



2018/2019

Your Essential Resource for

# SPECTROSCOPY SUPPLIES



Agilent Technologies



Agilent  
**CrossLab**

From Insight to Outcome

**ACROSS THE LAB, AROUND THE WORLD,  
WITH YOU EVERY STEP OF THE WAY.**

Real stories from the lab.

# WHO WE ARE. WHAT WE DO.

Whatever your lab needs, Agilent CrossLab is ready to partner with you to create new and transformative opportunities. Together, we'll support your scientific and business goals with superior laboratory services, software, and consumables from Agilent. A direct connection to a global team of service experts delivers vital, actionable insights at every level for your lab.

Our solutions maximize performance, reduce complexity, and drive improved economic, operational, and measurable outcomes. And our innovative and comprehensive products generate immediate results and lasting impact.

Look out for CrossLab stories from the lab to find out how we can help.

Get the full story at  
[www.agilent.com/chem/CrossLabStories](http://www.agilent.com/chem/CrossLabStories)

## SATISFY YOUR GROWING DEMAND TO SCREEN LARGE NUMBERS OF SAMPLES, FASTER

Agilent leads the way with our best-in-class portfolio of atomic and molecular spectroscopy systems. Our comprehensive and trusted portfolio offers the most powerful and reliable solutions for diverse application areas such as energy and chemicals, environmental, food safety and agriculture, geochemistry, materials testing and research, semiconductor analysis, pharmaceutical, academic, and life science research.



Agilent 5110 Series ICP-OES

Our supplies product range includes:

- **Atomic Absorption** supplies that help you reduce detection limits. Our research and development efforts have also led to innovations such as single-element and solid-cathode multi-element lamps, along with high-intensity UltrAA lamps.
- **ICP-OES supplies** that deliver reliable results for complex matrixes. From spray chambers and brackets—to nebulizers, torches, and peristaltic pump tubing—Agilent ICP-OES supplies help you confidently determine major and trace elements in samples such as food, water, and soil.
- **ICP-MS supplies** for confident trace analysis. Agilent ICP-MS supplies continually push the boundaries of design and innovation, helping you reduce interferences and improve productivity.
- **MP-AES supplies** and accessories that maintain the superior performance of the revolutionary Agilent 4210 MP-AES—a system that literally runs on air.
- **Molecular supplies** that ensure high performance, nondestructive measurements for quantitative analysis, and spectral imaging. From high-quality UV cuvettes to source lamps, cell holders, reference materials, and other critical parts, Agilent molecular supplies help you discover, characterize, and test various solid, liquid, organic, and inorganic materials.

You can count on Agilent to provide the supplies you need to be competitive and successful. Trust us to protect your investment with genuine parts and supplies plus a broad range of services, supported by a global network of experienced service professionals who can help you achieve the highest performance from every system in your lab. All Agilent supplies are backed by unmatched technical support—plus a 90-day warranty from the date of shipment.



# Table of Contents

|                                                                                       |           |                                                                                           |            |
|---------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------|------------|
| <b>Featured Products</b> .....                                                        | <b>1</b>  | Volatile Organic Samples .....                                                            | 61         |
| Agilent Atomic Spectroscopy Portfolio .....                                           | 1         | Applications Kits .....                                                                   | 62         |
| Agilent Molecular Spectroscopy Portfolio.....                                         | 3         | Spare Sample Introduction Kits for 700 Series,<br>Vista Series, and Liberty ICP-OES ..... | 64         |
| Agilent Spectroscopy Supplies Portfolio .....                                         | 6         | High Dissolved Solids .....                                                               | 65         |
| <b>Atomic Absorption Supplies</b> .....                                               | <b>7</b>  | Inert Sample Introduction Systems .....                                                   | 66         |
| Hollow Cathode Lamps.....                                                             | 7         | Ketone-Based Organic Solvents.....                                                        | 67         |
| Coded Single Element Lamps.....                                                       | 9         | Volatile Organics .....                                                                   | 68         |
| Uncoded Single Element Lamps.....                                                     | 10        | Common Organic Solvents .....                                                             | 69         |
| Convenient Multi-Element Lamps.....                                                   | 11        | SVS 1 and SVS 2 Switching Valves for ICP-OES .....                                        | 70         |
| High Intensity UltrAA Coded Single Element Lamps .....                                | 13        | AVS 6/7 Advanced Valve Systems for 5100/5110 DV ICP-OES.....                              | 74         |
| High Intensity UltrAA Multi-Element Lamps .....                                       | 14        | Multimode Sample Introduction System (MSIS).....                                          | 77         |
| Background Correction Lamps.....                                                      | 15        | <b>ICP-MS Supplies</b> .....                                                              | <b>79</b>  |
| ACT-80 Atom Concentrator Tube.....                                                    | 16        | Sample Introduction Supplies .....                                                        | 80         |
| Mark 7 Flame Atomization System.....                                                  | 17        | Humidifier Accessory.....                                                                 | 85         |
| Mark 7 Flame Atomization System Operating Kit.....                                    | 19        | PFA Inert Sample Introduction Kit Supplies.....                                           | 88         |
| Burners.....                                                                          | 20        | Torches and Components.....                                                               | 90         |
| Mark VI Flame Atomization System Operating Kit.....                                   | 23        | Interface Cones and Ion Lenses.....                                                       | 91         |
| Mark VI Standard Spray Chambers.....                                                  | 24        | Vacuum System Supplies.....                                                               | 102        |
| SIPS 10/20 Supplies .....                                                             | 25        | Peripherals Supplies.....                                                                 | 103        |
| VGA 77 Supplies.....                                                                  | 26        | Integrated Sample Introduction System 3 for 7800/7900/8900 .....                          | 106        |
| Graphite Furnace Parts and Supplies .....                                             | 29        | Gas Line Supplies .....                                                                   | 118        |
| Graphite Tubes and Platforms.....                                                     | 31        | <b>MP-AES Supplies</b> .....                                                              | <b>122</b> |
| Graphite Electrodes .....                                                             | 32        | Humidifier Accessory.....                                                                 | 124        |
| Graphite Shrouds .....                                                                | 32        | Multimode Sample Introduction System (MSIS).....                                          | 128        |
| Graphite Furnace Tools.....                                                           | 33        | External Gas Control Module (EGCM).....                                                   | 129        |
| Programmable Sample Dispenser (PSD) Supplies (used with<br>Graphite Furnace AA) ..... | 34        | Organics Kit for 4100 MP-AES .....                                                        | 129        |
| <b>ICP-OES Supplies</b> .....                                                         | <b>35</b> | AVS 4 Advanced Valve System, for 4200/4210 MP-AES .....                                   | 130        |
| Operating Supplies Kits .....                                                         | 35        | IsoMist Temperature-controlled Spray Chamber .....                                        | 132        |
| IsoMist Temperature-controlled Spray Chamber .....                                    | 40        | <b>Autosampler Supplies</b> .....                                                         | <b>133</b> |
| Sample Compartment Kits, Spray Chambers, and Brackets.....                            | 41        | SPS 4 Autosampler Supplies.....                                                           | 133        |
| Nebulizers and Accessories .....                                                      | 42        | SPS 3 Autosampler Supplies.....                                                           | 138        |
| Humidifier Accessory.....                                                             | 45        | Integrated Autosampler (I-AS) Supplies .....                                              | 141        |
| Torches .....                                                                         | 46        | ASX-500 Series Autosampler Supplies .....                                                 | 142        |
| Torches for 700 Series, Vista Series, and Liberty ICP-OES.....                        | 49        | Common Autosampler Supplies .....                                                         | 143        |
| Tubing .....                                                                          | 53        | <b>AA/MP-AES, ICP-OES, and ICP-MS Standards</b> .....                                     | <b>145</b> |
| Internal Standard Kit .....                                                           | 56        | IntelliQuant Calibration Standards for<br>5100/5110 SVDV/VDV ICP-OES.....                 | 147        |
| Tubing Kits for 700 Series, Vista Series,<br>and Liberty ICP-OES.....                 | 57        | ICP-MS Standards.....                                                                     | 157        |
| Low Volatile Organic Solvents .....                                                   | 58        | Wear Metal and Metallo-organic Standards .....                                            | 162        |
| Aromatic Organic Solvents .....                                                       | 59        | Biodiesel Standards.....                                                                  | 166        |
| Ketone-Based Organic Solvents .....                                                   | 60        |                                                                                           |            |

|                                                               |            |                                                              |            |
|---------------------------------------------------------------|------------|--------------------------------------------------------------|------------|
| <b>UV-Vis and UV-Vis-NIR Flow Cells and Cuvettes.....</b>     | <b>167</b> | <b>UV Filters, Standards, and Reagents.....</b>              | <b>196</b> |
| Agilent 8453/8454 UV-Vis and Cary UV-Vis-NIR Supplies .....   | 167        | Standards and Reagents .....                                 | 197        |
| Cell Shapes.....                                              | 168        | <b>Agilent Cary Eclipse Fluorescence Supplies .....</b>      | <b>199</b> |
| Cell Volumes .....                                            | 169        | Kits and Supplies for Fluorescence Accessories.....          | 199        |
| Macrocells.....                                               | 171        | Base Plate for Custom Accessories .....                      | 200        |
| Disposable Polystyrene Cells .....                            | 174        | Fluorescence Cuvettes and Flow Cells .....                   | 201        |
| Semi-microcells.....                                          | 175        | Microplates .....                                            | 202        |
| Sub-microcells .....                                          | 176        | Fiber Optic Probes and Couplers .....                        | 203        |
| Ultra-microcells .....                                        | 176        | Standards and Reference Materials .....                      | 204        |
| TrayCell.....                                                 | 178        | <b>Agilent Cary Series FTIR Supplies.....</b>                | <b>205</b> |
| Cylindrical Cells .....                                       | 179        | <b>Agilent Solutions.....</b>                                | <b>211</b> |
| Flow-through Cells.....                                       | 180        | <b>Services and Support .....</b>                            | <b>213</b> |
| Cell Holders and Accessories .....                            | 183        | Focus on what you do best.....                               | 213        |
| <b>Agilent 8453/8454 UV-Vis Supplies .....</b>                | <b>185</b> | Agilent CrossLab Service Plans.....                          | 213        |
| 8453/8454 Tubings and Fittings .....                          | 185        | Agilent Compliance Services.....                             | 213        |
| Instrument Parts and Supplies.....                            | 186        | Agilent Education and Consulting Services.....               | 214        |
| Dissolution Testing Supplies .....                            | 188        | The Agilent Value Promise—10 Years of Guaranteed Value ..... | 214        |
| <b>Agilent Cary UV-Vis and UV-Vis-NIR Supplies .....</b>      | <b>189</b> | Technical Support at work for you .....                      | 214        |
| Cary Fiber Optic Probes .....                                 | 189        | Need more information?.....                                  | 214        |
| Replaceable Tips and Miscellaneous Supplies .....             | 191        |                                                              |            |
| Kits and Supplies for UV-Vis and UV-Vis-NIR Accessories ..... | 192        |                                                              |            |
| Cary Source Lamps.....                                        | 195        |                                                              |            |
| Cary Tubing.....                                              | 195        |                                                              |            |



## Agilent Atomic Spectroscopy Portfolio

### Leading the Way in Atomic Spectroscopy Innovation

The Agilent Atomic Spectroscopy portfolio offers you the most diverse application coverage, while our unique MP-AES and ICP-QQQ technologies deliver new possibilities for your lab. Choose Agilent and together we'll take the path to success.

### Atomic Absorption (AA) Spectrometers

#### Extend your productivity, performance, and output boundaries

Agilent AA instruments are suitable for routine analysis where reliability and simple operation are vital. With the world's fastest and most productive flame AA, the world's most sensitive furnace AA, user-friendly software, and unbeaten instrument ruggedness, you can be sure you're getting reliable results.



### Microwave Plasma-Atomic Emission Spectrometer (MP-AES)

#### Elemental analysis using only air

The next generation of MP-AES technology, the Agilent 4210 MP-AES provides the lowest cost of ownership, improved safety, and superior performance. The Agilent 4210 MP-AES has high sensitivity, detection limits down to sub ppb levels, and is faster than conventional flame AA. Best of all, the Agilent 4210 MP-AES runs on air instead of combustible gases. The 4210 MP-AES is also easy to use with application-specific software applets and plug-and-play hardware to ensure you can set up quickly without method development or alignment, and with minimal training.

## Agilent 5110 Series ICP-OES

### The fastest, most precise ICP-OES... ever!

Agilent's 5110 Synchronous Vertical Dual View (SVDV) ICP-OES combines speed and analytical performance, so you don't have to compromise on either. The 5100 SVDV features unique Dichroic Spectral Combiner (DSC) technology that allows both the axial and radial views of the plasma to be captured in one reading. This feature delivers accurate results in the quickest possible time. The optional AVS 6 and 7 port switching valve system reduces cost-per-analysis and more than doubles the productivity of the 5110 ICP-OES. A vertically oriented torch allows you to measure the most challenging samples, from high matrix to volatile organic solvents. The vertical orientation also means uncompromised, robust measurements on tough samples with less cleaning, less downtime, and a reduced need for replacement torches.



## Agilent 7900 ICP-MS

### A new dimension in quadrupole ICP-MS

The world's best selling quadrupole ICP-MS now delivers 10 x higher matrix tolerance, 10 x wider dynamic range, 10 x better signal-to-noise ratio, and software so powerful it can write your methods for you.

Innovative technology and a new MassHunter software platform make the 7900 the world's most powerful, and most automated quadrupole ICP-MS. With matrix tolerance extended into the tens of % TDS range, plus a linear dynamic range of up to 11 orders of magnitude – and the industry's most effective helium collision mode – the 7900 ICP-MS delivers superior data quality whatever your application.



## Agilent 8900 Triple Quadrupole ICP-MS

### Put your ICP-MS results beyond doubt

Interference removal is more reliable and easier to achieve with Agilent's second-generation 8900 ICP-QQQ. The 8900 ICP-QQQ offers a range of configurations to cover applications from routine analysis to advanced research and high performance materials analysis. With helium mode performance and productivity to match Agilent's market-leading quadrupole ICP-MS systems, the Agilent 8900 ICP-QQQ adds MS/MS mode for controlled and consistent interference removal in reaction mode, making it the world's most powerful and flexible multi-element analyzer.



## Agilent Molecular Spectroscopy Portfolio

### In the Lab – In the Field... Now we take you further

Agilent provides an extensive portfolio of molecular spectroscopy solutions. With over 60 years of experience, Agilent brings you UV-Vis and UV-Vis-NIR, FTIR and FTIR-imaging, and fluorescence spectroscopy products engineered to help you discover, characterize, and test a variety of solid, liquid, organic, and inorganic materials. Take advantage of powerful analysis routines for reliable results with built-in ease-of-use to ensure your productivity.

### Agilent Cary Eclipse Fluorescence

#### Superior fluorescence sensitivity and fast kinetics

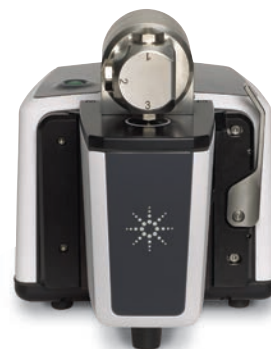


The Agilent Cary Eclipse Spectrophotometer with unique xenon flash lamp technology delivers superior sensitivity with fiber optics, high signal-to-noise ratios, and fast kinetic measurement capabilities. Combined with room light immunity and a wide range of options including polarization and a microplate reader, the Cary Eclipse is sensitive, accurate, and flexible. With a range of measurement options, you can be sure that the Cary Eclipse is the ideal workhorse for all your analytical needs.

### Agilent Cary 630 FTIR

#### Innovative, intuitive, reliable

The compact Agilent Cary 630 FTIR spectrometer is innovative, intuitive, and reliable, providing superior quantitative and qualitative information for routine analysis of solids, liquids, and gases. With a wide range of sample interfaces and high performing optics – including our unique DialPath for measuring liquids – the compact Agilent Cary 630 FTIR will give you accurate results – fast.





## Agilent Handheld and Portable FTIR

### Fully integrated, portable FTIR

Agilent's range of handheld and portable FTIR systems includes the world's most capable handheld and portable FTIR analyzers. Each system offers a simplified workflow, providing immediate answers regardless of the location of the sample.

The Agilent 4300 handheld FTIR spectrometer enables true nondestructive analysis for a variety of applications. At the heart of the system is a unique, rugged, interferometer, field-proven in challenging environments. The rugged design combined with superior ergonomics, provides an exceedingly compact, easy-to-use system, perfect for obtaining fast, high quality answers.

## FTIR Microscopy and Imaging

### See more than ever – fast

The Agilent Cary FTIR microscopes and chemical imaging systems represent the latest in cutting-edge performance. Leveraging the latest in technological developments, these systems deliver unparalleled spatial resolution and sensitivity. The wide range of options provides flexibility to suit applications ranging from routine measurements to cutting-edge applied research. The Agilent Cary 620 uses true Focal Plane Array (FPA1) imaging, enabling you to collect hundreds to thousands of spectra simultaneously.

Using Agilent's unique high magnification optics, you can collect the highest resolution data with quality similar to that of an IR synchrotron, ideal for analyzing biomedical samples. If your application is more related to materials, such as polymer laminates, then Agilent's unique Live FPA Imaging mode for ATR analysis eliminates time-consuming sample preparation, providing answers in less than 5 minutes compared to over 24 hours with traditional systems.

<sup>1</sup>This product is regulated by the US Department of State under the International Traffic in Arms Regulations, 22 CFR 120-130 ("ITAR"). An export license from the US government is therefore required to export this product from the United States, and other ITAR restrictions apply to the shipment, use, service, and other aspects of this product and the FTIR instrument in which it is used.





### Raman Spectroscopy – Formerly Cobalt Light Systems

#### Accurate, non-invasive analysis of materials through opaque barriers

Agilent develops innovative Raman products for non-invasive, through-barrier chemical analysis in a range of applications. Proprietary spatially offset Raman spectroscopy (SORS) technology enables the Agilent RapID system to verify the identity of pharmaceutical raw materials through unopened opaque containers. This decreases the burden on the QC lab, prevents contamination, and paves the way for 100 % inspection. The Agilent TRS100 system uses transmission Raman spectroscopy (TRS) for fast, easy-to-use whole tablet or capsule assay and polymorph analysis in pharmaceutical QC testing. A TRS100 system can reduce content uniformity, assay, and ID tests to minutes per batch, saving costs and improving the QC workflow.

The Agilent Resolve handheld Raman system uses SORS for rapid identification of explosives, narcotics, and hazardous materials through sealed, opaque containers. Resolve's unique through-barrier capability means hazards remain contained, improving the safety and efficiency of hazmat, military, law enforcement, and customs operations. The Cobalt Insight200M, from Agilent, also employs SORS technology for liquid explosive detection at airport security. The system screens all common container types with the lowest false alarm rate of any ECAC certified LEDS system.

### UV-Vis and UV-Vis-NIR Spectrophotometers

#### You can do it all with a Cary spectrophotometer

The Agilent Cary range of UV-Vis and UV-Vis-NIR spectrophotometers are renowned for their superior performance, flexibility, and ease-of-use. With unsurpassed photometric accuracy and a wide range of flexible accessories, the series is designed to meet your application requirements now and in the future. The instruments vary in capabilities from the routine QA/QC Cary 60 to the industry-leading Cary 6000i and Cary 7000 UMS, and from scanning spectrophotometers to the photodiode-array-based Cary 8454.



# Agilent Spectroscopy Supplies Portfolio

## Agilent Hollow Cathode Lamps

Agilent uncoded hollow cathode lamps provide economical operation, superb performance and are compatible with all Agilent and most AA systems from other manufacturers\*. Agilent lamps are manufactured in an ISO 9001 certified environment and use proven processing steps to ensure optimum purity, stable operation, and long lifetime.



Turn to **Page 7** or visit [www.agilent.com/chem/hollow-cathode-lamps](http://www.agilent.com/chem/hollow-cathode-lamps)

\*Not compatible with PerkinElmer systems. For Agilent hollow cathode lamps suitable for all PerkinElmer AA systems, see [www.agilent.com/chem/lamps-for-pe](http://www.agilent.com/chem/lamps-for-pe)



## Inert OneNeb Series 2 Nebulizer, for ICP-OES and MP-AES

The OneNeb series 2 nebulizer is an inert, high efficiency universal nebulizer that is virtually indestructible. It provides superb tolerance to high levels of dissolved solids, and is tolerant to most sample matrixes determined using ICP-OES and MP-AES, including high acids, HF digests, and organic solvents. It replaces a conventional glass concentric nebulizer and is compatible with most conventional cyclonic spray chambers.

For ICP-OES, turn to **Page 42, 43, 44** or visit [www.agilent.com/chem/oneneb2](http://www.agilent.com/chem/oneneb2)

For MP-AES, turn to **Page 124** or visit [www.agilent.com/chem/oneneb2mp-aes](http://www.agilent.com/chem/oneneb2mp-aes)

## ICP-MS Interface Cones for Superior, Reproducible Performance

Optimum performance of your ICP-MS is critically dependent on the size, shape, and condition of the interface cones. They provide the ideal combination of matrix tolerance and high sensitivity. Agilent cones ensure optimum performance and maximum uptime. Don't risk performance problems with nongenuine cones. Agilent also offers a trade-in credit against return of used platinum cones when purchasing replacements, ensuring cost savings for you and reducing your lab's environmental impact.

Turn to **Page 91, 92, 93** or visit [www.agilent.com/chem/interface-cones-ion-lenses](http://www.agilent.com/chem/interface-cones-ion-lenses)





## Atomic Absorption Supplies

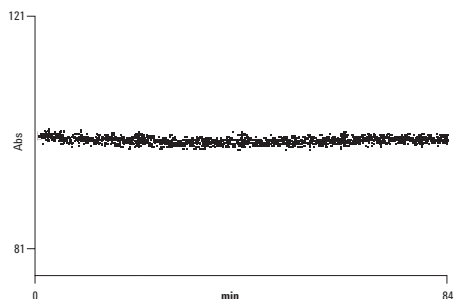
### Hollow Cathode Lamps

Agilent provides a comprehensive range of consumables for atomic absorption, designed to maintain the high performance of your AA instrument. In addition, Agilent continues to research and manufacture an extensive range of single-element and solid-cathode multi-element lamps, plus high-intensity UltrAA lamps for superior cost-effective performance.

Agilent hollow cathode lamps provide optimal signal-to-noise performance, permitting determinations at even lower levels with the most demanding applications. Agilent lamps are manufactured in an ISO 9001 certified environment and use proven processing steps to guarantee quality and reliability, and to ensure they are optimized to deliver the best performance from your AA. Agilent lamps provide high spectral purity because of purified materials, an extended processing cycle, and unique lamp conditioning procedures. These ensure minimal lamp warm-up time and good stability during operation.

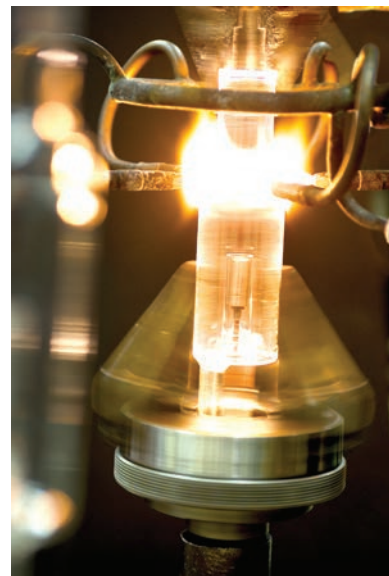
Economical operation is assured by the long lamp life, typically exceeding 5,000 mA hours, over and above our factory conditioning and testing service.

Consistent performance is also assured. All lamps are tested to confirm that the emission intensity exceeds a minimum level. No lamp leaves our factory without having satisfied our demanding test standards. These tests ensure that you receive quality lamps that can provide optimum signal-to-noise ratio and stable performance throughout the life of the lamp.



H.C.L Drift Test

The trace shows the variation in emission intensity from a lamp over a 1 hour 24 minutes period. The steady trace demonstrates the superb stability and low drift achieved when using our hollow cathode lamps (after a suitable warm-up period).



## TIPS AND TOOLS

Did you know that Agilent can streamline your parts and service procurement needs by being your single source for parts, consumables, and services for your PerkinElmer AA, ICP-OES, and ICP-MS systems?

Learn more about the comprehensive Agilent portfolio for PerkinElmer parts at:

**[www.agilent.com/chem/pespectrosupplies](http://www.agilent.com/chem/pespectrosupplies)**

## Coded Single Element Lamps

- High performance – manufactured from the purest cathode materials
- Easier to use – element coded for automatic lamp recognition, preventing errors
- Stable operation – extended processing ensures minimal warm-up and good lamp stability



Coded Single Element Lamp, Cu, 5610101400

### Coded Single Element Lamps

| Element         | Part No.   | Element        | Part No.   |
|-----------------|------------|----------------|------------|
| Aluminum – Al   | 5610100100 | Nickel – Ni    | 5610103700 |
| Antimony – Sb   | 5610100200 | Niobium – Nb   | 5610103800 |
| Arsenic – As    | 5610100300 | Palladium – Pd | 5610104000 |
| Barium – Ba     | 5610100400 | Phosphorus – P | 5610107700 |
| Beryllium – Be  | 5610100500 | Platinum – Pt  | 5610104100 |
| Bismuth – Bi    | 5610100600 | Potassium – K  | 5610104200 |
| Boron – B       | 5610100700 | Rhenium – Re   | 5610104400 |
| Cadmium – Cd    | 5610100800 | Rhodium – Rh   | 5610104500 |
| Calcium – Ca    | 5610101000 | Selenium – Se  | 5610105000 |
| Chromium – Cr   | 5610101200 | Silicon – Si   | 5610105100 |
| Cobalt – Co     | 5610101300 | Silver – Ag    | 5610105200 |
| Copper – Cu     | 5610101400 | Sodium – Na    | 5610105300 |
| Gold – Au       | 5610102100 | Strontium – Sr | 5610105400 |
| Hafnium – Hf    | 5610102200 | Tantalum – Ta  | 5610105500 |
| Iridium – Ir    | 5610102600 | Tellurium – Te | 5610105600 |
| Iron – Fe       | 5610102700 | Thallium – Tl  | 5610105800 |
| Lead – Pb       | 5610102900 | Tin – Sn       | 5610106100 |
| Lithium – Li    | 5610103000 | Titanium – Ti  | 5610106200 |
| Magnesium – Mg  | 5610103200 | Vanadium – V   | 5610106500 |
| Manganese – Mn  | 5610103300 | Zinc – Zn      | 5610106800 |
| Mercury – Hg    | 5610103400 | Zirconium – Zr | 5610106900 |
| Molybdenum – Mo | 5610103500 |                |            |
| Neodymium – Nd  | 5610103600 |                |            |

### TIPS AND TOOLS

Did you know that Agilent also offers a comprehensive range of coded 50 mm hollow cathode lamps that are compatible with all PerkinElmer AA systems? They provide economical operation and match the performance of genuine PerkinElmer Lumina lamps.

Choose the lamp for the elements you need at: [www.agilent.com/chem/perkinelmer-hcl](http://www.agilent.com/chem/perkinelmer-hcl)

## Uncoded Single Element Lamps

- No element coding for economical operation
- Compatible with all Agilent and most other AA systems
- Same excellent performance as provided by Agilent coded single element lamps

### Uncoded Single Element Lamps

| Element         | Part No.   | Element        | Part No.   |
|-----------------|------------|----------------|------------|
| Aluminum – Al   | 5610122000 | Neodymium – Nd | 5610125500 |
| Antimony – Sb   | 5610122100 | Nickel – Ni    | 5610125600 |
| Arsenic – As    | 5610122200 | Niobium – Nb   | 5610125700 |
| Barium – Ba     | 5610122300 | Palladium – Pd | 5610125900 |
| Beryllium – Be  | 5610122400 | Phosphorus – P | 5610126000 |
| Bismuth – Bi    | 5610122500 | Platinum – Pt  | 5610126100 |
| Boron – B       | 5610122600 | Potassium – K  | 5610126200 |
| Cadmium – Cd    | 5610122700 | Rhenium – Re   | 5610126400 |
| Cesium – Cs     | 5610122800 | Rhodium – Rh   | 5610126500 |
| Calcium – Ca    | 5610122900 | Rubidium – Rb  | 5610126600 |
| Chromium – Cr   | 5610123100 | Ruthenium – Ru | 5610126700 |
| Cobalt – Co     | 5610123200 | Samarium – Sm  | 5610126800 |
| Copper – Cu     | 5610123300 | Scandium – Sc  | 5610126900 |
| Europium – Eu   | 5610123600 | Selenium – Se  | 5610127000 |
| Gadolinium – Gd | 5610123700 | Silicon – Si   | 5610127100 |
| Gallium – Ga    | 5610123800 | Silver – Ag    | 5610127200 |
| Germanium – Ge  | 5610123900 | Sodium – Na    | 5610127300 |
| Gold – Au       | 5610124000 | Strontium – Sr | 5610127400 |
| Hafnium – Hf    | 5610124100 | Tantalum – Ta  | 5610127500 |
| Indium – In     | 5610124400 | Tellurium – Te | 5610127600 |
| Iridium – Ir    | 5610124500 | Thallium – Tl  | 5610127800 |
| Iron – Fe       | 5610124600 | Tin – Sn       | 5610128100 |
| Lanthanum – La  | 5610124700 | Titanium – Ti  | 5610128200 |
| Lead – Pb       | 5610124800 | Tungsten – W   | 5610128300 |
| Lithium – Li    | 5610124900 | Vanadium – V   | 5610128500 |
| Magnesium – Mg  | 5610125100 | Yttrium – Y    | 5610128700 |
| Manganese – Mn  | 5610125200 | Zinc – Zn      | 5610128800 |
| Mercury – Hg    | 5610125300 | Zirconium – Zr | 5610128900 |
| Molybdenum – Mo | 5610125400 |                |            |



Uncoded single element lamp, Au, 5610124000

## Convenient Multi-Element Lamps

- Save time by eliminating lamp warm-up, when switching elements
- Same excellent performance as provided by Agilent single element lamps
- Primary lines checked to avoid and minimize spectral interferences



Coded multi-element lamp, Co/Cr/Cu/Fe/Mn/Ni,  
5610107600

### Coded Multi-Element Lamps – for automatic lamp recognition, preventing errors

| Element                                                          | Part No.   |
|------------------------------------------------------------------|------------|
| Aluminum/Calcium/Magnesium – Al/Ca/Mg                            | 5610108800 |
| Calcium/Magnesium – Ca/Mg                                        | 5610107100 |
| Cobalt/Chromium/Copper/Iron/Manganese/Nickel – Co/Cr/Cu/Fe/Mn/Ni | 5610107600 |
| Copper/Iron/Manganese/Zinc – Cu/Fe/Mn/Zn                         | 5610109600 |
| Copper/Iron/Silicon/Zinc – Cu/Fe/Si/Zn                           | 5610109700 |
| Copper/Zinc – Cu/Zn                                              | 5610119200 |
| Silver/Cadmium/Lead/Zinc – Ag/Cd/Pb/Zn                           | 5610108700 |
| Silver/Chromium/Copper/Iron/Nickel – Ag/Cr/Cu/Fe/Ni              | 5610109500 |
| Sodium/Potassium – Na/K                                          | 5610107000 |

**Uncoded Multi-Element Lamps – for economical operation and universal compatibility**

| Element                                                          | Part No.   |
|------------------------------------------------------------------|------------|
| Calcium/Magnesium – Ca/Mg                                        | 5610129100 |
| Cobalt/Chromium/Copper/Iron/Manganese/Nickel – Co/Cr/Cu/Fe/Mn/Ni | 5610129200 |
| Copper/Zinc – Cu/Zn                                              | 5610129300 |
| Sodium/Potassium – Na/K                                          | 5610129000 |



Uncoded multi-element lamp, Co/Cr/Cu/Fe/Mn/Ni,  
5610129200

**TIPS AND TOOLS**

Did you know that you can safely and conveniently return used hollow cathode lamps for recycling using prepaid shipping pails?

This recycling service is currently available in the US (excluding Alaska, Hawaii, and Puerto Rico). Find out more about the Agilent AA lamp recycling service at **[www.agilent.com/chem/aarecycle](http://www.agilent.com/chem/aarecycle)**

## High Intensity UltrAA Coded Single Element Lamps

- Emission intensity is increased by 3 to 5 times, for lower noise
- Sensitivity is increased by up to 40 % due to the sharper emission profile, allowing determinations at even lower levels
- Element coded for automatic lamp recognition, preventing errors

UltrAA lamps are high intensity, boosted discharge hollow cathode lamps. They use the standard lamp current, but apply an additional boost discharge within the lamp to increase the emission intensity. The boost current is supplied from a secondary control module (either integrated into the instrument or supplied from an external module).

UltrAA lamps are manufactured from the purest cathode materials, and every lamp is QA/QC tested to guarantee performance and reliability. These lamps are coded for automatic lamp recognition (except for 55 AA, SpectrAA-50/55 and SpectrAA-5 models), eliminating the risk of time-consuming errors when reprogramming the lamp position.



High intensity UltrAA lamp, As, 561018100

### High Intensity UltrAA Coded Single Element Lamps

| Element        | Part No.   |
|----------------|------------|
| Antimony – Sb  | 5610108000 |
| Arsenic – As   | 5610108100 |
| Bismuth – Bi   | 5610134200 |
| Boron – B      | 5610135700 |
| Cobalt – Co    | 5610134100 |
| Copper – Cu    | 5610109100 |
| Germanium – Ge | 5610134300 |
| Gold – Au      | 5610109000 |
| Iron – Fe      | 5610108600 |
| Lead – Pb      | 5610108200 |
| Manganese – Mn | 5610133700 |
| Nickel – Ni    | 5610108500 |
| Palladium – Pd | 5610135800 |
| Platinum – Pt  | 5610135900 |
| Selenium – Se  | 5610108300 |
| Silicon – Si   | 5610133400 |
| Tellurium – Te | 5610134000 |
| Thallium – Tl  | 5610108400 |
| Tin – Sn       | 5610133900 |

## High Intensity UltrAA Multi-Element Lamps

- Unique combinations of compatible elements extend the versatility and performance of any AA spectrometer
- Save time by avoiding the need to warm up a new lamp
- Same excellent performance as provided by Agilent single element, UltrAA coded lamps

### High Intensity UltrAA Coded Multi-Element Lamps

| Element                                                          | Part No.   |
|------------------------------------------------------------------|------------|
| Aluminum/Calcium/Magnesium – Al/Ca/Mg                            | 5610133600 |
| Cobalt/Chromium/Copper/Iron/Manganese/Nickel – Co/Cr/Cu/Fe/Mn/Ni | 5610134500 |
| Cobalt/Molybdenum/Lead/Zinc – Co/Mo/Pb/Zn                        | 5610135200 |
| Copper/Iron/Manganese/Zinc – Cu/Fe/Mn/Zn                         | 5610135000 |
| Copper/ Iron/Silicon/Zinc – Cu/Fe/Si/Zn                          | 5610135100 |
| Copper/Zinc – Cu/Zn                                              | 5610134600 |
| Silver/Cadmium/Lead/ Zinc – Ag/Cd/Pb/Zn                          | 5610108900 |
| Silver/Chromium/Copper/Iron/Nickel – Ag/Cr/Cu/Fe/Ni              | 5610134900 |



High intensity UltrAA lamp, Ag/Cd/Pb/Zn,  
5610108900

### High Intensity UltrAA Uncoded Multi-Element Lamps

| Element                        | Part No.   |
|--------------------------------|------------|
| Arsenic/Copper/Iron – As/Cu/Fe | 5610135300 |
| Nickel/Selenium – Ni/Se        | 5610135400 |



High intensity UltrAA lamp, As/Cu/Fe, 5610135300

## Background Correction Lamps

Deuterium background correction lamps provide accurate and fast correction over the widest possible absorbance range and are QC-selected for optimal lifetime.



Deuterium lamp for AA instruments, G8431-80000

### Background Correction Lamps

| Element                                             | Part No.    |
|-----------------------------------------------------|-------------|
| Deuterium background correction lamp for AA systems | G8431-80000 |

## ACT-80 Atom Concentrator Tube

The ACT-80 Atom Concentrator Tube is a quartz tube that is positioned in the air-acetylene flame to enhance the sensitivity of flame AA by 2–3 times when compared to that of normal flame AA. An improvement in detection limit is also achieved.

### ACT-80 Atom Concentrator Tube

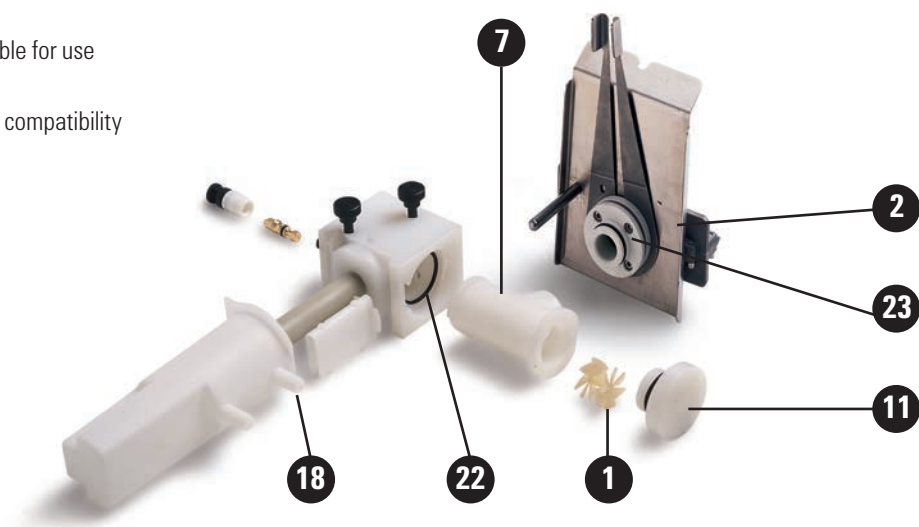
| Description                                                    | Unit  | Part No.   |
|----------------------------------------------------------------|-------|------------|
| ACT-80 atom concentrator tube, for Mark 7 air-acetylene burner |       | 110656800  |
| Spare quartz atomization cells, for ACT-80                     | 10/pk | 9910054400 |

#### TIPS AND TOOLS

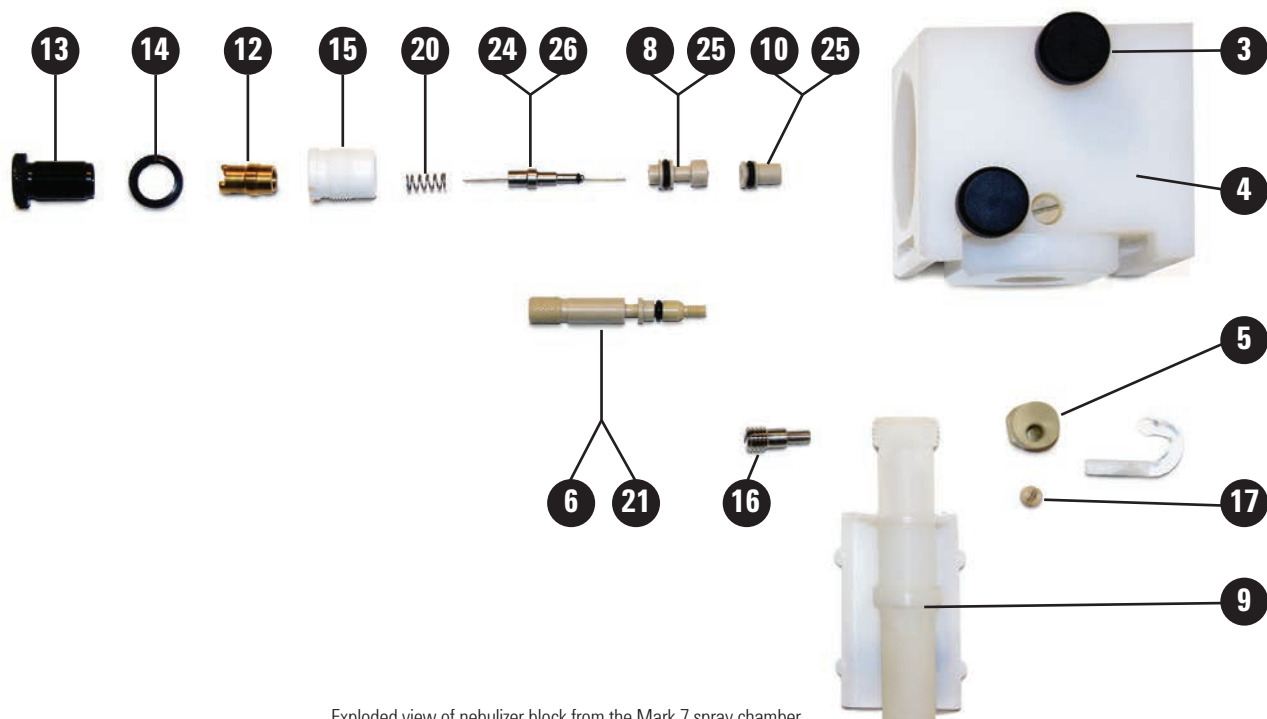
Deuterium background correction is only usable over the range from 185 to around 430 nm. There is no usable output from the lamp at higher wavelengths.

## Mark 7 Flame Atomization System

- Simple-to-use twist and lock assembly makes for easy cleaning and routine maintenance
- Flexible operation with the capability to tune performance using the externally adjustable impact bead, fit mixing paddles for better precision, or both
- Inert construction makes spray chamber suitable for use with aqueous and organic solutions
- Fit organic resistant O-rings to ensure organic compatibility



Complete Mark 7 spray chamber assembly, 110634490 (shown with optional Mark 7 air-acetylene burner (item 2), ordered separately)



Exploded view of nebulizer block from the Mark 7 spray chamber

**Mark 7 Spray Chamber**

| Item | Description                                                                                                            | Part No.   |
|------|------------------------------------------------------------------------------------------------------------------------|------------|
|      | Complete Mark 7 spray chamber assembly, aqueous, for use with aqueous solutions (fitted with standard O-rings)         | 110634490  |
|      | Complete Mark 7 spray chamber assembly, organic, for use with organic solvents (fitted with organic resistant O-rings) | 110866890  |
| 1    | Mixing paddle, fluorinated                                                                                             | 110637000  |
|      | Mixing paddles, fluorinated, 5/pk                                                                                      | 9910093600 |
| 2    | Mark 7 air-acetylene burner                                                                                            | 210164000  |
|      | Mark 7 nitrous oxide-acetylene burner                                                                                  | 210164100  |
| 7    | Spray chamber body, fluorinated                                                                                        | 6210092090 |
| 11   | Spray chamber bung, fluorinated                                                                                        | 1610118800 |
| 11   | O-ring for spray chamber bung, nitrile for aqueous solutions                                                           | 6910012100 |
| 11   | O-ring for spray chamber bung, organic solvent compatible                                                              | 6910015200 |
| 18   | Kit, fluorinated liquid trap, drain tube with integrated float and magnet                                              | 9910105800 |
| 22   | O-ring spray chamber, nitrile                                                                                          | 6910037000 |
| 22   | O-ring spray chamber, organic solvent compatible                                                                       | 6910036800 |
| 23   | O-ring burner base, nitrile, for aqueous solutions                                                                     | 6910010500 |
| 23   | O-ring burner base, organic solvent compatible                                                                         | 6910013100 |

**Nebulizer Components For Mark 7 Spray Chamber**

| Item | Description                                                                                    | Part No.   |
|------|------------------------------------------------------------------------------------------------|------------|
| 3    | Spray chamber mounting screw                                                                   | 1510226600 |
| 4    | Nebulizer block, fluorinated (excludes integrated nebulizer and spray chamber mounting screws) | 9910093100 |
| 5    | Clamp bead adjuster                                                                            | 810133400  |
| 6    | Screw bead adjuster                                                                            | 1510225000 |
| 8    | Nebulizer capillary guide                                                                      | 810134400  |
| 9    | Kit, fluorinated liquid trap, drain tube with integrated float and magnet                      | 9910105800 |
| 10   | Venturi nebulizer, PEEK                                                                        | 1610117390 |
| 12   | Clamp bush guide                                                                               | 810134300  |
| 13   | Screw capillary adjuster                                                                       | 1510226800 |
| 14   | Nut lock M12 x 0.5                                                                             | 1510226700 |
| 15   | Bearing bush nebulizer                                                                         | 310046600  |
| 16   | Screw lock dog point M8                                                                        | 1510226000 |
| 17   | Screw M6 x 6 Ertalyte                                                                          | 1510226500 |

(Continued)

**Nebulizer Components For Mark 7 Spray Chamber**

| Item | Description                                                                                                                                                                | Part No.   |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 18   | Kit, fluorinated liquid trap, drain tube with integrated float and magnet                                                                                                  | 9910105800 |
| 20   | Nebulizer spring                                                                                                                                                           | 4610017400 |
| 21   | O-ring screw bead adjuster, nitrile                                                                                                                                        | 6910000100 |
| 21   | O-ring screw bead adjuster, organic solvent compatible                                                                                                                     | 6910036900 |
| 24   | O-ring, 1/32 inch id x 3/32 inch od x 1/32 inch, nitrile                                                                                                                   | 6910009700 |
| 25   | O-ring, 3/16 inch id x 5/16 inch od x 1/16 inch, nitrile                                                                                                                   | 6910009800 |
| 25   | O-ring, 3/16 inch id x 5/16 inch od x 1/16 inch, organic solvent compatible                                                                                                | 6910013600 |
| 26   | Nebulizer capillary kit<br>Includes capillary assembly, capillary guide, nebulizer spring, nebulizer cleaning wire, Hi-Vac capillary tubing, and standard capillary tubing | 9910093000 |
|      | Glass impact beads, 5/pk                                                                                                                                                   | 9910025700 |
|      | PTFE impact beads, for use with HF digests, 5/pk                                                                                                                           | 9910053300 |
|      | Mark 7 O-ring kit, for aqueous samples                                                                                                                                     | 9910093400 |
|      | Mark 7 O-ring kit, for organic solvents                                                                                                                                    | 9910093500 |
|      | Drain tubing for aqueous solutions, per m, 2 m required                                                                                                                    | 3710009200 |
|      | Drain tubing for organic solvents, nitrile rubber, per m, 2 m required                                                                                                     | 3710011700 |
|      | Venturi extraction tool                                                                                                                                                    | 7210027700 |
|      | Nebulizer capillary extraction tool                                                                                                                                        | 7210027600 |
|      | Stand for Mark V, VI, and 7 spray chambers                                                                                                                                 | 9910049800 |

**TIPS AND TOOLS**

Store a spare set of compatible O-rings, glass impact beads, and nebulizer springs for the spray chamber. During routine maintenance, replace O-rings if they are visibly worn or cracked, and change the glass impact bead if the surface of the bead is worn or pitted.

## Mark 7 Flame Atomization System Operating Kit

Typical operation supplies required for moderate use of Flame Atomic Absorption Spectrometer Systems with Mark 7 spray chamber.

### Mark 7 Flame Atomization System Operating Kit

| Description                                                                                                                                                                | Kit Quantity | Unit   | Part No.   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------|------------|
| Mark 7 operating supplies kit                                                                                                                                              |              |        | 190034100  |
| <b>Kit Contents</b>                                                                                                                                                        |              |        |            |
| Venturi nebulizer, PEEK                                                                                                                                                    | 1            | 1      | 1610117390 |
| Nebulizer capillary kit<br>Includes capillary assembly, capillary guide, nebulizer spring, nebulizer cleaning wire, Hi-Vac capillary tubing, and standard capillary tubing | 1            |        | 9910093000 |
| Nebulizer block, fluorinated (excludes integrated nebulizer and spray chamber mounting screws)                                                                             | 1            |        | 9910093100 |
| Glass impact beads                                                                                                                                                         | 1            | 5/pk   | 9910025700 |
| High solids capillary tubing, 3 m                                                                                                                                          | 1            | 3 m    | 9910024800 |
| Mark 7 O-ring kit, for aqueous samples                                                                                                                                     | 1            | 1/pk   | 9910093400 |
| Mixing paddles, fluorinated                                                                                                                                                | 1            | 5/pk   | 9910093600 |
| Burner cleaning and alignment cards                                                                                                                                        | 1            | 100/pk | 9910053900 |

## Burners

The Mark 7 burner fits all current AA instruments and the earlier SpectrAA series instruments and is compatible with the Mark V, VI, and 7 spray chambers.

### Burners

| Description                                 | Part No.   |
|---------------------------------------------|------------|
| Mark 7 air-acetylene burner                 | 210164000  |
| Mark 7 nitrous oxide-acetylene burner       | 210164100  |
| Burner cleaning and alignment cards, 100/pk | 9910053900 |



Mark 7 air/acetylene burner, 210164000

### TIPS AND TOOLS

The best way to clean the burner is to polish the inside of the burner slot using the burner cleaning strips and a liquid metal polish. Then clean the outside of the burner slot with a clean rag. Then sonicate for a few minutes in a detergent solution, rinse, and dry. Ensure the burner is dry before refitting and igniting the flame.



Glass impact beads, 9910025700



PTFE impact beads, 9910053300

## Impact Beads

| Description                                      | Use With                         | Unit | Part No.   |
|--------------------------------------------------|----------------------------------|------|------------|
| Glass impact beads, 5/pk                         | Mark V, VI, and 7 spray chambers | 5/pk | 9910025700 |
| PTFE impact beads, for use with HF digests, 5/pk | Mark V, VI, and 7 spray chambers | 5/pk | 9910053300 |

## TIPS AND TOOLS

To avoid damaging the bead when replacing, ensure the adjusting screw is turned fully clockwise. Then fit the bead and tighten the locking screw.

## Nebulizers and Nebulizer Maintenance

| Description                        | Kit Contents                                                                                                                                                    | Use With                         | Part No.   |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------|
| Barrel nebulizer, adjustable       |                                                                                                                                                                 | Mark V and VI spray chambers     | 9910043500 |
| Barrel nebulizer, high vacuum      |                                                                                                                                                                 | Mark V and VI spray chambers     | 9910043700 |
| Spare Venturi kit, PEEK            | Includes PEEK Venturi, O-rings, nebulizer spring, nebulizer tool, and instructions                                                                              | Mark V and VI spray chambers     | 9910024400 |
| Pt/Ir capillary spares kit         | Includes capillary assembly, capillary guide, nebulizer spring, nebulizer tool, nebulizer cleaning wire, Hi-Vac capillary tubing, and standard capillary tubing | Mark V and VI spray chambers     | 9910024500 |
| High solids capillary tubing, 3 m  |                                                                                                                                                                 | Mark V, VI, and 7 spray chambers | 9910024800 |
| High vacuum capillary tubing, 3/pk |                                                                                                                                                                 | Mark V, VI, and 7 spray chambers | 9910044000 |
| Nebulizer capillary kit            | Includes capillary assembly, capillary guide, nebulizer spring, nebulizer cleaning wire, Hi-Vac capillary tubing, and standard capillary tubing                 | Mark 7 spray chamber             | 9910093000 |
| Nebulizer cleaning wire, 3 x 0.3 m |                                                                                                                                                                 | Mark V, VI, and 7 spray chambers | 9910024700 |
| Nebulizer O-ring kit               |                                                                                                                                                                 | Barrel nebulizers                | 9910035200 |



Capillary spares kit, 9910024500



High solids capillary tubing, 9910024800



Nebulizer cleaning wire, 9910024700



High vacuum capillary tubing, 9910044000

## Mark VI Flame Atomization System Operating Kit

Typical operation supplies required for moderate use of Flame Atomic Absorption Spectrometer Systems with the Mark VI spray chamber.

### Mark VI Flame Atomization System Operating Kit – For use with aqueous samples

| Description                         | Kit Quantity | Unit   | Part No.   |
|-------------------------------------|--------------|--------|------------|
| Mark VI operating supplies kit      |              |        | 190024800  |
| <b>Kit Contents</b>                 |              |        |            |
| Spare Venturi kit, PEEK             | 1            |        | 9910024400 |
| Pt/Ir capillary spares kit          | 1            |        | 9910024500 |
| Barrel nebulizer, high vacuum       | 1            | 1/ea   | 9910043700 |
| Nebulizer O-ring kit                | 1            |        | 9910035200 |
| High vacuum capillary tubing        | 1            | 3/pk   | 9910044000 |
| High solids capillary tubing, 3 m   | 1            |        | 9910024800 |
| O-ring/gasket kit                   | 1            |        | 9910026500 |
| Mixing paddles                      | 1            | 5/pk   | 9910063600 |
| Burner cleaning and alignment cards | 1            | 100/pk | 9910053900 |

### TIPS AND TOOLS

Store a spare set of compatible O-rings, glass impact beads, and nebulizer springs for the spray chamber. During routine maintenance, replace O-rings if they are visibly worn or cracked, and change the glass impact bead if the surface of the bead is worn or pitted.

## Mark VI Standard Spray Chambers

The Mark VI spray chamber was used with older model Agilent AA instruments. It has many of the design features and benefits of the Mark 7 design.

### Mark VI Standard Spray Chambers - For use with aqueous samples

| Description                                             | Part No.   |
|---------------------------------------------------------|------------|
| O-ring/gasket kit                                       | 9910026500 |
| Mixing paddles, 5/pk                                    | 9910063600 |
| Liquid trap and float assembly                          | 9910061600 |
| Drain tubing for aqueous solutions, per m, 2 m required | 3710009200 |
| Nebulizer bung assembly                                 | 110351990  |
| Requires nebulizer                                      |            |
| Complete Mark VI spray chamber assembly                 | 110351790  |
| Requires nebulizer                                      |            |



Liquid trap and float assembly, 9910061600

### Mark VI Universal Spray Chamber - For use with organic solvents\*

| Description                                                            | Part No.   |
|------------------------------------------------------------------------|------------|
| Mixing paddles, 5/pk                                                   | 9910063600 |
| Liquid trap and float assembly                                         | 9910061600 |
| O-ring/gasket kit                                                      | 9910045700 |
| Pressure relief bung                                                   | 9910063100 |
| Drain tubing for organic solvents, nitrile rubber, per m, 2 m required | 3710011700 |

\*Also suitable for use with aqueous solutions



SIPS 20 Sample Introduction Pump System  
for flame AA



SIPS 10/20 pump tubing, 9910075900



Constant pressure head bottle, rectangular,  
110533590



Pump bands, 9910077600



SIPS 20 3-way T-piece assembly, 110585790

## SIPS 10/20 Supplies

The Sample Introduction Pump System (SIPS) is an innovative sample introduction and dilution system for flame AA that eliminates the task of manual preparation of multiple calibration standards, providing fast, accurate online dilution of over-range samples.

### SIPS 10/20 Operating Supplies Kit

| Description                       | Kit Contents                                                                                                                                                                                                                                           | Part No.  |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| SIPS 10/20 operating supplies kit | Includes 2 constant pressure bottles, 500 mL (110533590), 1 L diluent bottle (6610014600), SIPS 3-way T-piece assembly for SIPS 20 (110585790), SIPS pump tubing, 6/pk (9910075900), SIPS tubing kit (9910076100), SIPS pump bands, 10/pk (9910077600) | 190025400 |

### SIPS 10/20 Maintenance Supplies

| Description                                                                    | Part No.   |
|--------------------------------------------------------------------------------|------------|
| Peristaltic pump tubing, orange/orange, 6/pk                                   | 9910075900 |
| Tubing kit for SIPS 10/20, to connect constant pressure head bottle to T-piece | 9910076100 |
| Constant pressure head bottle, rectangular, 1 L                                | 110766690  |
| Constant pressure head bottle, rectangular, 500 mL                             | 110533590  |
| Pump bands, 10/pk                                                              | 9910077600 |
| SIPS 10 2-way T-piece assembly                                                 | 110651090  |
| SIPS 20 3-way T-piece assembly                                                 | 110585790  |

## VGA 77 Supplies

The Vapor Generation Accessory (VGA 77) is ideal for  $\mu\text{g/L}$  determination of Hg and the hydride-forming elements.

### Operating Supplies Kit

| Description                   | Kit Contents                                                                                                                                                                                                                                                                                                                                            | Part No.  |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| VGA 77 operating supplies kit | Includes 2 tubes and connectors (9910061900), 2 packs pump tubes, black/black, 12/pk (3710027200), 2 packs pump tubes, purple/black, 12/pk (3710027300), pump bed kit (9910050700), gas liquid separator (9910071100), mercury flow-through cell (9910040700), 2 boxes hydride absorption cells, 2/box (9910040000), spare plumbing module (9910062100) | 190025200 |

### Hydride Modules\*

| Description                | Part No.   |
|----------------------------|------------|
| AA hydride module VGA 77   | 9910062100 |
| ICP hydride module VGA 77P | 9910062200 |

\*A separate hydride module should be used exclusively for Hg determinations to reduce cross contamination

### Absorption Cells

| Description                                       | Use With  | Part No.   |
|---------------------------------------------------|-----------|------------|
| Flow-through mercury absorption cell, single cell | VGA 76/77 | 9910040700 |
| Hydride absorption cells, quartz, 2/pk            | VGA 76/77 | 9910040000 |



VGA 77 Vapor Generation Accessory



AA hydride module VGA 77, 9910062100



Flow-through mercury absorption cell, 9910040700



Hydride absorption cells, quartz, 9910040000



Tubing and connector kit, 9910061900



Transfer tubing, VGA 76/77, 3710026390

### Tubing

| Description                                                  | Kit Contents                                                                                                                                                                                                                                                      | Use With       | Part No.   |
|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| Peristaltic pump tubing for reagent, black/black tabs, 12/pk |                                                                                                                                                                                                                                                                   | VGA 76/77      | 3710027200 |
| Peristaltic pump tubing for sample, purple/black tabs, 12/pk |                                                                                                                                                                                                                                                                   | VGA 76/77      | 3710027300 |
| Tubing and connector kit                                     | Includes 1 sample and 2 reagent peristaltic pump tubes, inlet tubing for sample and reagents (3 x 0.4 m), connectors, acid-resistant connecting tubing, gas inlet tubing to gas-liquid separator, reaction coil, and O-ring strap to secure gas-liquid separator  | VGA 77 for AA  | 9910061900 |
| Tubing and connector kit                                     | Includes 2 sample and 2 reagent peristaltic pump tubes, inlet tubing for sample and reagents, (3 x 0.4 m), connectors, acid-resistant connecting tubing, gas inlet tubing to gas-liquid separator, reaction coil, and O-ring strap to secure gas-liquid separator | VGA 77 for ICP | 9910061800 |
| Drain tubing for aqueous solutions, per m, 2 m required      |                                                                                                                                                                                                                                                                   | VGA 76/77      | 3710009200 |
| Transfer tubing<br>Gas-liquid separator to absorption cell   |                                                                                                                                                                                                                                                                   | VGA 76/77      | 3710026390 |
| Tubing and connector kit                                     | Includes 1 sample and 2 reagent peristaltic pump tubes, inlet tubing for sample and reagents, (3 x 0.4 m), connectors, acid-resistant connecting tubing, gas inlet tubing to gas-liquid separator, and reaction coil                                              | VGA 76         | 9910039900 |

**VGA 76/77 Miscellaneous Supplies**

| Description                                                                            | Part No.   |
|----------------------------------------------------------------------------------------|------------|
| Reagent vessel, cap, high density polyethylene, square, 500 mL                         | 6610011600 |
| Pump tube beds kit                                                                     | 9910050700 |
| VGA cell support for Mark 7 burner                                                     | 110654990  |
| VGA cell support for Mark VI burner                                                    | 110375990  |
| O-ring strap to secure gas-liquid separator                                            | 6910018900 |
| Bracket to mount VGA 77 on the 700 Series ICP-OES                                      | 410427590  |
| Spare thumbscrews to secure VGA 77 mounting bracket to 700 Series ICP-OES (4 required) | 1510267900 |



Pump tube beds kit, 9910050700

**Reagents for VGA 76/77 Operation**

| Description                    | Part No.   |
|--------------------------------|------------|
| Sodium tetrahydroborate, 500 g | 8210029100 |



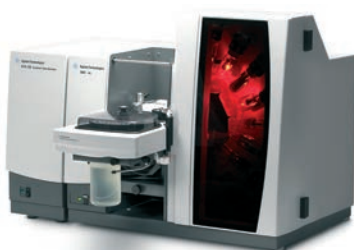
AA gas-liquid separator for VGA 77, 9910071100

**Gas-liquid Separators**

| Description          | Use With       | Part No.   |
|----------------------|----------------|------------|
|                      | VGA 77 for AA  | 9910071100 |
| Gas-liquid separator | VGA 77 for ICP | 9910062000 |
|                      | VGA 76 for AA  | 9910040200 |



Gas-liquid separator, 9910062000



280Z dedicated Zeeman graphite furnace  
Atomic Absorption Spectrometer



GTA 120 Deuterium furnace operating supplies kit,  
190067900



Graphite shroud for GTA 120, 6310003100

## Graphite Furnace Parts and Supplies

Maximize your uptime by keeping one of these kits handy.

### Kit for GTA 120 Furnace System

| Description                                      | Part No.     |          |            |
|--------------------------------------------------|--------------|----------|------------|
| GTA 120 Deuterium furnace operating supplies kit | 190067900    |          |            |
| Kit Contents                                     | Kit Quantity | Unit     | Part No.   |
| Graphite electrodes<br>For GTA 120               | 2            | 1 pair   | 6310003400 |
| Graphite shroud for GTA 120                      | 1            |          | 6310003100 |
| Omega platform tubes, pyrolytically coated       | 5            | 10/pk    | 6310003700 |
| Syringe, 100 µL                                  | 1            | 1/pk     | 4710003200 |
| Capillary assembly                               | 1            | 5/pk     | 9910115100 |
| Plastic beakers, low density polyethylene, 10 mL | 1            | 5/pk     | 9910115600 |
| Autosampler cups, 2.0 mL conical, polyethylene   | 1            | 1,000/pk | 9910028200 |

### Kit for GTA 120 Zeeman Furnace System

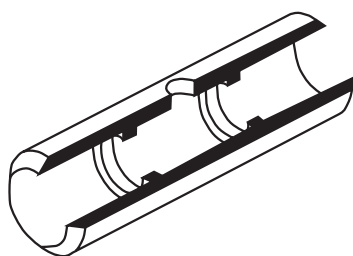
| Description                                      | Part No.     |          |            |
|--------------------------------------------------|--------------|----------|------------|
| GTA 120 Zeeman furnace operating supplies kit    | 190068000    |          |            |
| Kit Contents                                     | Kit Quantity | Unit     | Part No.   |
| Graphite electrodes for GTA 120 Zeeman           | 2            | 1 pair   | 6310003500 |
| Graphite shroud for GTA 120 Zeeman               | 1            |          | 6310003600 |
| Omega platform tubes, pyrolytically coated       | 5            | 10/pk    | 6310003700 |
| Syringe, 100 µL                                  | 1            | 1/pk     | 4710003200 |
| Capillary assembly                               | 1            | 5/pk     | 9910115100 |
| Plastic beakers, low density polyethylene, 10 mL | 1            | 5/pk     | 9910115600 |
| Autosampler cups, 2.0 mL conical, polyethylene   | 1            | 1,000/pk | 9910028200 |

**Kits for GTA 100/GTA 110 Furnace Systems**

| <b>Description</b>                               |                     | <b>Part No.</b> |                 |
|--------------------------------------------------|---------------------|-----------------|-----------------|
| GTA 110 Deuterium furnace operating supplies kit |                     | 190024900       |                 |
| GTA 110 Zeeman furnace operating supplies kit    |                     | 190025000       |                 |
| <b>Kit Contents</b>                              | <b>Kit Quantity</b> | <b>Unit</b>     | <b>Part No.</b> |
| Omega platform tubes, pyrolytically coated       | 5                   | 10/pk           | 6310003700      |
| Syringe, 100 $\mu$ L                             | 1                   | 1/pk            | 4710002300      |
| Plunger for 100 $\mu$ L syringe, PTFE-tipped     | 1                   | 1/pk            | 4710003100      |
| Capillary assembly                               | 1                   | 5/pk            | 9910032300      |
| Glass beakers, 25 mL                             | 1                   | 5/pk            | 6610008200      |
| Autosampler cups, 2.0 mL conical, polyethylene   | 1                   | 1,000/pk        | 9910028200      |
| <b>And</b>                                       |                     |                 |                 |
| Graphite electrodes for GTA 95/96/97/100/110     | 2                   | 1 pair          | 6310001600      |
| <b>Or</b>                                        |                     |                 |                 |
| Graphite electrodes for GTA 96/100/110 Zeeman    | 2                   | 1 pair          | 6310001700      |



GTA 110 Deuterium furnace operating supplies kit,  
190024900



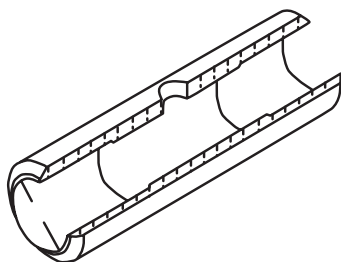
Partitioned tubes, 6310001200



Omega platform tubes, 6310003700



Solid pyrolytic graphite platforms, 6310001300



Plateau tubes, 6310001100

## Graphite Tubes and Platforms

Graphite tubes are quality tested to ensure each batch passes our demanding performance specifications for contamination, sensitivity, precision, electrical resistance, and lifetime.

Use partitioned tubes for general purpose work and when you need the best detection limits with samples that have low background. These are also ideal when measuring organic solutions, or samples with low viscosity that may spread throughout the tube, potentially degrading precision.

Omega platform tubes combine ease-of-use with perfect atomization. The integrated platform ensures a perfect thermal profile to produce dense atom clouds for good signal-to-noise ratios and the best detection limits.

The combination of the solid pyrolytic platforms and plateau tubes provides continuity with older methods, and gives the best platform effect. This ensures best performance with samples that have high background or interferences. More operator skill is required for best results.

- High purity graphite reduces spurious absorption from trace contaminants and improves signal-to-noise ratio
- Every tube is individually tested for reproducible and reliable results
- Perform fewer repeats and increase productivity

### Graphite Tubes and Platforms

| Description                                                                                  | Unit  | Part No.   |
|----------------------------------------------------------------------------------------------|-------|------------|
| Partitioned tubes, pyrolytically coated                                                      | 10/pk | 6310001200 |
| Omega platform tubes, pyrolytically coated                                                   | 10/pk | 6310003700 |
| Solid pyrolytic graphite platforms<br>Only for use with plateau tubes, p/n 6310001100        | 10/pk | 6310001300 |
| Plateau tubes, pyrolytically coated<br>Only for use with pyrolytic platforms, p/n 6310001300 | 10/pk | 6310001100 |

## Graphite Electrodes

- Spare electrodes maximize uptime
- Good electrical contact ensures optimum performance and maximizes tube life
- High purity graphite reduces spurious absorption from trace contaminants and improves signal-to-noise ratio

### Graphite Electrodes

| Description                                   | Unit   | Part No.   |
|-----------------------------------------------|--------|------------|
| Graphite electrodes<br>For GTA 120            | 1 pair | 6310003400 |
| Graphite electrodes for GTA 120 Zeeman        | 1 pair | 6310003500 |
| Graphite electrodes for GTA 95/96/97/100/110  | 1 pair | 6310001600 |
| Graphite electrodes for GTA 96/100/110 Zeeman | 1 pair | 6310001700 |



Graphite electrodes for GTA 120, 6310003400



Graphite electrodes for GTA 95/96/97/100/110,  
6310001600

## Graphite Shrouds

### Graphite Shrouds

| Description                               | Part No.   |
|-------------------------------------------|------------|
| Graphite shroud for GTA 120               | 6310003100 |
| Graphite shroud for GTA 120 Zeeman        | 6310003600 |
| Graphite shroud for GTA 95/96/97/100/110  | 6310001800 |
| Graphite shroud for GTA 96/100/110 Zeeman | 6310001900 |



Graphite shroud for GTA 120, 6310003100



Graphite shroud for GTA 120 Zeeman, 6310003600



Electrode extractor tool, 9910031200

## Graphite Furnace Tools

### Graphite Furnace Tools

| Description                                                         | Part No.   |
|---------------------------------------------------------------------|------------|
| Graphite tube alignment tool                                        | 7210034200 |
| Graphite tube removal tool                                          | 7210018900 |
| Electrode extractor tool for GTA 96/97/100/110/120, 2 draw bars     | 9910031200 |
| Shroud removal tool for GTA 96/97/100/110/120                       | 9910033300 |
| Electrode extractor tool for GTA 96/100/110/120 Zeeman, 2 draw bars | 9910049300 |
| Shroud removal tool for GTA 96/100/110/120 Zeeman                   | 9910050400 |



High capacity carousel kit, 9910113100

### Optional Accessories for Graphite Furnace AAS

| Description                                                                                                                                                                                                                          | Used With  | Part No.   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|
| GTA viewing and fume extraction accessory<br>Mounts on sample compartment to remove fumes from the GTA workhead and improves viewing of the tube for easier alignment; connects to a 150 mm (6 inch) or 125 mm (5 inch) exhaust duct | GTA 120    | 210190000  |
| High capacity carousel kit<br>Includes carousel disk (130 samples), 1.1 mL vials (2,000/pk), and five 10 mL plastic beakers for bulk solutions                                                                                       | GTA 120    | 9910113100 |
| Bubble-free syringe update kit                                                                                                                                                                                                       | PSD 97/100 | 9910116800 |

## Programmable Sample Dispenser (PSD) Supplies (used with Graphite Furnace AA)

### Spares and Supplies

| Description                                                       | Use With                              | Part No.   |
|-------------------------------------------------------------------|---------------------------------------|------------|
| Sample vials, polyethylene, 1.1 mL, 2,000/pk                      | PSD 120 high capacity sample carousel | 6610025900 |
| Autosampler cups, 2.0 mL conical, polyethylene, 1,000/pk          | PSD 95/96/97/100/120                  | 9910028200 |
| Glass beakers, 25 mL                                              | PSD 95/96/97/100                      | 6610008200 |
| Plastic beakers, low density polyethylene, 10 mL                  | PSD 120                               | 9910115600 |
| Rinse bottle, Nalgene, 1 L                                        | PSD 97/100/120                        | 6610012100 |
| Cap for rinse bottle                                              | PSD 97/100/120                        | 1610094600 |
| Capillary assembly, 5/pk                                          | PSD 120                               | 9910115100 |
|                                                                   | PSD 95/96/97/100                      | 9910032300 |
| Carousel adapters, 5/pk                                           | PSD 120                               | 9910116900 |
| Allows use of 2 mL sample vials in the central carousel locations |                                       |            |
| Syringe, 100 $\mu$ L                                              | PSD 120                               | 4710003200 |
|                                                                   | PSD 95/96/97/100                      | 4710002300 |
| Plunger for 100 $\mu$ L syringe, PTFE-tipped                      | PSD 96/97/100/110                     | 4710003100 |
| Replacement carousel plate                                        | PSD 100/120                           | 5410056900 |
| Replacement carousel plate for 130-sample carousel                | PSD 120                               | 5410046300 |
| Furnace workhead viewing mirror                                   | GTA 110/120                           | 9910091200 |
| Furnace workhead viewing mirror                                   | GTA 96/97/100                         | 9910032700 |
| Screw Knurled M4, Retaining Block, 1/pk                           |                                       | 1510146800 |
| Carousel adapters, 5/pk                                           | PSD 120                               | 9910116900 |



Glass beakers, 6610008200



Sample vials, 2 mL, 9910028200



Plastic beakers, 9910115600



5110 SVDV ICP-OES spectrometer

## ICP-OES Supplies

### Operating Supplies Kits

Agilent is the recognized world leader and innovator in ICP-OES, with thousands of systems installed worldwide. The Agilent 5110 ICP-OES revolutionizes ICP-OES analysis by running your samples more efficiently without compromising on performance, even with your toughest samples. Our ICP range can handle both routine and the most challenging applications. A choice of sample introduction options and a wide range of performance and productivity enhancing accessories make Agilent systems the fastest and most flexible ICP-OES systems available today. Agilent ICP-OES are compatible with a range of supplies designed to extend the capabilities of the instruments.

#### Operating Supplies Kits for 700 Series and Liberty ICP-OES

| Description       | Comments                                                                                               | Kit Contents                                                                                                                                                                                                                                                                                                                                                                                  | Part No.   |
|-------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Extenda Valu-Pack | Supports routine operation of Agilent axial ICP systems with glass cyclonic sample introduction system | Includes spare torches (7/pk), double-pass (1/pk) + single-pass (2/pk) glass cyclonic spray chambers, SeaSpray nebulizer, spray chamber O-ring kits (2/pk), tubing and connectors kit, EzyFit sample inlet connectors, and GazFit gas connectors for the nebulizer                                                                                                                            | 9910112800 |
| Matrix Valu-Pack  | Supports routine operation of Agilent axial ICP systems with inert sample introduction system          | Includes high-solids torch, semidemountable torch with 1.8 mm id alumina injector, 0.8 mm id quartz injector, 1.4 mm id quartz injectors (6/pk), spray chambers (1 each double-pass glass cyclonic and inert Sturman-Masters), V-groove nebulizer, O-ring kit for inert spray chamber, tubing and connectors kit, EzyFit sample inlet connectors, and GazFit gas connectors for the nebulizer | 9910112600 |
| Extenda Valu-Pack | Supports routine operation of Agilent radial ICP systems with inert sample introduction system         | Includes spare torches (4/pk), Sturman-Masters spray chamber, torch bonnet, O-ring kit (2/pk), V-groove nebulizer (2/pk), tubing and connectors kit (2/pk), and GazFit gas connectors for the nebulizer                                                                                                                                                                                       | 9910112700 |

## Operating Supplies Kits for 5100/5110 Dual View ICP-OES

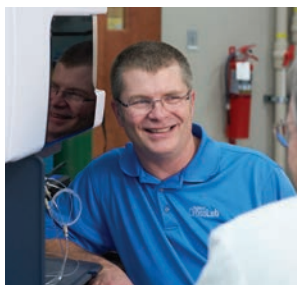
| Description                                            | Kit Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Part No.    |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Operating supplies kit, for 5100/5110 SVDV/VDV ICP-OES | Includes EasyFit demountable torch, outer tube sets (2), peristaltic pump tubes for sample (4 packs) and waste (4 packs), tubing and connectors for internal standard, U-series SeaSpray nebulizer, UniFit sample inlet fittings (0.75 mm id), EzyLok gas connectors for nebulizer, double-pass glass cyclonic spray chamber with spare nebulizer seal, UniFit connectors for spray chamber drain, clamp, windows for axial and radial view, capillary tubing for nebulizer, barb connectors (2), sample tray, and PFA nebulizer gas tubing and drain tubing for spray chamber | G8010-67001 |
| Operating supplies kit, for 5100/5110 RV ICP-OES       | Includes EasyFit demountable torch, outer tube sets (2), peristaltic pump tubes for sample (4 packs) and waste (4 packs), tubing and connectors for internal standard, U-series SeaSpray nebulizer, UniFit sample inlet fittings (0.75 mm id), EzyLok gas connectors for nebulizer, double-pass glass cyclonic spray chamber with spare nebulizer seal, UniFit connectors for spray chamber drain, clamp, pre-optic window, capillary tubing for nebulizer, barb connectors (2), sample tray, and PFA nebulizer gas tubing and drain tubing for spray chamber                  | G8012-67001 |

## TIPS AND TOOLS

Solve your ICP-OES challenges with innovative sample introduction components and supplies, certified standards, filtration options to reduce blockage, and maintenance tips to help improve your laboratory performance and sample output. Agilent provides everything you need for a complete ICP-OES solution so you can achieve an improved, trouble-free workflow for maximum productivity.

Visit [www.agilent.com/en/icpoesprod](http://www.agilent.com/en/icpoesprod) to find out more.

## Real stories from the lab.



**Agilent  
CrossLab**  
From Insight to Outcome

TRUE STORY No. **67**  
**HIGH VALUE  
SPECTROSCOPY**

During a visit to a major commercial lab, the CrossLab team proved that switching to Agilent ICP-OES systems could produce quality spectroscopy with better productivity at a lower cost.

[www.agilent.com/chem/story67](http://www.agilent.com/chem/story67)



Double-pass glass cyclonic spray chamber,  
7910043700



Sturman-Masters spray chamber, 110593190

### Spray Chambers and Brackets

| Description                                                                           | Use With                                                                                                                            | Comments                                                                                                                                                                                | Part No.   |
|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Single-pass glass cyclonic spray chamber, for 700 Series and Liberty ICP-OES          | Routine aqueous samples where best signal-to-noise performance is required                                                          | Needs mounting bracket                                                                                                                                                                  | 2010081700 |
| Cooled double-pass glass cyclonic action spray chamber, with cooling gallery          | Ideal for use with highly volatile organic solvents                                                                                 | Includes mounting bracket for Liberty Series I/II, Vista and 700 Series ICP-OES instruments; requires, but does not include, a refrigerated water recirculator for subambient operation | 9910070400 |
| Double-pass glass cyclonic spray chamber, suitable for 700 Series and Liberty ICP-OES | Organic solvents and high matrix or high TDS samples                                                                                | Needs mounting bracket                                                                                                                                                                  | 7910043700 |
| Sturman-Masters spray chamber, white, for 700 Series and Liberty ICP-OES              | Samples dissolved in hydrofluoric acid (HF) or when using the V-groove nebulizer for fusions or slurries and other high TDS samples | Needs mounting bracket                                                                                                                                                                  | 110593190  |
| Bracket for mounting glass cyclonic spray chambers                                    | 715/725/735 radial, Vista-PRO radial and early axial, Vista-MPX radial and Liberty Series II radial and early axial models          |                                                                                                                                                                                         | 110611700  |
|                                                                                       | 710/720/730 axial, Vista-PRO axial, Vista-MPX axial and Liberty Series II axial models                                              |                                                                                                                                                                                         | 110665200  |
| Bracket for mounting Sturman-Masters spray chamber                                    | 715/725/735 radial, Vista-PRO radial and early axial, Vista-MPX radial models and Liberty Series II radial and early axial models   |                                                                                                                                                                                         | 410298400  |
|                                                                                       | 710/720/730 axial, Vista-PRO axial, Vista-MPX axial and Liberty Series II axial models                                              |                                                                                                                                                                                         | 410328600  |
| Bracket for mounting MSIS with axial and radial ICP                                   | All 700 Series axial and radial models                                                                                              |                                                                                                                                                                                         | 110868000  |
| O-ring for nebulizer inlet of single- and double-pass cyclonic spray chamber          |                                                                                                                                     |                                                                                                                                                                                         | 6910001200 |

(Continued)

### Spray Chambers and Brackets

| Description                                                                                                       | Use With                                                                                        | Comments                                              | Part No.    |
|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------|
| Double-pass glass cyclonic spray chamber with ball joint outlet, for 5100/5110 ICP-OES                            | For use with organic solvents, high matrix or high TDS samples                                  | Includes Helix nebulizer seal and UniFit drain outlet | G8010-60256 |
| Single-pass glass cyclonic spray chamber with ball joint outlet, for 5100/5110 ICP-OES                            | For use with aqueous and low matrix samples where best sensitivity and lowest LODs are required | Includes Helix nebulizer seal and UniFit drain outlet | G8010-60271 |
| Inert PTFE single-pass cyclonic spray chamber with ball joint outlet, for 5100/5110 ICP-OES                       | For use with HF digests and low TDS samples                                                     | Includes Helix nebulizer seal and UniFit drain outlet | G8000-70008 |
| Inert PTFE double-pass cyclonic spray chamber with ball joint outlet, for 5100/5110 ICP-OES                       | For use with HF digests and low TDS samples                                                     | Includes Helix nebulizer seal and UniFit drain outlet | G8010-80034 |
| UniFit drain connector, for 5100/5110 ICP-OES spray chamber, 2.0 mm od, 0.86 mm id, 480 mm capillary tubing, 3/pk | Connects the peristaltic pump tubing for the waste line to the spray chamber outlet             |                                                       | G8010-80036 |



Inert PTFE double-pass cyclonic spray chamber with ball joint outlet for 5100/5110 ICP-OES, G8010-80034



Double-pass glass cyclonic spray chamber with ball joint outlet, for 5100/5110 ICP-OES, G8010-60256

### TIPS AND TOOLS

Skipping sample filtration can lead to significant downtime if large particles become trapped in the sample uptake tubing, nebulizer, or injector.

Agilent Captiva Premium Syringe Filters are available in a wide range of sizes, formats, and membranes. With the industry's highest flow rates and loading capacities, they make the filtration process faster than ever.

**Sturman-Masters Spray Chamber Supplies**

| Item | Description                                                                                                               | Part No.   |
|------|---------------------------------------------------------------------------------------------------------------------------|------------|
| 1    | Spray chamber top section, Ertalyte (excludes thumbscrews, baffle, and outlet bung)                                       | 1610114500 |
| 2    | Thumbscrew, ICP spray chamber                                                                                             | 1510188100 |
| 3    | Nebulizer holder, Ertalyte. Required to install a 6 mm od concentric nebulizer                                            | 810128100  |
| 4    | O-ring for inside of nebulizer holder, 7/32 inch id, 11/32 inch od, 1/16 inch nitrile rubber                              | 6910008200 |
| 5    | O-ring to seal nebulizer holder in spray chamber body 7/16 inch id, 5/8 inch od, 3/32 inch nitrile rubber                 | 6910019800 |
| 6    | Spray chamber base (lower section), Ertalyte (excludes drain fitting assembly)                                            | 1610114700 |
| 7    | O-ring for spray chamber body, seals top section to the base 2 + 3/16 inch id, 2 + 3/8 inch od, 3/32 inch, nitrile rubber | 6910017400 |
| 8    | Retaining nut for spray chamber                                                                                           | 1510188200 |
| 9    | Internal baffle for spray chamber                                                                                         | 1610114600 |
|      | Drain fitting assembly for spray chamber                                                                                  | 110593000  |
|      | Outlet bung for sample aerosol outlet to torch (top of spray chamber)                                                     | 1610114800 |
|      | O-ring for drain and aerosol outlet, 11/16 inch id, 13/16 inch od, 1/16 inch nitrile rubber                               | 6910006000 |



Sturman-Masters spray chamber, 110593190

## IsoMist Temperature-controlled Spray Chamber

Agilent's IsoMist temperature-controlled spray chamber accurately controls the temperature of the sample introduction system. This delivers excellent long-term stability for even the most difficult matrices, including volatile organic solvents and viscous oil samples.

The programmed temperature is controlled using a peltier device providing the ability to either heat or cool the sample introduction system and maintain a stable temperature.



### Supplies for IsoMist (RoL configuration), used with ICP-OES

| Description                                                            | Comments                                                                                                                                                                                                     | Part No.    |
|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| PuraFlex transfer tube for IsoMist used with Agilent 5100/5110 ICP-OES | Connects the aerosol outlet from the IsoMist to the Easy-fit ICP-OES torch                                                                                                                                   | G8010-68011 |
| ICP spray chamber, Twister style encapsulated for IsoMist              | Twister style (double pass) glass cyclonic with thermal conductive polymer encapsulation for use with IsoMist for 5100/5110 ICP-OES (RoL configuration)<br>Will not fit the IsoMist for the 4200/4210 MP-AES | G8010-68024 |
| Drain fitting, right-angle, UniFit, 3/pk                               | For waste outlet of IsoMist spray chamber                                                                                                                                                                    | G8010-68023 |

## Sample Compartment Kits, Spray Chambers, and Brackets

- Single-pass glass cyclonic spray chamber for good signal-to-noise performance with excellent washout
- Double-pass glass cyclonic spray chamber provides improved plasma stability with organic and high TDS samples
- Sturman-Masters spray chamber is inert, minimizes interferences, and improves stability with high TDS samples (compatible with 700 Series and Liberty ICP-OES only)

### Sample Compartment Kits

| Description                                                                                                                                                                                                                              | Kit Contents                                                                                                                                                             | Part No.   | For Axial ICP | For Radial ICP |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------|----------------|
| Sample compartment/torch box tube connection kit<br>Includes all tubing for spray chamber area and spare nipples for drain (excluding pump tubing) (compatible with 700 Series and Liberty ICP-OES only)                                 | Includes all tubing for spray chamber area and spare nipples for drain (excluding pump tubing) (compatible with 700 Series and Liberty ICP-OES only)                     | 9910057100 |               |                |
| Sample compartment O-ring kit<br>Includes all O-rings for spray chamber area, demountable torch, and ASA (compatible with 700 Series and Liberty ICP-OES only)                                                                           | Includes all O-rings for spray chamber area, demountable torch, and ASA (compatible with 700 Series and Liberty ICP-OES only)                                            | 9910057200 |               |                |
| Tubing and connector kit for 700 Series and Liberty ICP-OES<br>Includes two packs of standard peristaltic pump tubing, snap connectors, and other connectors used in sample compartment and torch box area; ideal for spare start-up kit | Includes two packs of standard peristaltic pump tubing, snap connectors and other connectors used in sample compartment and torch box area; ideal for spare start-up kit |            | 9910097500    | 9910105400     |
| Molding drip tray, for 700 Series ICP-OES                                                                                                                                                                                                |                                                                                                                                                                          | 6210113000 |               |                |
| O-ring kit, ASA Argon saturation accessory                                                                                                                                                                                               |                                                                                                                                                                          | 9910081400 |               |                |



Sample compartment/torch box tube connection kit, 9910057100



Sample compartment O-ring kit, 9910057200

## Nebulizers and Accessories

- Manufactured to fine tolerances for reproducible and stable sample uptake
- Tight specifications deliver fine droplets for best signal intensity and optimum signal-to-noise
- Fewer repeats means less downtime and improved productivity

### Nebulizers and Accessories

| Description                                                                           | Kit Contents                                                                                                                                               | Application                                                                                                                                                                   | Part No.    |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| OneNeb Series 2 inert concentric nebulizer                                            | Includes replaceable sample capillary/connector assembly, quick release connector for nebulizer gas inlet, and conical adapter for peristaltic pump tubing | Ideal for routine analysis of samples up to 25 % TDS with good precision and better sensitivity than a SeaSpray; inert construction makes it suitable for most solution types | G8010-60293 |
| U-series concentric glass nebulizer (SeaSpray), for 5100/5110 ICP-OES                 | Includes UniFit sample connector (0.75 mm id x 700 mm) and EzyLok gas connector                                                                            | Routine analysis of samples to 20 % TDS                                                                                                                                       | G8010-60255 |
| Concentric glass nebulizer (SeaSpray), for 700 Series and Vista Series ICP-OES        | Includes EzyFit sample connector (0.75 mm id x 700 mm) and EzyLok gas connector                                                                            | Routine analysis of samples to 20 % TDS                                                                                                                                       | 2010096400  |
| U-series concentric glass nebulizer (Conikal), for 5100/5110 ICP-OES                  | Includes UniFit sample connector (0.75 mm id x 700 mm) and EzyLok gas connector                                                                            | Routine analysis of organic solvents and samples to 5 % TDS                                                                                                                   | G8010-60270 |
| K-style (Conikal) concentric glass nebulizer, for 700 Series and Vista Series ICP-OES | Includes Ezyfit sample connector (0.75 mm id x 700 mm) and EzyLok gas connector                                                                            | Routine analysis of organic solvents and samples to 5 % TDS                                                                                                                   | 2010106800  |
| U-series slurry glass concentric nebulizer, for 5100/5110 ICP-OES                     | Includes UniFit sample connector (0.75 mm id x 700 mm) and EzyLok gas connector                                                                            | Recommended for routine analysis of most organic samples and samples with larger particle sizes e.g. for used oil samples                                                     | G8010-60347 |
| Low-flow concentric glass nebulizer (MicroMist), 0.4 mL/min uptake                    | Includes UniFit sample connector (0.5 mm id x 700 mm) and EzyLok gas connector                                                                             | Small sample volumes for 700 Series and Vista Series ICP-OES                                                                                                                  | 2010126000  |
| Concentric glass nebulizer (SeaSpray) 2 mL/min at 1 L/min                             | Includes EzyFit sample connector (0.75 mm id x 700 mm) and EzyLok gas connector                                                                            | Routine analysis of samples to 20 % TDS                                                                                                                                       | CP959366    |
| V-groove nebulizer kit, inert, for the Sturman-Masters spray chamber                  | Includes tubing and fittings                                                                                                                               | Samples with hydrofluoric acid, fusions, slurries, or >20 % TDS                                                                                                               | 9910057400  |

(Continued)



OneNeb Series 2 inert concentric nebulizer,  
8010-60293



K-style (Conikal) nebulizer, 2010106800

## Nebulizers and Accessories

| Description                                                                                                                                         | Kit Contents                                                                                                              | Application                                                                                        | Part No.    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------|
| Mira Mist PTFE concentric type nebulizer                                                                                                            | Includes 0.5 m sample capillary (0.044 inch od x 0.018 inch id) and gas connector                                         | Routine analysis of samples to 20 % TDS including aggressive acids and organic solvents            | CP913246    |
| Mira Mist PEEK concentric type nebulizer                                                                                                            | Includes 0.5 m sample capillary (0.044 inch od x 0.018 inch id) and gas connector                                         | Routine analysis of samples to 20 % TDS (not recommended for aggressive acids or organic solvents) | CP914506    |
| Concentric glass slurry nebulizer                                                                                                                   | Includes EzyFit sample connector (0.75 mm id x 700 mm)                                                                    | Slurry samples with particles to 150 µm or >20 % TDS                                               | 2010097600  |
| High flow concentric glass slurry nebulizer, for Liberty Series II axial systems                                                                    | Includes EzyFit sample connector (0.75 mm id x 700 mm) and EzyLok gas connector                                           | Slurry samples or those >20 % TDS                                                                  | 2010097700  |
| High flow K-style (Conikal) concentric glass nebulizer, for Liberty Series II axial systems                                                         | Includes EzyFit sample connector (0.75 mm id x 700 mm) and EzyLok gas connector                                           | Routine analysis of samples to 5 % TDS                                                             | 2010081600  |
| Sample inlet (UniFit) fitting, for U-series concentric glass nebulizer, used with 5100/5110 ICP-OES, 0.75 mm id x 1.3 mm od capillary tubing, 10/pk |                                                                                                                           |                                                                                                    | G8010-80035 |
| Sample inlet (UniFit) fitting, for U-series concentric glass nebulizer, used with 5100/5110 ICP-OES, 0.5 mm id x 1.3 mm od capillary tubing, 10/pk  |                                                                                                                           |                                                                                                    | G3266-80012 |
| Sample inlet fitting, for OneNeb Series 2 nebulizer                                                                                                 | Includes capillary connector with captive sample capillary tubing 0.5 mm id, 1/16 inch od, 750 mm length capillary tubing | Suitable for the OneNeb Series 2 nebulizer                                                         | G8010-60345 |

(Continued)

## TIPS AND TOOLS

The OneNeb Series 2 universal nebulizer can be used with HF, high dissolved solids, organic solvents, and low-flow applications. It provides improved sensitivity too.

To see the OneNeb flyer, watch the OneNeb video, or check specifications, visit [www.agilent.com/chem/oneneb2](http://www.agilent.com/chem/oneneb2)



Inert V-groove nebulizer, 9910057400

## Nebulizers and Accessories

| Description                                                                            | Kit Contents                                                                        | Application                                                                                                                                    | Part No.   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Conical adapter, 1/16 inch od sample line, for OneNeb Series 2 nebulizer               | Includes conical PTFE adapter with PTFE nut (female) and PTFE ferrule and lock ring | Joins 1/16 in od sample capillary to peristaltic pump tubing                                                                                   | 5043-0502  |
| Sample inlet (EzyFit) fitting, for concentric glass nebulizer on axial ICP-OES, 10/pk  |                                                                                     |                                                                                                                                                | 9910107700 |
| Sample inlet (EzyFit) fitting, for concentric glass nebulizer on radial ICP-OES, 10/pk |                                                                                     | Suitable for SVS 1 accessory                                                                                                                   | 1610136400 |
| Gas inlet connector (EzyLok), for concentric glass nebulizer                           | Includes Ezylok connector, tubing adaptor, and tubing clamp                         | Suitable for 700 Series and Vista Series ICP-OES                                                                                               | 9910127800 |
| Sample inlet connector, for Mira Mist nebulizer                                        | Includes 0.5 m sample capillary (0.044 inch od x 0.018 inch id)                     |                                                                                                                                                | CP913777   |
| Y-piece connector, for online addition of internal standard/ionization buffer          |                                                                                     |                                                                                                                                                | 1610132400 |
| Tubing, 1/8 inch id, 1/4 inch od, 1/16 inch wall, per m                                |                                                                                     | Connects argon supply to nebulizer with 700 Series and Liberty ICP-OES                                                                         | 3710031500 |
| Nebulizer gas connector                                                                |                                                                                     | Connects nebulizer gas supply tubing to gas outlet connector on instrument with 700 Series and Vista Series ICP-OES                            | 1610085300 |
| Auxiliary gas connector                                                                |                                                                                     | Connects auxiliary gas supply tubing to gas outlet connector on instrument with 700 Series and Vista Series ICP-OES                            | 1610085600 |
| Speedy clamp                                                                           |                                                                                     | Secures gas supply tubing to nebulizer or auxiliary gas connector (2 required per length of tubing). Suits 700 Series and Vista Series ICP-OES | 810103200  |



Sample inlet (EzyFit) fitting, 9910107700



Gas inlet connector (EzyLok), 9910127800



Y-piece connector, 1610132400



Humidifier accessory, for ICP-OES, ICP-MS, and MP-AES instruments

## Humidifier Accessory

Agilent's humidifier accessory is compatible with a range of Agilent ICP-OES, ICP-MS, and MP-AES instruments. The accessory is based on hollow fiber membrane tubing, which passes through a bottle containing de-ionized water. This humidifies the nebulizer gas, reducing desolvation at the nebulizer orifice. This process enables the accurate analysis of challenging sample types that could cause particulate buildup, and eventually block the nebulizer, improving long-term stability. Recommended when solutions have > 3 % TDS.

### Humidifier Accessories

| Description                                                | Use with                                                                           | Kit Contents                                                                                                                                                                                                        | Part No.    |
|------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Nebulizer gas humidifier accessory, for ICP-OES and MP-AES | 5100/5110 DV Series ICP-OES or 4200/4210 Series MP-AES                             | Includes gas lines (0.6 m, 4 mm od, 2/pk), fitting plate, and bracket plus installation instructions                                                                                                                | G8010-60346 |
| Nebulizer gas humidifier bottle, for ICP-MS                | 7800/7900 and 8900 Series ICP-MS                                                   | Replacement bottle with hollow fiber membrane tubing inside<br><b>Does not include</b> gas lines or mounting bracket. For a complete kit for ICP-MS, order pn G8412A and G8412A#100 (for 7800/7900 and 8900 models) | G8400-60700 |
| Tubing kit, for nebulizer gas humidifier accessory         | 5100/5110 Series DV ICP-OES, 4200/4210 MP-AES and 7800/7900 and 8900 Series ICP-MS | Includes tubing, black, PTFE, 2 x 4 mm, 615 mm long (5043-0059), tubing, black, PTFE, 1.59 x 3.17 mm, 575 mm long (5043-0060)                                                                                       | G8400-60710 |

### LEARN MORE

To learn more about the humidifier accessory, search for [5991-7290EN](https://www.agilent.com/search/5991-7290EN) at [www.agilent.com/search](https://www.agilent.com/search)

## Torches

- Ignite easily and stay lit, reducing downtime
- Even and stable plasma delivers reproducible results
- Guaranteed fit with automatic gas connections
- No need for manual torch alignment, simplifying torch installation



### Torches

| Description                                                                   | Comments                                                                                                                                                    | Application                                   | Part No.    |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------|
| <b>Torches for 5100/5110 SVDV/VDV ICP-OES</b>                                 |                                                                                                                                                             |                                               |             |
| One-piece Easy-fit torch (standard DV torch)                                  | Features a 1.8 mm id injector with an extended outer tube with slot for radial viewing                                                                      |                                               | G8010-60228 |
| Demountable Easy-fit torch                                                    | Features a 1.8 mm id injector with replaceable extended outer tube with slot for radial viewing                                                             |                                               | G8010-60236 |
| Easy-fit demountable high solids torch                                        | Features a 2.4 mm id injector with replaceable extended outer tube with slot for radial viewing                                                             | Recommended for high TDS samples              | G8010-60232 |
| Easy-fit demountable torch for semivolatile organic solvents                  | Features a 1.4 mm id injector with replaceable extended outer tube with slot for radial viewing                                                             | Recommended for semivolatile organic solvents | G8010-60233 |
| Easy-fit inert demountable torch for HF digests                               | Features a ceramic 1.8 mm id injector with replaceable extended outer tube with slot for radial viewing. Supplied with ball joint connection for torch base | Recommended for HF digests                    | G8010-60231 |
| Quartz outer tube set for demountable Easy-fit torch for 5100/5110 DV ICP-OES | Comprises extended outer tube with slot for radial viewing, intermediate tube (integrated into assembly), and top seal                                      |                                               | G8010-60263 |



Quartz outer tube set, for 5100/5110 Series DV torch, G8010-60263

(Continued)



One-piece Easy-fit torch, G8012-60000

### Torches

| Description                                                                     | Comments                                                                                                                                                   | Application                               | Part No.    |
|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------|
| <b>Torches for 5100/5110 RV (Radial) ICP-OES</b>                                |                                                                                                                                                            |                                           |             |
| One-piece Easy-fit torch (standard RV torch)                                    | Features a 1.4 mm id injector with shorter outer tube (no slot) for dedicated radial viewing                                                               |                                           | G8012-60000 |
| Demountable Easy-fit torch                                                      | Features a 1.4 mm id injector with replaceable shorter outer tube (no slot) for dedicated radial viewing                                                   |                                           | G8010-60237 |
| Easy-fit demountable torch, for volatile organic solvents                       | Features a 0.8 mm id injector with replaceable shorter outer tube (no slot) for dedicated radial viewing                                                   | Recommended for volatile organic solvents | G8010-60235 |
| Easy-fit inert demountable torch, for HF digests                                | Features a ceramic 1.8 mm id injector with replaceable shorter outer tube (no slot) for radial viewing. Supplied with ball joint connection for torch base | Recommended for HF digests                | G8010-60234 |
| Quartz outer tube set for demountable Easy-fit torch, for 5100/5110, RV ICP-OES | Comprises shorter outer tube (no slot) for radial viewing, intermediate tube (integrated into assembly), and top seal                                      |                                           | G8010-60264 |

### Real stories from the lab.



**Agilent  
CrossLab**  
From Insight to Outcome

### TRUE STORY No. **82** **CLEARING THE AIR**

Workers in an environmental lab complained of headaches. A CrossLab engineer troubleshooted and fixed the problem, creating a safer lab environment and improved performance.

[www.agilent.com/chem/story82](http://www.agilent.com/chem/story82)

**Common 5100/5110 ICP-OES Torch Supplies**

| Description                                          | Comments                                                                                                                                              | Part No.    |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Torch clamp                                          | Secures ball joint socket between spray chamber and torch on 5100/5110 ICP-OES<br><i>Not</i> suitable for use with the inert torch                    | G8000-64140 |
| Torch clamp for inert demountable torch              | Secures ball joint socket between inert spray chamber and inert torch for 5100/5110 ICP-OES<br><i>Not</i> suitable for the standard demountable torch | G8010-60227 |
| Torch cleaning stand for 5100/5110 ICP-OES torches   | Provides a stable platform that allows either the whole torch or the injector/base assembly to be suspended in the cleaning solution                  | G8010-68021 |
| Storage rack for torches used with 5100/5110 ICP-OES | Provides a convenient way to store up to five 5100/5110 DV/RV ICP-OES torches after cleaning                                                          | G8010-67000 |



Torch clamp, G8000-64140



Torch clamp, for inert demountable torch, G8010-60227

**Miscellaneous Supplies for 5100/5110 Dual View ICP-OES**

| Description                                                                | Part No.    |
|----------------------------------------------------------------------------|-------------|
| Work coil, for 5100/5110 Dual View ICP-OES                                 | G8010-68103 |
| Strainer, for cooling water                                                | G1833-67024 |
| Replacement glass, quartz, for the axial view pre-optics window            | G8010-68014 |
| O-ring, for the axial view pre-optics window                               | G8010-68018 |
| Replacement glass, calcium fluoride, for the radial view pre-optics window | G8010-68015 |



Torch cleaning stand, for 5100/5110 ICP-OES torches, G8010-68021



Low-flow axial quartz torch with 2.4 mm id injector tube, 2010090400



High solids axial torch with Agilent injector design, 2010094800



Sheath gas high solids torch for axial ICP, 2010122400



Low-flow quartz torch for radial ICP, 2010069690



High solids torch with Agilent injector design for radial ICP, 2010095000

## Torches for 700 Series, Vista Series, and Liberty ICP-OES

### One Piece Axial Torches

| Description                                                                                                                                                                                 | Application                                                                   | Part No.   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------|
| Low-flow quartz torch with 2.4 mm id injector tube                                                                                                                                          | Routine analysis of aqueous samples <10 % TDS                                 | 2010090400 |
| Low-flow quartz torch with 0.8 mm id injector tube                                                                                                                                          | Routine analysis of volatile organic solvents, e.g. gasoline                  | 2010104700 |
| Low-flow quartz torch with 1.4 mm id injector tube                                                                                                                                          | Routine analysis of organic solvents, e.g. kerosene, xylene, and white spirit | 2010104800 |
| High solids torch with Agilent injector design, 2.4 mm id                                                                                                                                   | Routine analysis of samples to 25 % TDS                                       | 2010094800 |
| Extended length high solids torch with Agilent injector design, 2.4 mm id                                                                                                                   | Routine analysis of samples to 25 % TDS                                       | 2010104600 |
| Sheath gas high solids torch with Agilent injector design, 2.4 mm id, used with the AGM 1 oxygen addition accessory (p/n G8473A) for better performance than the extended high solids torch | Routine analysis of samples to 25 % TDS                                       | 2010122400 |

### One Piece Radial Torches

| Description                                                                     | Application                                                                   | Part No.   |
|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------|
| Torch, low-flow, quartz, 1.4 mm id injector tube                                | Routine analysis of aqueous samples <10 % TDS                                 | 2010069690 |
| Torch, low-flow, quartz, 0.8 mm id injector tube, annealed for greater strength | Routine analysis of volatile organic solvents, e.g. gasoline                  | 2010117400 |
| Torch, low-flow, quartz, 1.4 mm id injector tube, annealed for greater strength | Routine analysis of organic solvents, e.g. kerosene, xylene, and white spirit | 2010117500 |
| Torch, high-solids, for radial ICP, Agilent injector design, 1.8 mm id          | Routine analysis of samples to 25 % TDS                                       | 2010095000 |

### Torch Spares

| Description                                                                                                                  | Part No.   |
|------------------------------------------------------------------------------------------------------------------------------|------------|
| Spare quartz torch bonnet, for radial ICP-OES                                                                                | 2010070790 |
| Transfer tube FEP cyclone spray chamber, for radial ICP                                                                      | 7910051290 |
| GazFit fittings, 8 mm id, for ICP-OES torches, 2/pk                                                                          | CP959924   |
| Transfer tube FEP Sturman-Masters spray chamber, for radial ICP                                                              | 7910051490 |
| GazFit fittings, 6 mm id, for one-piece and semidemountable ICP-OES torches, 4/pk                                            | 9910107100 |
| Transfer tube FEP, for axial ICP (suitable for cyclone and Sturman-Masters spray chambers)                                   | 7910051590 |
| Silicon pump tubing, 3/16 inch id, 5/16 inch od, per m                                                                       |            |
| Connects the torch plasma and auxiliary gas lines to the argon supply with the 700 Series, Vista Series, and Liberty ICP-OES | 2410023800 |
| Tubing, 1/4 inch id, 1/16 inch od, per m                                                                                     | 3710033400 |



Spare quartz torch bonnet, 2010070790



Transfer tube FEP for axial ICP, 7910051590

### Cones for Dual View and Axial ICP-OES

| Description                                                                    | Part No.    |
|--------------------------------------------------------------------------------|-------------|
| Finger nut, for cone                                                           | 1510220200  |
| Pre-optics cone, for 5100/5110 SVDV/VDV ICP-OES                                | G8010-68109 |
| Pre-optics cone, for Vista/700 Series axial ICP-OES                            | 3610007300  |
| Pre-optics cone, for Liberty Series axial ICP-OES                              | 3610006200  |
| Esteele cleaning powder, for cleaning interface cone on axially-viewed ICP-OES | 8110002800  |



Pre-optics cone for Vista/700 Series axial ICP-OES, 3610007300



Semidemountable inert axial torch assembly kit,  
9910084700



Semidemountable inert radial torch assembly kit,  
10056800



Fully demountable axial torch assembly kit,  
9910106300



Fully demountable radial torch assembly kit,  
9910106400



Spare semidemountable quartz torch body,  
2010072900

## Semidemountable and Fully Demountable Torches

| Description                                     | Comments                                                                                              | Part No.   |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------|
| Semidemountable inert axial torch assembly kit  | Also requires 1 m length of transfer tubing to connect the spray chamber to the torch, p/n 3710033400 | 9910084700 |
| Semidemountable inert radial torch assembly kit | Also requires 1 m length of transfer tubing to connect the spray chamber to the torch, p/n 3710033400 | 9910056800 |
| Fully demountable axial torch assembly kit      | Includes torch and bracket kit                                                                        | 9910106300 |
| Fully demountable radial torch assembly kit     | Includes torch and bracket kit                                                                        | 9910106400 |

\*Application: Samples with free HF when used with an inert alumina injector (p/n 2410067590); for volatile organic solvents, use narrow bore 0.8 mm id quartz injector (p/n 2010077500)

## Spares for Semidemountable Torches

| Description                                                 | Part No.   |
|-------------------------------------------------------------|------------|
| Spare semidemountable quartz torch body, for axial ICP-OES  | 2010083400 |
| Spare semidemountable quartz torch body, for radial ICP-OES | 2010072900 |
| Injector holder kit, with O-rings                           | 9910057300 |
| Alumina injector tube, 1.8 mm                               | 2410067590 |
| Quartz injector tube, 1.8 mm, 3/pk                          | 9910057000 |
| Quartz injector tube, 0.8 mm id                             | 2010077500 |



Injector holder kit, 9910057300



Alumina injector tube, 2410067590



Quartz injector tube, 0.8 mm id, 2010077500

**Spares for Fully Demountable Torches**

| Description                                           | Part No.   |
|-------------------------------------------------------|------------|
| Fully demountable axial torch assembly kit            | 9910106300 |
| Spare fully demountable axial torch body              | 7910044400 |
| Spare fully demountable radial torch body             | 7910044500 |
| Quartz outer tube, axial                              | 2010095200 |
| Quartz outer tube for high solids, axial              | 2010120300 |
| Quartz intermediate tube, axial and radial            | 2010095300 |
| Quartz outer tube, radial                             | 2010095500 |
| Ceramic outer tube, radial                            | 2010095800 |
| O-ring kit                                            | 9910108200 |
| Alumina injector, tapered, 1.8 mm id, axial or radial | 2010095900 |
| Quartz injector, tapered, 1.8 mm id, axial or radial  | 2010101800 |
| Quartz injector, 1.0 mm id, radial                    | 2010096000 |
| Quartz injector, 1.5 mm id, radial                    | 2010095600 |
| Quartz injector, 2.4 mm id, axial                     | 2010095400 |
| Ceramic injector, 2.4 mm id, axial or radial          | 2010101700 |



Spare fully demountable radial torch body,  
7910044500



Quartz intermediate tube, axial and radial,  
2010095300



Quartz outer tube, radial, 2010095500



Alumina injector, 1.8 mm id, axial or radial,  
2010095900

## Tubing

### Peristaltic Pump Tubing

| Peristaltic Pump Tubing Chemical Compatibility |                                                                                                             |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Tubing                                         | Recommendations                                                                                             |
| Standard PVC tubes                             | Suitable for all aqueous solutions, medium-concentrated acids and bases                                     |
| Solvent flexible (Solvaflex)                   | Suitable for kerosene, white spirit, alcohols, medium-highly concentrated acids and bases                   |
| FPM fluoroelastomer polymer                    | Suitable for gasoline, naptha, toluene, xylene (aromatic hydrocarbons), highly concentrated acids and bases |
| Marprene                                       | Suitable for ketone-based solvents including MIBK and DIBK                                                  |

| Common Peristaltic Pump Tubing Dimensions |                     |                     |
|-------------------------------------------|---------------------|---------------------|
| Bridge Colors                             | Inner Diameter (mm) | Inner Diameter (in) |
| Orange/Red                                | 0.19                | 0.0075              |
| Orange/Blue                               | 0.25                | 0.01                |
| Orange/Green                              | 0.38                | 0.015               |
| Orange/Yellow                             | 0.51                | 0.02                |
| Orange/White                              | 0.64                | 0.025               |
| Black/Black                               | 0.76                | 0.03                |
| Orange/Orange                             | 0.89                | 0.035               |
| White/White                               | 1.03                | 0.04                |
| Red/Red                                   | 1.14                | 0.045               |
| Gray/Gray                                 | 1.3                 | 0.05                |
| Yellow/Yellow                             | 1.42                | 0.055               |
| Yellow/Blue                               | 1.52                | 0.06                |
| Blue/Blue                                 | 1.65                | 0.065               |
| Green/Green                               | 1.85                | 0.07                |
| Purple/Purple                             | 2.06                | 0.08                |
| Purple/Black                              | 2.29                | 0.09                |
| Purple/Orange                             | 2.54                | 0.1                 |

Length 16 in (406 mm), bridge interval 6 in (152 mm)

### Standard pump tubing sizes used with Agilent ICP-OES systems for aqueous samples

#### Dual View and Axial ICP-OES\*

|                   |              |
|-------------------|--------------|
| Sample            | White/White  |
| Drain             | Blue/Blue    |
| Internal Standard | Orange/White |

\*For organic solvents and high matrix samples, the sample pump tube used should be smaller in diameter, e.g. black/black

#### Radial ICP-OES\*

|                   |              |
|-------------------|--------------|
| Sample            | Gray/Gray    |
| Drain             | Blue/Blue    |
| Internal Standard | Orange/White |

\*For organic solvents and high matrix samples, the sample pump tube used should be smaller in diameter, e.g. black/black

### PVC Tubing for Aqueous Samples

| Description                                                  | Part No.   |
|--------------------------------------------------------------|------------|
| Peristaltic pump tubing, orange/green, 12/pk                 | 3710068200 |
| Peristaltic pump tubing, orange/green, flared ends, 12/pk    | 3710068300 |
| Peristaltic pump tubing, orange/white, 12/pk                 | 3710046900 |
| Peristaltic pump tubing for reagent, black/black tabs, 12/pk | 3710027200 |
| Peristaltic pump tubing, orange/orange, 12/pk                | 3710068800 |
| Peristaltic pump tubing, white/white, 12/pk                  | 3710034400 |
| Peristaltic pump tubing, gray/gray, 12/pk                    | 3710034500 |
| Peristaltic pump tubing, blue/blue, 12/pk                    | 3710034600 |
| Peristaltic pump tubing for sample, purple/black tabs, 12/pk | 3710027300 |
| Peristaltic pump tubing, black/white, 12/pk                  | 3710068900 |

#### Replacement Tubing for Aqueous Samples

|                                                                                                                                                             |             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Drain tubing, spray chamber to peristaltic pump waste line (glass cyclonic spray chamber) and 5100/5110 spray chamber waste, 0.12 inch id, 0.062 inch thick | 3710024600  |
| Tubing, spray chamber to torch and 5100/5110 sample tray drain, 1/4 inch id, 1/16 inch od, per m                                                            | 3710033400  |
| Clip to secure the drain tubing to the 5100/5110 ICP-OES sample tray                                                                                        | G8010-40026 |
| Tubing, spray chamber to peristaltic pump waste line (Sturman-Masters spray chamber), per m                                                                 | 3710033900  |
| Nebulizer capillary tubing, per m                                                                                                                           | 2410020500  |



Peristaltic pump tubing, 3710034400



Peristaltic pump tubing, 3710047000

**PVC Solvaflex Tubing for Low Volatile Organic Samples**

| Description                                              | Part No.   |
|----------------------------------------------------------|------------|
| Peristaltic pump tubing, orange/green, 12/pk             | 3710068000 |
| Peristaltic pump tubing, orange/green, flared ends, 6/pk | 3710068100 |
| Peristaltic pump tubing, black/black, 12/pk              | 3710034800 |
| Peristaltic pump tubing, white/white, 12/pk              | 3710035000 |
| Peristaltic pump tubing, gray/gray, 12/pk                | 3710035200 |
| Peristaltic pump tubing, blue/blue, 12/pk                | 3710067900 |
| Peristaltic pump tubing, purple/black, 12/pk             | 3710047000 |

**Replacement Tubing for Low Volatile Organic Samples**

|                                                                                             |            |
|---------------------------------------------------------------------------------------------|------------|
| Tubing, spray chamber to torch, per m                                                       | 3710037800 |
| Tubing, spray chamber to peristaltic pump waste line (Sturman-Masters spray chamber), per m | 3710035300 |
| Tubing, spray chamber to peristaltic pump waste line (glass cyclonic spray chamber), per m  | 3710035400 |
| Nebulizer capillary tubing, per m                                                           | 2410020500 |



Peristaltic pump tubing, 3710044100

**Marprene Tubing for Ketone-Based Organic Samples**

| Description                                               | Part No.   |
|-----------------------------------------------------------|------------|
| Peristaltic pump tubing, orange/green, 12/pk              | 3710068400 |
| Peristaltic pump tubing, orange/green, flared ends, 12/pk | 3710068500 |
| Peristaltic pump tubing, orange/yellow, 12/pk             | 3710044000 |
| Peristaltic pump tubing, black/black, 6/pk                | 3710044100 |
| Peristaltic pump tubing, black/black, 12/pk               | 3710041900 |
| Peristaltic pump tubing, orange/orange, 6/pk              | 9910075900 |
| Peristaltic pump tubing, white/white, 12/pk               | 3710044200 |
| Peristaltic pump tubing, gray/gray, 12/pk                 | 3710044300 |
| Peristaltic pump tubing, yellow/yellow, 12/pk             | 3710041800 |
| Peristaltic pump tubing, blue/blue, 12/pk                 | 3710044400 |

**Replacement Tubing for Ketone-Based Organic Samples**

|                                                                                             |            |
|---------------------------------------------------------------------------------------------|------------|
| Tubing, spray chamber to torch, per m                                                       | 3710037800 |
| Tubing, spray chamber to peristaltic pump waste line (Sturman-Masters spray chamber), per m | 3710035300 |
| Tubing, spray chamber to peristaltic pump waste line (glass cyclonic spray chamber), per m  | 3710035400 |
| Nebulizer capillary tubing, per m                                                           | 2410020500 |

**FPM Fluoroelastomer Polymer Tubing for Aromatic Organic Samples**

| Description                                               | Part No.   |
|-----------------------------------------------------------|------------|
| Peristaltic pump tubing, orange/green, 12/pk              | 3710068600 |
| Peristaltic pump tubing, orange/green, flared ends, 12/pk | 3710068700 |
| Peristaltic pump tubing, orange/yellow, 12/pk             | 3710043500 |
| Peristaltic pump tubing, black/black, 12/pk               | 3710043600 |
| Peristaltic pump tubing, white/white, 12/pk               | 3710043700 |
| Peristaltic pump tubing, gray/gray, 12/pk                 | 3710043800 |
| Peristaltic pump tubing, blue/blue, 12/pk                 | 3710043900 |
| Peristaltic pump tubing, orange/yellow, 6/pk              | 3710053500 |
| Peristaltic pump tubing, black/black, 6/pk                | 3710053600 |
| Peristaltic pump tubing, white/white, 6/pk                | 3710053700 |
| Peristaltic pump tubing, gray/gray, 6/pk                  | 3710053800 |
| Peristaltic pump tubing, yellow/yellow, 12/pk             | 3710041700 |
| Peristaltic pump tubing, blue/blue 6/pk                   | 3710053900 |



Peristaltic pump tubing, 3710043600

**Internal Standard Kit**

The internal standard kit enables online addition of internal standard. It includes:

- One pack standard PVC pump tubing
- One pack EzyFit sample inlet connectors, 10/pk
- Five Y-piece connectors
- Connecting tubing

**Internal Standard Kit**

| Description                                            | Part No.   |
|--------------------------------------------------------|------------|
| Internal standard kit 1, with black/black pump tubing  | 9910124000 |
| Internal standard kit 2, with orange/white pump tubing | 9910124100 |

Internal standard kit 2, with orange/white tubing,  
9910124100

## Tubing Kits for 700 Series, Vista Series, and Liberty ICP-OES

### Aqueous Samples and High Dissolved Solids

The ICP-OES tubing kit for aqueous samples and high dissolved solids includes:

- Two packs standard PVC peristaltic pump tubing, 12/pk (one each of blue/blue and white/white for the axial ICP kits, and one each of gray/gray and blue/blue for the radial ICP kits)
- One FEP transfer tube (spray chamber to torch)
- Drain tubing, 1 m
- Tubing for waste line from spray chamber, 1 m
- One pack EzyFit sample inlet connectors, 10/pk
- Nebulizer capillary tubing, 2 m
- Barb connectors for joining tubing (5/pk of 1/16 to 1/8 in id and 5/pk of 1/16 to 1/16 in id)
- Connecting tubing, 0.5 m



Aqueous tubing kit 1, for axial ICP-OES,  
9910123600

### Aqueous Samples and High Dissolved Solids

| Description                   | Use With                                                                            | Part No.   |
|-------------------------------|-------------------------------------------------------------------------------------|------------|
| Aqueous tubing kit 1 – axial  | OneNeb/SeaSpray/K-style nebulizers and double or single-pass cyclonic spray chamber | 9910123600 |
| Aqueous tubing kit 1 – radial | OneNeb/SeaSpray/K-style nebulizers and double or single-pass cyclonic spray chamber | 9910123700 |
| Aqueous tubing kit 2 – axial  | OneNeb/V-groove nebulizer and Sturman-Masters spray chamber                         | 9910123800 |
| Aqueous tubing kit 2 – radial | OneNeb/V-groove nebulizer and Sturman-Masters spray chamber                         | 9910123900 |

## Low Volatile Organic Solvents

The ICP-OES tubing kit for low volatile organic solvents includes:

- Two packs PVC Solvaflex peristaltic pump tubing, 12/pk (one each of black/black and white/white)
- One FEP transfer tube (spray chamber to torch)
- Drain tubing, 1 m
- Tubing for waste line from spray chamber, 1 m
- Nebulizer capillary tubing, 2 m
- Barb connectors for joining tubing (5/pk of 1/16 to 1/8 in id and 5/pk of 1/16 to 1/16 in id)

### Low Volatile Organic Solvents

| Description                    | Use With                                                         | Part No.   |
|--------------------------------|------------------------------------------------------------------|------------|
| Organics tubing kit 1 – axial  | OneNeb/SeaSpray nebulizer and double-pass cyclonic spray chamber | 9910124200 |
| Organics tubing kit 1 – radial | OneNeb/SeaSpray nebulizer and double-pass cyclonic spray chamber | 9910124300 |
| Organics tubing kit 2 – axial  | OneNeb/V-groove nebulizer and Sturman-Masters spray chamber      | 9910124400 |
| Organics tubing kit 2 – radial | OneNeb/V-groove nebulizer and Sturman-Masters spray chamber      | 9910124500 |



Organics tubing kit 1, for radial ICP-OES,  
9910124300

## Aromatic Organic Solvents

The ICP-OES tubing kit for aromatic organic solvents includes:

- Two packs of FPM peristaltic pump tubing, 12/pk (one each of black/black and white/white)
- One FEP transfer tube (spray chamber to torch)
- Drain tubing, 1 m
- Tubing for waste line from spray chamber, 1 m
- Nebulizer capillary tubing, 2 m
- Barb connectors for joining tubing (5/pk of 1/16 to 1/8 in id and 5/pk of 1/16 to 1/16 in id)



Organics tubing kit 3, for radial ICP-OES,  
9910124700

### Aromatic Organic Solvents

| Description                    | Use With                                                         | Part No.   |
|--------------------------------|------------------------------------------------------------------|------------|
| Organics tubing kit 3 – axial  | OneNeb/SeaSpray nebulizer and double-pass cyclonic spray chamber | 9910124600 |
| Organics tubing kit 3 – radial | OneNeb/SeaSpray nebulizer and double-pass cyclonic spray chamber | 9910124700 |
| Organics tubing kit 4 – axial  | OneNeb/V-groove nebulizer and Sturman-Masters spray chamber      | 9910124800 |
| Organics tubing kit 4 – radial | OneNeb/V-groove nebulizer and Sturman-Masters spray chamber      | 9910124900 |

## Ketone-Based Organic Solvents

- Two packs Marprene peristaltic pump tubing, 6/pk (one each of black/black and white/white)
- One FEP transfer tube (spray chamber to torch)
- Drain tubing, 1 m
- Tubing for waste line from spray chamber, 1 m
- One pack EzyFit sample inlet connectors, 10/pk
- Nebulizer capillary tubing, 2 m
- Barb connectors for joining tubing (5/pk of 1/16 to 1/8 in id and 5/pk of 1/16 to 1/16 in id)

### Ketone-Based Organic Solvents

| Description                    | Use With                                                         | Part No.   |
|--------------------------------|------------------------------------------------------------------|------------|
| Organics tubing kit 5 – axial  | OneNeb/SeaSpray nebulizer and double-pass cyclonic spray chamber | 9910125000 |
| Organics tubing kit 5 – radial | OneNeb/SeaSpray nebulizer and double-pass cyclonic spray chamber | 9910125100 |
| Organics tubing kit 6 – axial  | OneNeb/V-groove nebulizer and Sturman-Masters spray chamber      | 9910125200 |
| Organics tubing kit 6 – radial | OneNeb/V-groove nebulizer and Sturman-Masters spray chamber      | 9910125300 |



Organics tubing kit 6, for radial  
ICP-OES, 9910125300

## Volatile Organic Samples

The ICP-OES tubing kit for volatile organic samples includes:

- Two packs of FPM peristaltic pump tubing, 6/pk (one each of black/black and white/white)
- Transfer tube (spray chamber to torch), 1 m
- Drain tubing, 1 m
- Tubing for waste line from spray chamber, 1 m
- One pack EzyFit sample inlet connectors, 10/pk
- Nebulizer capillary tubing, 2 m
- Barb connectors for joining tubing (5/pk of 1/16 to 1/8 in id and 5/pk of 1/16 to 1/16 in id)
- Connecting tubing, 1 m



Volatile organics tubing kit – radial, 9910125500

### Volatile Organic Samples

| Description                           | Use With                                                                                                                                      | Part No.   |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Volatile organics tubing kit – axial  | OneNeb/SeaSpray nebulizer, cooled spray chamber and full-length torch                                                                         | 9910125400 |
| Volatile organics tubing kit – radial | Volatile organics tubing kit – radial OneNeb/SeaSpray nebulizer, cooled spray chamber, and annealed (organics) torch or semidemountable torch | 9910125500 |

## Applications Kits

### Spare Sample Introduction Kits for 5100/5110 Dual View ICP-OES

#### 5100/5110 SVDV/VDV ICP-OES

| Description                                                                                                         | Nebulizer, Spray Chamber                                                                                                                                                                                                                                                                                             | Part No.    |
|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Inert sample introduction kit, for use with HF digests and high TDS samples                                         | Inert double-pass spray chamber with ball joint socket, OneNeb series 2 nebulizer, inert demountable Easy-fit torch with ceramic injector (1.8 mm id), torch clamp for inert torch and Solvaflex peristaltic pump tubes for sample (black/black tabs) and waste (gray/gray tabs)                                     | G8010-68007 |
| Ketone based organic solvent sample introduction kit, for use with ketone based organic solvents including MIBK     | Double-pass glass cyclonic spray chamber with ball joint socket, Conikal nebulizer, demountable Easy-fit torch with 1.4 mm id injector, solvent resistant drain tubing and Marprene peristaltic pump tubes for sample (white/white tabs) and waste (blue/blue tabs)                                                  | G8010-68009 |
| Semivolatile organic solvent sample introduction kit, for use with semivolatile organic solvents including kerosene | Double-pass glass cyclonic spray chamber with ball joint socket, Conikal nebulizer, demountable Easy-fit torch with 1.4 mm id injector, solvent resistant drain tubing and Solvaflex peristaltic pump tubes for sample (black/black tabs) and waste (grey/grey tabs)                                                 | G8010-68029 |
| Volatile organic solvent sample introduction kit, for use with volatile organic solvents including gasoline         | Conikal nebulizer, demountable Easy-fit torch with 0.8 mm id injector, solvent resistant drain tubing and FPM peristaltic pump tubes for sample (white/white tabs) and waste (blue/blue tabs). Requires but does <b>not</b> include a cooled spray chamber. The IsoMist peltier cooled spray chamber is recommended. | G8010-68005 |

## 5100/5110 RV (Radial) ICP-OES

|                                                                                                                     |                                                                                                                                                                                                                                                                                                                      |             |
|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Inert sample introduction kit, for use with HF digests and high TDS samples                                         | Inert double-pass spray chamber with ball joint socket, OneNeb series 2 nebulizer, inert demountable Easy-fit torch with ceramic injector (1.8 mm id), torch clamp for inert torch and Solvaflex peristaltic pump tubes for sample (black/black tabs) and waste (gray/gray tabs)                                     | G8010-68006 |
| Ketone based organic solvent sample introduction kit, for use with ketone based organic solvents including MIBK     | Double-pass glass cyclonic spray chamber with ball joint socket, Conikal nebulizer, demountable Easy-fit torch with 1.4 mm id injector, solvent resistant drain tubing and Marprene peristaltic pump tubes for sample (white/white tabs) and waste (blue/blue tabs)                                                  | G8010-68008 |
| Semivolatile organic solvent sample introduction kit, for use with semivolatile organic solvents including kerosene | Double-pass glass cyclonic spray chamber with ball joint socket, Conikal nebulizer, demountable Easy-fit torch with 1.4 mm id injector, solvent resistant drain tubing and Solvaflex peristaltic pump tubes for sample (black/black tabs) and waste (grey/grey tabs)                                                 | G8010-68030 |
| Volatile organic solvent sample introduction kit, for use with volatile organic solvents including gasoline         | Conikal nebulizer, demountable Easy-fit torch with 0.8 mm id injector, solvent resistant drain tubing and FPM peristaltic pump tubes for sample (white/white tabs) and waste (blue/blue tabs). Requires but does <b>not</b> include a cooled spray chamber. The IsoMist peltier cooled spray chamber is recommended. | G8010-68004 |



Ketone based organic solvent sample introduction kit, G8010-68008

## Spare Sample Introduction Kits for 700 Series, Vista Series, and Liberty ICP-OES

These sample introduction kits include:

- Nebulizer
- Spray chamber
- Mounting bracket
- FEP transfer tube (spray chamber to torch)
- Nebulizer gas connector with connecting tubing and 2 tubing clamps

### Axial ICP-OES

| Description                                                | Nebulizer, Spray Chamber                                              | Part No.   |
|------------------------------------------------------------|-----------------------------------------------------------------------|------------|
| Aqueous samples kit                                        | SeaSpray nebulizer, single-pass glass cyclonic spray chamber          | 9810039790 |
| High sensitivity kit, for aqueous samples                  | OneNeb nebulizer, single-pass glass cyclonic spray chamber            | 9810046690 |
| Flexible kit, for use with high solids or organic solvents | OneNeb nebulizer, double-pass glass cyclonic spray chamber            | 9810046590 |
| Common organic solvents kit                                | Conikal (K style) nebulizer, single-pass glass cyclonic spray chamber | 9810039890 |
| Volatile organic solvents kit                              | SeaSpray nebulizer, double-pass glass cyclonic spray chamber          | 9810039690 |

### Radial ICP-OES

| Description                                                       | Nebulizer, Spray Chamber                                               | Part No.   |
|-------------------------------------------------------------------|------------------------------------------------------------------------|------------|
| High solids kit                                                   | SeaSpray nebulizer, double-pass glass cyclonic spray chamber           | 9810039590 |
| High sensitivity kit, for high solids                             | OneNeb nebulizer, double-pass glass cyclonic spray chamber             | 9810046490 |
| Inert high solids kit (use with HF/fusions)                       | V-groove nebulizer, Sturman-Masters double-pass cyclonic spray chamber | 9810039490 |
| Inert high sensitivity kit, for high solids (use with HF/fusions) | OneNeb nebulizer, Sturman-Masters double-pass cyclonic spray chamber   | 9810046390 |

## High Dissolved Solids

The application kits for high dissolved solids include:

- Nebulizer
- Spray chamber
- Mounting bracket
- Agilent high-solids torch (unless otherwise stated)
- Argon saturator accessory
- ICP-OES tubing kit. Includes two packs of peristaltic pump tubing (12/pk), FEP transfer tube (spray chamber to torch), drain tubing (1 m), tubing for waste line from spray chamber (1 m), one pack of EzyFit sample inlet connectors (10/pk), nebulizer capillary tubing (2 m), barb connectors for joining tubing (5/pk of 1/16 to 1/8 in id and 5/pk of 1/16 to 1/16 in id), and connecting tubing (0.5 m).



High solids kit 2 – radial, 9910125900

### High Dissolved Solids

| Description                | Nebulizer, Spray Chamber                                                                                                                                                                            | Part No.   |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| High solids kit 1 – axial  | Includes Seaspray nebulizer, double-pass glass cyclonic spray chamber, mounting bracket, patented high-solids torch, argon saturator accessory, and all necessary tubing                            | 9910125600 |
| High solids kit 1 – radial | Includes Seaspray nebulizer, double-pass glass cyclonic spray chamber, mounting bracket, patented high-solids torch, argon saturator accessory and all necessary tubing                             | 9910125700 |
| High solids kit 2 – axial  | Includes V-groove nebulizer, Sturman-Masters spray chamber, mounting bracket, patented high-solids torch, argon saturator accessory, and all necessary tubing                                       | 9910125800 |
| High solids kit 2 – radial | Includes V-groove nebulizer, Sturman-Masters spray chamber, mounting bracket, patented high-solids torch, argon saturator accessory, and all necessary tubing                                       | 9910125900 |
| High solids kit 3 – axial  | Includes V-groove nebulizer, Sturman-Masters spray chamber, sheath gas high-solids torch with Agilent injector design (2.4 mm id), AGM 1 auxiliary gas module for flow control over sheath gas flow | 9910141000 |

## Inert Sample Introduction Systems

The inert sample introduction systems kit is for solutions with free HF and includes:

- V-groove nebulizer
- Double-pass Sturman-Masters spray chamber
- Mounting bracket
- Semidemountable torch with 1.8 mm id alumina injector
- ICP-OES tubing kit. Includes two packs of peristaltic pump tubing (12/pk), FEP transfer tube (spray chamber to torch), drain tubing (1 m), tubing for waste line from spray chamber (1 m), one pack EzyFit sample inlet connectors (10/pk), nebulizer capillary tubing (2 m), barb connectors for joining tubing (5/pk of 1/16 to 1/8 in id and 5/pk of 1/16 to 1/16 in id), and connecting tubing (0.5 m).

### Inert Sample Introduction Systems

| Description        | Nebulizer, Spray Chamber                                | Part No.   |
|--------------------|---------------------------------------------------------|------------|
| Inert kit – axial  | V-groove nebulizer, Sturman-Masters spray chamber       | 9910126000 |
| Inert kit – radial | V-groove nebulizer, Sturman-Masters spray chamber       | 9910126100 |
| Inert kit – radial | Excludes spray chamber, nebulizer, and mounting bracket | 9910126200 |



Inert kit – radial, 9910126100

## Ketone-Based Organic Solvents

The application kits for ketone-based organic solvents include:

- Nebulizer
- Spray chamber
- Mounting bracket
- One-piece torch with 1.4 mm id injector
- ICP-OES tubing kit. Includes two packs peristaltic pump tubing (6/pk), FEP transfer tube (spray chamber to torch), drain tubing (1 m), tubing for waste line from spray chamber (1 m), one pack of EzyFit sample inlet connectors (10/pk), nebulizer capillary tubing (2 m), barb connectors for joining tubing (5/pk of 1/16 to 1/8 in id and 5/pk of 1/16 to 1/16 in id), and connecting tubing (0.5 m).

AGM 1 oxygen accessory (p/n G8473A) is recommended when analyzing organic solvents on axial ICP-OES.



Organics kit 6 – radial, 9910127400

### Ketone-Based Organic Solvents

| Description             | Nebulizer, Spray Chamber                                                                       | Part No.   |
|-------------------------|------------------------------------------------------------------------------------------------|------------|
| Organics kit 5 – axial  | Glass concentric (Conikal) nebulizer, double-pass glass cyclonic spray chamber                 | 9910127100 |
| Organics kit 5 – radial | Glass concentric (Conikal) nebulizer, double-pass glass cyclonic spray chamber, annealed torch | 9910127200 |
| Organics kit 6 – axial  | V-groove nebulizer, double-pass Sturman-Masters spray chamber                                  | 9910127300 |
| Organics kit 6 – radial | V-groove nebulizer, double-pass Sturman-Masters spray chamber, annealed torch                  | 9910127400 |

## Volatile Organics

The volatile organics kit reduces vapor pressure that can destabilize the plasma and lead to signal loss. The kit includes:

- Glass concentric (Conikal) nebulizer
- Water-cooled spray chamber
- Mounting bracket
- One-piece torch with 0.8 mm id injector
- ICP-OES tubing kit. Includes two packs of peristaltic pump tubing (6/pk), transfer tube (spray chamber to torch) 1 m, drain tubing (1 m), tubing for waste line from spray chamber (1 m), one pack of EzyFit sample inlet connectors (10/pk), nebulizer capillary tubing (2 m), barb connectors for joining tubing (5/pk of 1/16 to 1/8 in id and 5/pk of 1/16 to 1/16 in id), and connecting tubing (0.5

AGM 1 oxygen accessory (p/n G8473A) is recommended when analyzing volatile organic solvents. Cooled spray chamber requires a refrigerated, water recirculator able to cool fluid down to -10 °C for analysis of volatile organic solvents such as gasoline and naphtha.

### Volatile Organics

| Description                    | Nebulizer, Spray Chamber                                                         | Part No.   |
|--------------------------------|----------------------------------------------------------------------------------|------------|
| Volatile organics kit – axial  | Glass concentric (Conikal) nebulizer, water-cooled spray chamber                 | 9910127500 |
| Volatile organics kit – radial | Glass concentric (Conikal) nebulizer, water-cooled spray chamber, annealed torch | 9910127600 |



Volatile organics kit – radial, 9910127600



Organics kit 1 – radial, 9910126400

## Common Organic Solvents

The application kits for common organic solvents include:

- Nebulizer
- Spray chamber
- Mounting bracket
- One-piece torch with 1.4 mm id injector
- The ICP-OES tubing kit. Includes two packs of peristaltic pump tubing (12/pk), FEP transfer tube (spray chamber to torch), drain tubing (1 m), tubing for waste line from spray chamber (1 m), one pack of EzyFit sample inlet connectors (10/pk), nebulizer capillary tubing (2 m), barb connectors for joining tubing (5/pk of 1/16 to 1/8 in id and 5/pk of 1/16 to 1/16 in id), and connecting tubing (0.5

AGM 1 oxygen accessory (p/n G8473A) is recommended when analyzing organic solvents on axial ICP-OES.

### Common Organic Solvents

| Description             | Application                                                                                                            | Nebulizer, Spray Chamber                                                                                                                                                                                           | Part No.   |
|-------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Organics kit 1 – axial  | Common, low volatility organic solvents, e.g. kerosene, xylene, and white spirit                                       | Includes glass concentric (Conikal) nebulizer, double-pass glass cyclonic spray chamber with mounting bracket, one-piece torch with 1.4 mm id injector, and all necessary Marprene and solvent flexible PVC tubing | 9910126300 |
| Organics kit 1 – radial | Common, low volatility organic solvents, e.g. kerosene, xylene, and white spirit                                       | Includes glass concentric (Conikal) nebulizer, double-pass glass cyclonic spray chamber, one-piece annealed torch with 1.4 mm id injector, and all necessary Marprene and solvent flexible PVC tubing              | 9910126400 |
| Organics kit 2 – axial  | High particulate samples dissolved in common, low volatility organic solvents, e.g. kerosene, xylene, and white spirit | Includes V-groove nebulizer, double-pass Sturman-Masters spray chamber with mounting bracket, one-piece torch with 1.4 mm id injector, and all necessary Marprene and solvent flexible PVC tubing                  | 9910126500 |
| Organics kit 2 – radial | High particulate samples dissolved in common, low volatility organic solvents, e.g. kerosene, xylene, and white spirit | Includes V-groove nebulizer, double-pass Sturman-Masters spray chamber with mounting bracket, one-piece annealed torch with 1.4 mm id injector, and all necessary Marprene and solvent flexible PVC tubing         | 9910126600 |

## SVS 1 and SVS 2 Switching Valves for ICP-OES

The SVS 1/SVS 1+ and SVS 2/SVS 2+ Switching Valve Systems are innovative sample introduction systems for ICP-OES that improve productivity and reduce memory effects by rinsing while the next sample is introduced. Excess sample is diverted away from the spray chamber, reducing sample carryover. The SVS 2/SVS 2+ doubles ICP-OES productivity by loading the next solution into a sample loop during the rinse phase, using a high speed pump.

### SVS 1+ Supplies

| Description                                                                            | Comments                                                                                                                                                                                                                                         | Part No.    |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Replacement 4-port valve, for SVS 1+                                                   | Replace every 4–6 months, depending on usage                                                                                                                                                                                                     | G8484-60101 |
| Valve tubing kit, for SVS 1+                                                           | Includes flangeless fittings, 1/4 inch-28, P-218, 4/pk; flangeless ferrules, 1/16 inch, P-240, 4/pk; super flangeless fittings, 1/4 inch-28, P-232; super flangeless ferrules, 1/16 inch, P-250x; PFA tubing, 1.5 m, 1/16 inch od x 0.02 inch id | G8485-60523 |
| Super flangeless nut, PEEK short headless, 1/4 in-28 flat-bottom for 1/16 in od tubing |                                                                                                                                                                                                                                                  | 1510256900  |
| Super flangeless ferrules, 1/16 inch, P-250x, for SVS 1+/2+                            |                                                                                                                                                                                                                                                  | 0100-1690   |
| Adjustable mounting bracket, for SVS 1+                                                | Allows mounting of the SVS 1+ on ICP-OES and MP-AES<br>Adjustable from 15–90 mm and preset to 50 mm                                                                                                                                              | G8485-81003 |



SVS 2 (left) and SVS 1 (right)



Replacement 4-port valve, for SVS 1, 3610010100



Flangeless fittings, 1610136500



Ferrules (4 required), 1610136600

## SVS 1 Supplies

| Description                                                                         | Part No.   |
|-------------------------------------------------------------------------------------|------------|
| Replacement 4-port valve, for SVS 1<br>Replace every 4–6 months, depending on usage | 3610010100 |
| Flangeless fittings (4 required)                                                    | 1610136500 |
| Ferrules (4 required)                                                               | 1610136600 |
| Sample inlet (EzyFit) fitting, for concentric glass nebulizer on radial ICP-OES     | 1610136400 |
| Capillary tubing, PFA, 0.0625 inch x 0.02 inch id                                   | 3710052400 |

## SVS 2 Supplies

| Description                                                                          | Kit Contents                                                                                                                                                                                                                                                                                                               | Part No.    |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Nebulizer EzyFit connector, for SVS 0.75 mm id, 1.6 mm od tubing (10/pk)             |                                                                                                                                                                                                                                                                                                                            | 1610146100  |
| Replacement triple-stack 4-port valve<br>Replace every 12 months, depending on usage | Includes valve assembly with rotor, mounting plate, mixing tee, thrust washer, and stator                                                                                                                                                                                                                                  | 3610020400  |
| Tubing kit, for SVS 2                                                                | Includes SVS 2 carrier/rinse tubing, 300 mm (blue), SVS 2 internal standard tubing, 300 mm (yellow), loop link, 80 mm (green/green), SVS 2 internal standard link, 120 mm (gray/brown), SVS 2 sample loop – 1.0 mL (black/black) and 1/4 inch – 28 super flangeless fittings and 1/16 inch super flangeless ferrules, 2/pk | 7910063800  |
| Replacement wiper seal kit, for SVS 2 fast uptake pump                               |                                                                                                                                                                                                                                                                                                                            | 7910064500  |
| Tubing kit, for SVS 2 fast uptake pump                                               | Includes PVC 2.5 mm id waste tubing, 1.5 m, PVC 2.5 mm id inlet tubing, 50 mm, valve waste tubing, 320 mm (red), bubble injector tubing, 400 mm, bubble injector T-piece and bubble injector 1-way valve                                                                                                                   | 3710066700  |
| Capillary transfer line, connects SVS 2 to UniFit nebulizer fitting, 50 mm           |                                                                                                                                                                                                                                                                                                                            | G8010-60834 |



SVS 2 tubing kit, 7910063800



Tubing kit for SVS 2 Fast Uptake Pump, 3710066700

## Sample Loops for the SVS2/SVS2+

| Description                | Part No.    |
|----------------------------|-------------|
| SVS 2 sample loop, 0.25 mL | 9910143200  |
| SVS 2 sample loop, 0.5 mL  | 9910143300  |
| SVS 2 sample loop, 1.0 mL  | 9910143400  |
| SVS 2 sample loop, 1.5 mL  | 9910143500  |
| SVS 2 sample loop, 2.0 mL  | 9910143600  |
| SVS 2 sample loop, 3.0 mL  | 9910143800  |
| SVS 2 sample loop, 3.5 mL  | 9910143900  |
| SVS 2 sample loop, 4.0 mL  | G8485-60518 |



SVS 2 sample loop, 1.0 mL, 9910143400

**SVS2+ Supplies**

| <b>Description</b>                                                                                                    | <b>Comments</b>                                                                                                                                                                                                           | <b>Part No.</b> |
|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Replacement 6/7 way valve assembly, for SVS 2+                                                                        | Includes rotor, mounting plate, mixing tee, thrust washer, valve body, and PTFE stator                                                                                                                                    | G8485-60513     |
| Replacement mixing tee for 6/7 way valve assembly, for SVS 2+                                                         |                                                                                                                                                                                                                           | G8485-60514     |
| Capillary transfer line, connects SVS 2 switching valve to U-Series nebulizer inlet, 50 mm long with UniFit connector |                                                                                                                                                                                                                           | G8010-60834     |
| Valve tubing kit, for SVS 2+                                                                                          | Includes carrier/rinse tubing (350 mm), internal standard tubing (350 mm), and sample loop (1 mL)*                                                                                                                        | G8485-60515     |
| Tubing, carrier/rinse, 350 mm, for SVS 2+                                                                             |                                                                                                                                                                                                                           | G8485-60516     |
| Tubing, internal standard, 350 mm, for SVS 2+                                                                         |                                                                                                                                                                                                                           | G8485-60517     |
| Pump tubing kit, for SVS 2+                                                                                           | Includes bubble injector tubing (220 mm), PVC inlet tubing (2.5 mm id, 100 mm), barb fitting (1/4-28 male to 1/8 inch), PVC inlet tubing (2.5 mm id, 1.5 m), bubble injector tee piece, and bubble injector one-way valve | G8485-60519     |
| Tubing, bubble injector, 220 mm, for SVS 2+                                                                           |                                                                                                                                                                                                                           | G8485-60520     |
| Tubing, inlet, PVC, 0.1 m, 2.5 mm id, for SVS 2+                                                                      |                                                                                                                                                                                                                           | G8485-60521     |
| Tubing, PFA, 3 m, 1/16 in od, 0.04 in id, for SVS 2+                                                                  |                                                                                                                                                                                                                           | G8485-60522     |
| Super flangeless nut, PEEK short headless, 1/4 in-28 flat-bottom for 1/16 in od tubing                                |                                                                                                                                                                                                                           | 1510256900      |
| Super flangeless ferrules, 1/16 inch, P-250x, for SVS 1+/2+                                                           |                                                                                                                                                                                                                           | 0100-1690       |
| Barb fitting, 1/4-28 male to 1/8 inch, for SVS 2+                                                                     |                                                                                                                                                                                                                           | G8485-80001     |
| Replacement uptake pump, for SVS 2+, excludes tubing or accessories                                                   |                                                                                                                                                                                                                           | G8485-60512     |
| Adjustable mounting bracket, for SVS 2+                                                                               | Adjustable from 15 to 90 mm and preset to 50 mm, allows mounting of the SVS2+ on the 5100/5110 Dual View ICP-OES                                                                                                          | G8485-81002     |
| Adjustable mounting bracket, for SVS 2+, to suit Agilent 700 Series axial ICP-OES                                     |                                                                                                                                                                                                                           | G8485-81001     |
| Stator alignment and extraction tool, PTFE, for SVS 2+                                                                |                                                                                                                                                                                                                           | G8485-80000     |

\*Tubing color code: black/black. Fittings already attached to tubing and labeled.

## AVS 6/7 Advanced Valve Systems for 5100/5110 DV ICP-OES

Agilent's Advanced Valve System (AVS) 6 or 7 port switching valve is an optional accessory for Agilent's 5100/5110 ICP-OES instruments. The switching valve features a unique two-position 6 or 7 port switching valve (the 7th port is for internal standardization) and a high speed positive displacement pump to rapidly fill the sample loop. The sample introduction system is rinsed at the same time as the next sample is presented to the instrument, virtually eliminating the delay-times of conventional ICP-OES analysis. This reduces your cost-per-analysis and more than doubles your productivity.



### Supplies for AVS 7 (7 port) Advanced Valve System for 5100/5110 DV ICP-OES

| Description                                                                                                                                            | Part No.    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Spare valve, 7 port, 2 position, for AVS 7 switching valve                                                                                             | G8495-60000 |
| Replacement valve assembly for AVS 7                                                                                                                   |             |
| Stator and rotor for 7 port valve, for AVS 7 switching valve                                                                                           | G8495-60003 |
| Rotor seal for 6-7 port valve, for AVS 6/7 switching valve                                                                                             | G8494-60002 |
| Drip tray for 6-7 port valve, for AVS 6/7 switching valve                                                                                              | G8010-20071 |
| Plug, PTFE, for 1/4-28 flat-bottom (blanking plug which can be used to block the 7th port of the AVS 7, if internal standard addition is not required) | UCP316      |

### Supplies for AVS 6 (6 port) Advanced Valve System for 5100/5110 DV ICP-OES

| Description                                                  | Part No.    |
|--------------------------------------------------------------|-------------|
| Spare valve, 6 port, 2 position, for AVS 6 switching valve   | G8494-60000 |
| Replacement valve assembly for AVS 6                         |             |
| Stator and rotor for 6 port valve, for AVS 6 switching valve | G8494-60003 |
| Rotor seal for 6-7 port valve, for AVS 6/7 switching valve   | G8494-60002 |
| Drip tray for 6-7 Port valve, for AVS 6/7 switching valve    | G8010-20071 |

#### LEARN MORE

To learn how to reduce costs and boost productivity using the AVS, enter [5991-6863EN](https://www.agilent.com/search) at [www.agilent.com/search](https://www.agilent.com/search)

**Supplies for AVS 4 (4 port) Advanced Valve System for 5100/5110 DV ICP-OES**

| <b>Description</b>                                                                              | <b>Part No.</b> |
|-------------------------------------------------------------------------------------------------|-----------------|
| Spare valve, 4 port, 2 position, for AVS 4 Switching Valve Replacement valve assembly for AVS 4 | G8493-60000     |
| Stator and rotor for 4 port valve, for AVS 4 switching valve                                    | G8493-60003     |
| Rotor seal for 4 port valve, for AVS 4 switching valve                                          | G8493-60002     |
| Drip tray for 4 port valve, for AVS 4 switching valve                                           | G8010-20080     |

**Miscellaneous Supplies for AVS Switching Valves for 5100/5110 DV ICP-OES**

| <b>Description</b>                                                                           | <b>Comments</b>                                                                                                                                                                                                                                    | <b>Part No.</b> |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Rinse, 10 L and waste, 20 L containers for AVS 6/7                                           | Includes 10 L HDPE container for rinse solution and 20 L HDPE container for waste both fitted with safety caps to prevent vapors reaching the lab<br>Supply lines fitted with sinkers to ensure the capillary draws from the base of the container | G8494-60005     |
| Internal standard container kit, 5 L, for AVS 7                                              | Includes 5 L polypropylene space saver container for internal standard. Fitted with safety caps to prevent vapors in the laboratory<br>Supply line fitted with sinker to ensure the capillary draws from the base of the container                 | G8495-60005     |
| Reagent uptake capillary tube 1.6 mm od x 1.0 mm id x 1400 mm length, with heavy PTFE sinker |                                                                                                                                                                                                                                                    | G8494-60007     |
| Check valve outlet, for AVS switching valve, nonmetallic                                     |                                                                                                                                                                                                                                                    | G8010-60300     |
| Mounting clamp, for AVS 4/6/7 switching valve                                                |                                                                                                                                                                                                                                                    | G8494-60004     |

**Tubing Kits for AVS Switching Valves for 5100/5110 DV ICP-OES**

| <b>Description</b>                                         | <b>Notes</b>                                                                                                                                                                                                                    | <b>Part No.</b> |
|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Sample inlet connection kit, for AVS switching valve       |                                                                                                                                                                                                                                 | G8010-60303     |
| Nebulizer connection kit, for AVS switching valve          |                                                                                                                                                                                                                                 | G8010-60304     |
| Autosampler connection kit, for AVS switching valve        | Super flangeless one-piece fitting, 1/4-28 flat-bottom, for 1/16 inch od tubing (used to join the probe line to the valve assembly)                                                                                             | G8010-60306     |
| Internal standard connection kit, for AVS7 switching valve |                                                                                                                                                                                                                                 | G8010-60307     |
| Pump outlet connection kit, for AVS switching valve        |                                                                                                                                                                                                                                 | G8010-60308     |
| Waste tube kit, for 4 port AVS switching valve             | Includes swivel barb adaptor fitted with 2m length of 1/8 inch id PVC tubing (for the AVS waste line)                                                                                                                           | G8010-60334     |
| Sample/rinse connection kit, for AVS switching valve, 2/pk | Includes super flangeless one-piece fitting, 1/4-28 flat-bottom, for 1/16 inch od tubing fitted with 1/16 inch od PFA tubing and a conical adapter to join to the peristaltic pump tubing                                       | G8010-60335     |
| Autosampler peri-pump connection kit                       | Allows the user to bypass the switching valve when required e.g. for wavelength calibration. Includes ferrule fitting for the autosampler line plus a conical PTFE adapter to enable connection to the peristaltic pump tubing. | G8010-60348     |
| UniFit sample line, 0.75 mm id x 116 inch od               | Replacement part, for Unifit nebulizer (p/n G8010-60336)<br>Connection kit supplied with the AVS 4                                                                                                                              | 8003-0493       |
| Nebulizer adaptor kit, for AVS switching valve             | Includes super flangeless one-piece fitting, 1/4-28 flat-bottom, for 1/16 inch od tubing and 1/16 inch od FEP tubing sleeve (used to join the sample capillary of the OneNeb nebulizer to the valve assembly)                   | G8010-60333     |

**Sample Loops for AVS 6/7 Switching Valves for 5100/5110 DV ICP-OES**

| <b>Description</b>                                  | <b>Part No.</b> |
|-----------------------------------------------------|-----------------|
| Sample loop for AVS switching valve, 1.0 mL volume* | G8010-60305     |
| Sample loop for AVS switching valve, 0.25 mL volume | G8010-60338     |
| Sample loop for AVS switching valve, 0.5 mL volume  | G8010-60339     |
| Sample loop for AVS switching valve, 1.5 mL volume  | G8010-60340     |
| Sample loop for AVS switching valve, 2.0 mL volume  | G8010-60341     |
| Sample loop for AVS switching valve, 2.5 mL volume  | G8010-60342     |
| Sample loop for AVS switching valve, 3.0 mL volume  | G8010-60343     |
| Sample loop for AVS switching valve, 3.5 mL volume  | G8010-60344     |

\*This is the standard loop supplied with the AVS switching valves



Multimode Sample Introduction System (MSIS)

## Multimode Sample Introduction System (MSIS)

The MSIS provides simultaneous vapor generation of environmentally sensitive elements including As, Se, and Hg with low  $\mu\text{g/L}$  detection limits. It provides better performance than conventional nebulization through thin film hydride technology, while offering a choice of three modes that eliminates changeover and allows routine and hydride elements to be determined using the same setup.

For best performance when determining environmentally sensitive elements such as As, Se, and Hg, it is recommended to use the conventional vapor generation technique using the VGA 77.

### Multimode Sample Introduction System (MSIS)

| Description                                 | Part No.    |
|---------------------------------------------|-------------|
| Multimode Sample Introduction System (MSIS) | G8000-63003 |

### MSIS Accessory Kits for 700 and Vista Series ICP-OES

| Description                                                 | Part No.    |
|-------------------------------------------------------------|-------------|
| Accessory kit to adapt the MSIS for use with axial ICP-OES  | G8479-68000 |
| Accessory kit to adapt the MSIS for use with radial ICP-OES | G8479-68001 |

Each kit includes mounting bracket with screws and washers, glass transfer tube with ball joint connection, clamps for ball joint, and torch with ball joint connection.



### Argon Gas and Air Filters

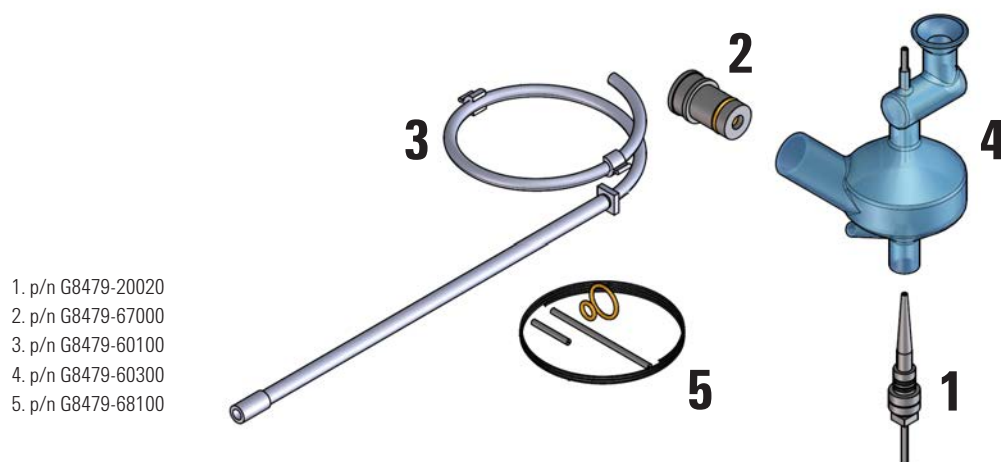
| Description                                                                                                                      | Part No.    |
|----------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Filters for 700 and Vista Series ICP-OES</b>                                                                                  |             |
| Small argon filter, charcoal, for detector gas purge line                                                                        | 6810008600  |
| Drierite filter, for detector gas purge line                                                                                     | 6810008700  |
| Large argon filter, charcoal, externally mounted, for polychromator gas purge line                                               | 6810010000  |
| <b>Filters for 5100/5110 Dual View ICP-OES</b>                                                                                   |             |
| Argon gas inlet filter (requires annual replacement, customer replaceable)                                                       | G8010-60136 |
| Inlet cooling air filter                                                                                                         | G8000-68002 |
| Replacement filter element, for the cooling air inlet on instruments fitted with the "dusty environment air inlet filter" option | G8010-60189 |

**MSIS Supplies**

| Description                                          | Comments                                                                | Part No.   |
|------------------------------------------------------|-------------------------------------------------------------------------|------------|
| Torch one piece, for axial ICP                       | Features ball joint sample inlet and 2.3 mm id injector                 | 7910050700 |
| Glass transfer tube, for axial ICP                   | Links to torch with ball joint sample inlet<br>Includes retaining clamp | 7910052800 |
| Torch one piece, for radial ICP                      | Features ball joint sample inlet and 1.4 mm id injector                 | 7910052900 |
| Glass transfer tube, for radial ICP                  | Links to torch with ball joint sample inlet<br>Includes retaining clamp | 7910052700 |
| Peristaltic pump tubing, black/black, 12/pk          | Required to pump reagents to MSIS                                       | 3710027200 |
| Peristaltic pump tubing, black/white, 12/pk          | Required to pump waste from MSIS                                        | 3710068900 |
| Bracket, for mounting MSIS with axial and radial ICP |                                                                         | 110868000  |

**MSIS Supplies to Support Routine Operation**

|                                    |                                                                                                                                                                                                          |             |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| MSIS nebulizer bushing             | Includes O-rings                                                                                                                                                                                         | G8479-20020 |
| O-rings for MSIS nebulizer bushing | Includes one pair of replacement O-rings for the nebulizer bushing (one internal and one external O-ring)                                                                                                | G8479-67000 |
| MSIS drain tube assembly           | Includes 0.2 m length of 1/8 inch id drain tubing with bushing for waste outlet plus barb adapter and a single peri pump tube, 2 bridged PVC with black/white tabs                                       | G8479-60100 |
| MSIS reaction cone assembly        | Includes reaction cone, bushing, threaded barb adapter, and tubing connector for sample inlet                                                                                                            | G8479-60300 |
| MSIS reagent tubing kit            | Includes O-rings for nebulizer bushing (one pair), tubing connectors for reagent/sample inlets, and capillary tubing 0.01 inch id by 0.03 inch od to join to peristaltic pump tubing for reductant inlet | G8479-68100 |





7900 ICP-MS

## ICP-MS Supplies

As ICP-MS has evolved to become the premier technique for trace metal analysis, Agilent has been at the forefront of development and design, introducing many important innovations. With the 8900 Triple Quadrupole ICP-MS, the innovative MS/MS operation provides precise control of reaction processes in the collision/reaction cell, ensuring better performance than conventional reaction cell ICP-MS. This new technology delivers unrivaled flexibility for solving difficult applications.

### ICP-MS Maintenance Schedule

| Item                                                          | Actions/Comments                                                                                            | Typical Schedule*                                                           |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Argon gas                                                     | Check argon gas pressure and volume                                                                         | Daily<br>(check before starting work and over the course of daily analysis) |
| Drain vessel                                                  | Check, empty if required                                                                                    |                                                                             |
| Peristaltic pump tubing                                       | Check for damage/deterioration<br>Typically replace sample uptake tubing weekly                             |                                                                             |
| Sampling cone, skimmer cone                                   | Check orifice for matrix build-up, deformation, and enlargement<br>Clean or replace if required             | Weekly                                                                      |
| Foreline pump                                                 | Check oil level and color<br>Check exhaust hose for kinks, damage, oil contamination, and secure connection | Monthly                                                                     |
| Nebulizer                                                     | Run nebulizer test, take appropriate action as indicated                                                    |                                                                             |
| Cooling fluid                                                 | Check level and condition                                                                                   |                                                                             |
| Foreline pump                                                 | Change oil                                                                                                  | 6 months                                                                    |
| Foreline pump oil mist filter                                 | Replace mist filter                                                                                         | Annually                                                                    |
| Penning gauge (7500 Series)                                   | Clean and replace when necessary                                                                            |                                                                             |
| Water strainer                                                | Check and clean                                                                                             |                                                                             |
| Cooling fluid                                                 | Replace                                                                                                     | Periodically                                                                |
| Extraction/Omega lenses                                       | Clean                                                                                                       |                                                                             |
| Shield contact                                                | Replace                                                                                                     |                                                                             |
| Octopole                                                      | Replace when necessary                                                                                      |                                                                             |
| Other ion lenses                                              | Clean                                                                                                       |                                                                             |
| Sample introduction area, for example, spray chamber, end cap | Clean                                                                                                       |                                                                             |
| Torch                                                         | Clean and replace when necessary                                                                            |                                                                             |
| Electron multiplier                                           | Evaluate and replace when necessary                                                                         |                                                                             |
| Plasma gas, auxiliary gas tubing                              | Check and replace when necessary                                                                            |                                                                             |
| Argon gas filter                                              | Check and replace when necessary                                                                            |                                                                             |
| Graphite gasket for sampler cone                              | Replace when surface or shape is damaged                                                                    |                                                                             |

\*Maintenance frequency is highly dependent on lab conditions, sample throughput, and sample type. Components should be checked periodically (as indicated), and appropriate action taken.

## Sample Introduction Supplies

### Sample Line Supplies

| Description                                                                                        | Specifications               | Use                                   | Unit  | 77/78/79/88/8900<br>Part No. | 7500<br>Part No. |
|----------------------------------------------------------------------------------------------------|------------------------------|---------------------------------------|-------|------------------------------|------------------|
| Tubing, peristaltic pump, Tygon, white/white                                                       | 1.02 mm id, 40 cm, 3 tabs    | Standard for sample introduction      | 12/pk | G1833-65569                  | G1833-65569      |
| Tubing, peristaltic pump, PVC, black/black, flared ends                                            | 0.76 mm id, 40 cm, 3 tabs    | Recommended for high matrix samples   | 12/pk | 5064-8101                    | 5064-8101        |
| Tubing, peristaltic pump, Tygon, 2 stopper, blue/orange, flared end, for pumping internal standard | 0.25 mm id                   | Standard for 77/78/79/88/8900         | 12/pk | G3280-67047                  | G3280-67047      |
| Tubing, peristaltic pump, PVC, 2 stopper, red/orange, flared end, for pumping internal standard    | 0.19 mm id                   | Standard for 7500 Series              | 15/pk | G3280-67008                  | G3280-67008      |
| Tubing, peristaltic pump, Fluran, 3 stopper, yellow/blue                                           | 1.52 mm id                   | For xylene analysis                   | 1/pk  | 5042-4799                    | 5042-4799        |
| Tubing, peristaltic pump, silicone, white/white                                                    | 1.02 mm id, 16 inch          |                                       | 6/pk  | G1820-65217                  | G1820-65217      |
| Tubing, peristaltic pump, Tygon, red/orange, for internal standard                                 | 0.19 mm id, 40 cm            |                                       | 12/pk |                              | G1833-65571      |
| Tubing, peristaltic pump, Ismaprene, for pumping drain                                             | 1.52 mm id, 40 cm, 3 tabs    |                                       | 12/pk | G1833-65570                  | G1833-65570      |
| Sample tubing, PFA                                                                                 | 0.5 mm id, 1.6 mm od, 5 m    | Standard sample uptake tubing         | 1/pk  | G1820-65105                  | G1820-65105      |
| Sample tubing, PFA                                                                                 | 0.2 mm id, 1.6 mm od, 70 cm  |                                       | 3/pk  | G1833-65573                  | G1833-65573      |
| Sample tubing, PFA                                                                                 | 0.15 mm id, 1.6 mm od, 70 cm |                                       | 3/pk  | G1833-65572                  | G1833-65572      |
| Sample tubing with PEEK guide, PFA                                                                 | 0.3 mm id, 1.6 mm od, 70 cm  |                                       | 5/pk  | G1820-65531                  | G1820-65531      |
| Sample tubing with PEEK guide, PFA                                                                 | 0.2 mm id, 1.6 mm od, 70 cm  |                                       | 5/pk  | G1820-65527                  | G1820-65527      |
| Sample tubing with PEEK guide, PFA                                                                 | 0.15 mm id, 1.6 mm od, 70 cm |                                       | 5/pk  | G1820-65526                  | G1820-65526      |
| Sample tubing, for online internal standard addition                                               | 0.3 mm id, 1.6 mm od, 3 m    | For online internal standard addition | 1/pk  | G1820-65478                  | G1820-65478      |
| Online internal standard addition kit                                                              |                              |                                       | 1/pk  | G3280-60590                  | G3280-60590      |
| Plastic tubing cutter                                                                              |                              |                                       | 1/pk  | 8710-1930                    | 8710-1930        |
| Sample tray                                                                                        |                              | For 7700/8800 ICP-MS                  | 1/pk  | G3280-40103                  |                  |

(Continued)



Sample tubing, PFA, G1820-65105

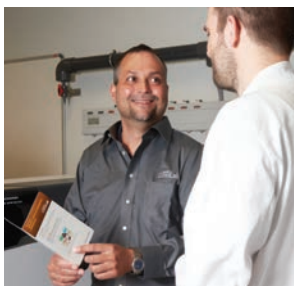


Plastic tubing cutter, 8710-1930

## Sample Line Supplies

| Description                                      | Specifications       | Use                  | Unit  | 77/78/79/88/8900<br>Part No. | 7500<br>Part No. |
|--------------------------------------------------|----------------------|----------------------|-------|------------------------------|------------------|
| Sample tray                                      |                      | For 7800/7900 ICP-MS | 1/pk  | G8400-40113                  |                  |
| Sample tray                                      |                      | For 8900 ICP-MS      | 1/pk  | G3666-40104                  |                  |
| Plug for cross joint                             |                      |                      | 3/pk  | G3138-65129                  | G3138-65129      |
| PTFE nut                                         | For 1.6 mm od tubing | For 1.6 mm od tubing | 10/pk | 5064-8023                    | 5064-8023        |
| Ferrule, front and back                          | For 1.6 mm od tubing | For 1.6 mm od tubing | 10/pk | 5064-8024                    | 5064-8024        |
| Stator arm tape, for peristaltic pump            |                      |                      | 3/pk  | G3280-60568                  | G3280-60568      |
| Stator arm tape, for peristaltic pump, 30 m roll |                      |                      | 1/pk  | 5043-0030                    | 5043-0030        |

## Real stories from the lab.



True Story No. **41**  
**OPTIMIZING  
 LAB OPS**

A team of Agilent service and sales experts helped an ICP-MS lab find ways to improve productivity and minimize instrument downtime.

Agilent  
**CrossLab**  
 ACROSS THE LAB,

[www.agilent.com/chem/story41](http://www.agilent.com/chem/story41)

## Nebulizers and Supplies

| Description                                       | Specifications                                   | Use                                                                                                                                                                                                                        | Unit  | 77/78/79/88/8900<br>Part No. | 7500<br>Part No. |
|---------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------|------------------|
| MicroMist nebulizer, U-series                     | Borosilicate glass, with UniFit sample connector | Standard on 78/79/8800<br>Suitable for most sample types except those containing HF or suspended particulates.                                                                                                             | 1/pk  | G3266-80004                  |                  |
| UniFit sample inlet fitting                       | 0.5 mm id, 700 mm, with connector                | For U-Series MicroMist nebulizer with Unifit sample connector                                                                                                                                                              | 10/pk | G3266-80012                  |                  |
| UniFit sample inlet fitting                       | 0.25 mm id, 700 mm, with connector               |                                                                                                                                                                                                                            | 10/pk | G3266-80013                  |                  |
| MicroMist nebulizer                               | Borosilicate glass, with Ezyfit sample connector | Standard on 7700x/e, 8800 and 7500cx/ce<br>Suitable for most sample types except those containing HF or suspended particulates<br>When ordered for the 7500a, the spray chamber end cap (p/n G1833-65475) is also required | 1/pk  | G3266-65003                  | G3266-65003      |
| Sample inlet (EzyFit) fitting                     | 0.25 mm id, 700 mm, with connector               | For MicroMist nebulizer with EzyFit sample connector, 0.25 mm id, 700 mm with connector                                                                                                                                    | 10/pk | G3266-80010                  | G3266-80010      |
| Sample inlet (EzyFit) fitting                     | 0.5 mm id, 700 mm, with connector                | For MicroMist nebulizer with EzyFit sample connector, 0.5 mm id, 700 mm                                                                                                                                                    | 10/pk | G3266-80011                  | G3266-80011      |
| Nebulizer* gas connector, for MicroMist nebulizer |                                                  |                                                                                                                                                                                                                            | 1/pk  | G3266-80015                  | G3266-80015      |
| MicroMist nebulizer, with PEEK gas fitting        | Borosilicate glass with PEEK gas connector       | Standard on 8900<br>Suitable for most sample types except those containing HF or suspended particulates                                                                                                                    | 1/pk  | G3266-80005                  |                  |
| Nebulizer cleaner                                 |                                                  | Suitable for conventional concentric nebulizer                                                                                                                                                                             | 1/pk  | G3266-80020                  | G3266-80020      |
| MicroFlow nebulizer                               | PFA, 200 µL/min                                  | For analysis of high purity and HF samples, not for use with the integrated autosampler (I-AS)                                                                                                                             | 1/pk  | G3139-65100                  | G3139-65100      |
| MicroFlow nebulizer, with I-AS probe              | PFA, 200 µL/min                                  | Standard for semicon configuration on 7700s, 8800, 8900, and 7500s<br>For analysis of high purity and HF samples when using the integrated autosampler (I-AS), sample uptake tube terminates as a sampling probe           | 1/pk  | G3139-65102                  | G3139-65102      |
| MicroFlow nebulizer                               | PFA, 20–50 µL/min                                | Low flow rate self-aspirating inert nebulizer, not for use with the integrated autosampler (I-AS)                                                                                                                          | 1/pk  | G3139-65106                  | G3139-65106      |

(Continued)



MicroMist nebulizer, G3266-65003



Sample tubing, G3266-80010



Nebulizer gas\* connector, G3266-80015

## Nebulizers and Supplies

| Description                                     | Specifications                                                  | Use                                                                                                                                                                                                                                                | Unit  | 77/78/79/88/8900<br>Part No. | 7500<br>Part No. |
|-------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------|------------------|
| MicroFlow nebulizer with I-AS probe             | PFA, 20–50 µL/min                                               | Low flow rate self-aspirating inert nebulizer when using the integrated autosampler (I-AS), sample uptake tube terminates as a sampling probe.                                                                                                     | 1/pk  | G3139-65108                  | G3139-65108      |
| Nebulizer* gas line connector                   |                                                                 | Connector for MicroFlow nebulizer                                                                                                                                                                                                                  | 1/pk  | G1833-65583                  | G1833-65583      |
| Mira Mist nebulizer                             | PTFE                                                            | For high solids applications such as environmental, geological, etc. Not for semiconductor use since it does not self-aspirate. When ordered for the 7500a, the spray chamber end cap (p/n G1833-65475) is also required (included with 7500cx/cs) | 1/pk  | G3161-80000                  | G3161-80000      |
| Mira Mist nebulizer, PEEK                       | PTFE                                                            | For high solids applications such as environmental, geological, etc. Not for semiconductor use since it does not self-aspirate. When ordered for the 7500a, the spray chamber end cap (p/n G1833-65475) is also required (included with 7500cx/cs) | 1/pk  | G3161-80001                  | G3161-80001      |
| Sample inlet connector, for Mira Mist nebulizer | Includes 0.5 m sample capillary (0.044 inch od x 0.018 inch id) |                                                                                                                                                                                                                                                    | 10/pk | CP913777                     |                  |
| Babington nebulizer                             | Includes FPM O-ring, PTFE sample tubing, and connector          | For samples with high matrix and high total salts. Clean when contaminated or when orifices are clogged.                                                                                                                                           | 1/pk  |                              | G1820-60453      |
| End cap for Babington nebulizer, polypropylene  | Includes FPM O-rings                                            | Replace when memory effects do not disappear after cleaning. Insert nebulizer in middle of end cap all the way through. Attach end cap to spray chamber with "TOP" mark facing up.                                                                 | 1/pk  |                              | G1833-65476      |
| Babington nebulizer removal tool                |                                                                 |                                                                                                                                                                                                                                                    | 1/pk  |                              | G1820-65345      |
| C-Flow PFA concentric nebulizer                 | PFA 200 µL/min                                                  | All PFA nebulizer recommended for ultratrace analysis. Alternative to the MicroFlow nebulizer.                                                                                                                                                     | 1/pk  | G3285-80000                  |                  |
| C-Flow PFA concentric nebulizer with I-AS probe | PFA 200 µL/min                                                  | All PFA nebulizer recommended for ultratrace analysis. Alternative to the MicroFlow nebulizer.                                                                                                                                                     | 1/pk  | G3285-80001                  |                  |
| C-Flow PFA concentric nebulizer                 | PFA 50 µL/min                                                   | Recommended for VPD and high matrix semiconductor, specifically Si matrixes above 100 mg/L, and for H <sub>3</sub> PO <sub>4</sub> . Use in free-aspiration mode.                                                                                  | 1/pk  | G3285-80002                  |                  |

(Continued)



Nebulizer cleaner, G3266-80020



MicroFlow nebulizer with I-AS probe, G3139-65102



Nebulizer gas\* line connector, G1833-65583

## Nebulizers and Supplies

| Description                                                   | Specifications                                                                                                   | Use                                                                                                                                                               | Unit | 77/78/79/88/8900<br>Part No. | 7500<br>Part No. |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------------------------|------------------|
| C-Flow PFA concentric nebulizer with I-AS probe               | PFA 50 µL/min                                                                                                    | Recommended for VPD and high matrix semiconductor, specifically Si matrixes above 100 mg/L, and for H <sub>3</sub> PO <sub>4</sub><br>Use in free-aspiration mode | 1/pk | G3285-80003                  |                  |
| Concentric nebulizer, Pyrex                                   | Use with Argon gas connector (p/n G1820-65052), connector kit (p/n G1820-60160), and end cap (p/n G1820-65121**) | Use with clean samples only. Not resistant to hydrochloric acid. Clean with a 5 % HNO <sub>3</sub> (v/v) bath; do not use ultrasonic bath.                        | 1/pk | G1820-65030                  | G1820-65030      |
| Concentric nebulizer, quartz                                  | Use with Quartz spray chamber (p/n G1820-65337), and Quartz connecting pipe (p/n G1820-80237**)                  | Recommended for trace analysis of clean samples. Lower contamination level than Pyrex. Clean using 5 % HNO <sub>3</sub> (v/v) bath; do not use ultrasonic bath.   | 1/pk | G1820-65138                  | G1820-65138      |
| Connector for nebulizer* gas line, polypropylene              | 4 mm tubing, includes ferrule and O-ring                                                                         | For gas line connection to concentric nebulizer                                                                                                                   | 1/pk | G1820-65052                  | G1820-65052      |
| Sample tubing with connector, PTFE                            | Tool included                                                                                                    | For Babington nebulizer, replace when heavily contaminated by high matrix samples.                                                                                | 1/pk |                              | G1820-65276      |
| Sample line connector                                         | Includes FPM O-ring                                                                                              | Connects concentric nebulizer with sample line. Port with large hole connects to nebulizer; smaller port connects with sample tubing.                             |      | G1820-60160                  | G1820-60160      |
| Union fitting                                                 | 4 mm tubing                                                                                                      | For PFA concentric nebulizer                                                                                                                                      | 1/pk | 5064-8078                    | 5064-8078        |
| Ferrule and FPM O-ring kit, for nebulizer* gas line connector |                                                                                                                  | For Babington/concentric nebulizer                                                                                                                                | 1/pk | G1820-65533                  | G1820-65533      |
| End cap, PTFE, for concentric nebulizer                       | Includes FPM O-rings                                                                                             | Connects the concentric nebulizer (Pyrex or quartz) with the spray chamber, for MicroMist, MicroFlow, and other concentric nebulizers.                            | 1/pk |                              | G1833-65475      |
| O-ring, FPM, for Babington nebulizer                          |                                                                                                                  | Used to create seal between Babington nebulizer and end cap                                                                                                       | 4/pk |                              | G1820-65199      |

(Continued)



Polypropylene connector, G1820-65052



Ferrule and FPM fluoroelastomer polymer O-ring kit, for nebulizer gas\* line connector, G1820-65533

## Nebulizers and Supplies

| Description                                                      | Specifications                                                                                                                    | Use                                                                                                                                                                                                                                  | Unit  | 77/78/79/88/8900<br>Part No. | 7500<br>Part No. |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------|------------------|
| O-ring kit, FPM, for concentric nebulizer                        | 2 sizes, 10 each                                                                                                                  |                                                                                                                                                                                                                                      | 20/pk | G1820-65491                  | G1820-65491      |
| O-rings for concentric nebulizer, for organic solvents (3 types) |                                                                                                                                   |                                                                                                                                                                                                                                      | 4/pk  | G1820-65520                  | G1820-65520      |
| O-ring, FPM, for end cap                                         |                                                                                                                                   | Use for the end cap of the Babington nebulizer, CrossFlow nebulizer, and concentric nebulizer                                                                                                                                        | 5/pk  |                              | G1820-65198      |
| O-rings for end cap, for organic solvents                        |                                                                                                                                   |                                                                                                                                                                                                                                      | 2/pk  |                              | G1820-65518      |
| Cross-flow nebulizer                                             | Includes bushing, nebulizer* gas line connector, blend gas line connector, sample tubing, and gas line tubings with inner sleeves | Standard nebulizer for the inert kit. Resistant to hydrofluoric acid. Set nebulizer* gas pressure to 500 kPa (5 kg/cm <sup>2</sup> ). Clean with 5 % HNO <sub>3</sub> (v/v) bath. Replace when memory effects remain after cleaning. |       |                              | G1833-65462      |
| O-ring A, for concentric nebulizer                               | Perfluoro, 1.07 mm id                                                                                                             |                                                                                                                                                                                                                                      | 5/pk  | G3280-67115                  |                  |
| O-ring B, for concentric nebulizer                               | Perfluoro, 3.8 mm id                                                                                                              |                                                                                                                                                                                                                                      | 5/pk  | G3280-67116                  |                  |

\*The term "carrier gas" has been replaced with "nebulizer gas" for ICP-MS (from July 2017)

\*\*Part supported but no longer available



## Humidifier Accessory

Compatible with a range of Agilent ICP-OES, ICP-MS, and MP-AES instruments, Agilent's humidifier accessory can significantly improve signal stability for the analysis of challenging sample types.

For more information, turn to **Page 45**.

**Spray Chambers**

| <b>Description</b>                                     | <b>Use</b>                                                                                                  | <b>Unit</b> | <b>77/78/79/88/8900<br/>Part No.</b> | <b>7500<br/>Part No.</b> |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------|--------------------------|
| Spray chamber, double-pass design, quartz              | Standard for 77/78/8800 and 7500 Series<br>Also suits 7900 and 8900 if Ultra HMI capability is not required |             | G3280-80008                          | G1820-65337              |
| Spray chamber, double-pass design, quartz              | For 7900 and 8900 series<br>Required when using Ultra HMI capability                                        |             | G8400-67150                          |                          |
| Endcap for spray chamber                               |                                                                                                             |             | G3280-60008                          |                          |
| Endcap retainer, secures end cap to spray chamber body | For 77/78/8800 and 7500 Series                                                                              |             | G3280-67091                          | G3280-67091              |
| Endcap retainer, secures end cap to spray chamber body | For 7900 and 8900 series (p/n G8400-67150)                                                                  |             | G8400-40200                          |                          |
| Connector for gas line at endcap                       |                                                                                                             |             | 5042-4775                            |                          |
| Endcap nut for nebulizer connection                    |                                                                                                             |             | 0535-1082                            |                          |
| Drain tubing assembly                                  |                                                                                                             |             | G3280-60555                          |                          |
| Tubing for drainage, 4 mm id, 2.5 m                    | Tubing between peristaltic pump tubing and drain tank                                                       |             | G1820-65515                          | G1820-65515              |
|                                                        |                                                                                                             |             | G3160-67000                          |                          |
| Drain tank, polyethylene, 4 L                          |                                                                                                             |             | 5042-4769                            | 5042-4769                |
| Drain tank                                             |                                                                                                             |             | G1820-65016                          | G1820-65016              |
| Drain tank for organic solvents                        |                                                                                                             |             | G1820-65505                          | G1820-65505              |
| Drain tubing kit                                       |                                                                                                             |             | G1833-65411                          | G1833-65411              |
| Bushing at spray chamber drain, FPM                    |                                                                                                             | 5/pk        |                                      | G1820-65482              |

(Continued)

## Spray Chambers

| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Use                                                                                                      | Unit  | 77/78/79/88/8900<br>Part No. | 7500<br>Part No. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------|------------------------------|------------------|
| Bushing at spray chamber drain, for organic solvents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | For use with organic solvents                                                                            |       |                              | G1820-65504      |
| Connector for spray chamber drainage, polypropylene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                          |       |                              | G1820-65503      |
| Spray chamber                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | For ultratrace B analysis, does not require quartz connector tube between spray chamber and torch        |       | G3280-80503                  | G3270-80300      |
| Ball Joint Connector, Quartz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Between spray chamber and torch                                                                          |       |                              | G1833-65426      |
| Connector, polypropylene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Between spray chamber and torch                                                                          |       |                              | G1833-65464      |
| T-connector for optional gas introduction, quartz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Between spray chamber and torch                                                                          |       |                              | G1833-65427      |
| O-rings for polypropylene connector, FPM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                          | 10/pk |                              | G1833-65480      |
| Clamps for ball joint connector between spray chamber and torch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Used to secure ball joint connectors on spray chamber, connector tube and torch.<br>For 77/8800 ICP-MS   | 2/pk  | G1833-65430                  | G1833-65430      |
| Clamp for ball joint connector between spray chamber and torch, 7900 ICP-MS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Used to secure ball joint connectors on spray chamber, connector tube and torch.<br>For 7800/7900 ICP-MS |       | G8400-60327                  |                  |
| Tygon tubing, 3 m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | For drain to drain tank                                                                                  |       | G3280-60077                  | G3280-60077      |
| Organic solvent introduction kit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                          |       |                              |                  |
| Replaces the standard quartz torch, sample introduction and drain parts with those suitable for analysis of volatile organic solvents. Includes quartz torch with 1.5 mm id injector (1.0 mm id torch is not supplied, but is available for volatile organics), sample tubing with guide (0.15 mm id, 70 cm, 5/pk and 0.2 mm id, 70 cm, 5/pk), sample tubing (0.3 mm id, 3 m) peristaltic pump tubing for drain (30/pk) and organic solvent warning label. Requires, but does not include a quartz concentric nebulizer and an option gas line for O <sub>2</sub> /Ar nebulizer* gas addition (p/n G4920A). A Pt sampling cone is also required, when O <sub>2</sub> nebulizer* gas is added. |                                                                                                          |       | G3280-60580                  |                  |

\*The term "carrier gas" has been replaced with "nebulizer gas" for ICP-MS (from July 2017)

## PFA Inert Sample Introduction Kit Supplies

The PFA inert sample introduction kits replace the standard quartz sample introduction parts with those suitable for the analysis of high purity and HF samples. Kit includes end cap (PFA), spray chamber (PFA), connecting pipe, demountable torch with PFA base, and torch injector (either Pt or sapphire). The kit with the sapphire injector is recommended for volatile organic solvents. The kit with the Pt injector is recommended for semiconductor applications. Requires but does not include a nebulizer. The PFA nebulizer is recommended and should be ordered separately.

### PP Inert Sample Introduction Kit Supplies for 7500 Series

| Description                                  | 7500 Part No. |
|----------------------------------------------|---------------|
| Spray chamber, polypropylene (sapphire tube) | G1833-65463   |
| Inert torch, quartz, without injector        | G1833-65422   |
| Platinum injector for inert torch, 2.5 mm id | G1833-65415   |
| Platinum injector for inert torch, 2.0 mm id | G1833-65409   |
| Platinum injector for inert torch, 1.5 mm id | G1833-65416   |



PFA inert kit, sapphire, 2.5 mm id, G4912-68000



Connector tube with gas port, G4912-80016

### PFA Inert Sample Introduction Kit Supplies

| Description                                                                  | Comments           | 77/78/79/88/8900 Part No. | 7500 Part No. |
|------------------------------------------------------------------------------|--------------------|---------------------------|---------------|
| PFA inert kit, sapphire, 2.5 mm id                                           | Torch included     | G4912-68000               |               |
| PFA inert kit, platinum, 2.5 mm id                                           | Torch included     | G4912-68001               |               |
| PFA inert kit, sapphire, 1.5 mm id                                           | Torch included     | G4912-68002               |               |
| PFA inert kit, platinum, 1.5 mm id                                           | Torch included     | G4912-68003               |               |
| Inert sample introduction kit, sapphire, 2.5 mm id                           | Torch not included |                           | G3285-80014   |
| Inert sample introduction kit, platinum, 2.5 mm id                           | Torch not included |                           | G3285-80015   |
| Inert sample introduction kit, sapphire, with O <sub>2</sub> port, 1.5 mm id | Torch not included |                           | G3285-80016   |
| Inert sample introduction kit, platinum, with O <sub>2</sub> port, 1.5 mm id | Torch not included |                           | G3285-80017   |
| End cap                                                                      |                    | G3285-80020               | G3285-80020   |
| Spray chamber                                                                |                    | G3285-80021               | G3285-80021   |
| Tube, drain, PFA                                                             |                    | G4912-80014               | G3285-80022   |
| Short connector tube                                                         | No gas port        |                           | G3285-80023   |
| Long connector tube                                                          | No gas port        | G3285-80024               |               |
| Connector tube with gas port                                                 |                    | G4912-80016               |               |

(Continued)

**PFA Inert Sample Introduction Kit Supplies**

| <b>Description</b>                                                         | <b>Comments</b> | <b>77/78/79/88/8900<br/>Part No.</b> | <b>7500<br/>Part No.</b> |
|----------------------------------------------------------------------------|-----------------|--------------------------------------|--------------------------|
| O-ring for injection assembly                                              |                 | G3285-80085                          | G3285-80085              |
| Injector, sapphire, for PFA inert kit, 2.5 mm id injector                  |                 | G3285-80034                          | G3285-80034              |
| Injector, platinum, for PFA, 2.5 mm id                                     |                 | G3285-80035                          | G3285-80035              |
| Injector, sapphire, for inert torch, 1.5 mm id                             |                 | G4912-80010                          |                          |
| Injector, sapphire, for PFA inert kit, with O <sub>2</sub> port, 1.5 mm id |                 |                                      | G3285-80036              |
| Injector, platinum, for PFA inert kit, with O <sub>2</sub> port, 1.5 mm id |                 |                                      | G3285-80037              |
| Injector, platinum, for inert torch, 1.5 mm id                             |                 | G4912-80011                          |                          |
| Torch for PFA inert kit                                                    |                 | G4912-80012                          | G4912-80012              |
| Demountable torch                                                          | No injector     | G4912-80013                          | G4912-80013              |

**Note:** PFA = perfluoroalkoxy

**HMI Kit Supplies for 7500**

| <b>Description</b>                               | <b>Part No.</b> |
|--------------------------------------------------|-----------------|
| Plug for make-up gas connector                   | G3270-20067     |
| Inner sleeve                                     | 5022-1703       |
| Gas connector                                    | 5042-4774       |
| End cap assembly                                 | G3270-60207     |
| Connector rod, oxygen                            | G3270-80026     |
| Torch, 2.5 mm, 2 projections                     | G3270-80043     |
| Quartz connector tube with dilution port for HMI | G3270-80024     |
| Quartz connector tube (straight)                 | G3270-80025     |
| Connector rod, oxygen                            | G3270-80026     |

## Torches and Components

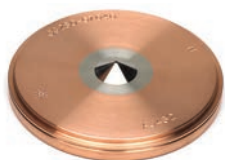
### Torches and Components

| Description                                                                 | Use                                                                                                     | 77/78/79/88/8900<br>Part No. | 7500<br>Part No. |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------|------------------|
| Torch, quartz, 2.5 mm id                                                    | Standard torch for most applications<br>Not suitable for samples containing hydrofluoric acid           | G3280-80053                  | G3270-80043      |
| Torch, quartz, 1.5 mm id, taper type                                        | For use with organic solvents.<br>Not suitable for samples containing hydrofluoric acid                 | G3280-80080                  | G1833-65424      |
| Torch, quartz, 1.0 mm id, taper type                                        | For use with organic solvents<br>Not suitable for samples containing hydrofluoric acid                  | G3280-80081                  | G1833-65425      |
| Shield plate, long-life                                                     | Use with the bonnet                                                                                     | G1833-65419                  | G1833-65419      |
| Bonnet (quartz ring for shield torch)                                       | Use with shield plate (p/n G1833-65419)                                                                 | G1833-65421                  | G1833-65421      |
| Quartz connector tube (straight)                                            | For use with UHMI spray chamber (pn G8400-67150) or without HMI capability                              | G3270-80025                  | G3270-80025      |
| Quartz connector tube with dilution port for HMI                            | For use with HMI capability for addition of dilution gas                                                | G3270-80024                  | G3270-80024      |
| Blank plug for UHMI dilution port, PTFE, 8900                               |                                                                                                         | G3666-20391                  |                  |
| Clamps for ball joint connector between spray chamber and torch             | Used to secure ball joint connectors on spray chamber, connector tube and torch                         | G1833-65430                  | G1833-65430      |
| Clamp for ball joint connector between spray chamber and torch, 7900 ICP-MS | Used to secure ball joint connectors on spray chamber, connector tube and torch. For 7800/7900 and 8900 | G8400-60327                  |                  |
| RF coil for 7700/8800 ICP-MS                                                |                                                                                                         | G3280-60638                  | G1833-65432      |
| Alignment plate for RF coil                                                 |                                                                                                         | G1833-66011                  | G1833-66011      |
| RF coil for 7900/8900 ICP-MS                                                |                                                                                                         | G8400-60434                  |                  |

**Note:** See PFA Inert Sample Introduction Kit Supplies table for the torch for inert kit on **Page 87, 88**.

### TIPS AND TOOLS

The torch must be completely dried before installing and igniting the plasma. Replace if chipped, cracked, or distorted.



Sampling cone, nickel,  
G3280-67040



Platinum sampling cone,  
G3280-67036

## Interface Cones and Ion Lenses

### Sampling Cones

Suits 77/78/7900 and 88/8900 series

| Description                                                   | Part No.    |
|---------------------------------------------------------------|-------------|
| Nickel (standard for x-lens, Ni tip with Cu base)             | G3280-67040 |
| Nickel-plated (Ni tip with Ni-plated Cu base)                 | G3280-67061 |
| Platinum (standard for s-lens / semicon, Pt tip with Cu base) | G3280-67036 |
| Platinum large insert (18 mm, Pt tip with Cu base)            | G3280-67056 |

## Cone Care Packages

### Suits 77/78/7900 and 8900 series

| Description                             | Kit Contents                                                                                                                                                                                 | Part No.  |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Nickel sampler cone care package        | Includes magnifier tool (5190-9614), graphite gasket for sampling cone, 3/pk (G3280-67009), cotton swabs for cleaning, 100/pk (9300-2574), and two nickel sampler cones (G3280-67040)        | 5067-0294 |
| Nickel plated sampler cone care package | Includes magnifier tool (5190-9614), graphite gasket for sampling cone, 3/pk (G3280-67009), cotton swabs for cleaning, 100/pk (9300-2574), and two nickel-plated sampler cones (G3280-67061) | 5067-0295 |
| Platinum sampler cone care package      | Includes magnifier tool (5190-9614), graphite gasket for sampling cone, 3/pk (G3280-67009), cotton swabs for cleaning, 100/pk (9300-2574), and two platinum sampler cones (G3280-67036)      | 5067-0296 |

**Note:** Cone care packages do not include skimmer cones. Please add the appropriate skimmer cone type and quantity required to your order using **Skimmer Cones** table.



Nickel sampler cone care package 5067-0294



Nickel plated sampler cone care package 5067-0295



Platinum sampler cone care package 5067-0296

## Skimmer Cones

### Selection by ion lens configuration and ICP-MS series

| Description                | x-lens              |             | s-lens (semicon) |             |
|----------------------------|---------------------|-------------|------------------|-------------|
|                            | 7700 (+e)/7800/8800 | 7900/8900   | 7700/7900/8800   | 8900        |
| Nickel                     | G3280-67041         | G8400-67200 | G3280-67066      | G3666-67421 |
| Platinum, with copper base | G3280-67060         | G8400-67201 | G3280-67064      | G3666-67401 |
| Platinum, with nickel base | G3280-67063         | G8400-67202 | G3280-67065      | G3666-67411 |

**Note:** Shaded cells denote standard configuration

## Skimmer Bases

### Selection first by ion lens configuration and ICP-MS series, then by the Interface cone material (Nickel, Ni or Platinum, Pt)

| Description                         | x-lens              |             |             | s-lens (semicon) |             |             |
|-------------------------------------|---------------------|-------------|-------------|------------------|-------------|-------------|
|                                     | 7700 (+e)/7800/8800 | 7900        | 8900        | 7900             | 7700/8800   | 8900        |
| Stainless steel (use with Ni cones) | G3280-60608         | G8400-60624 | G3666-60301 | G8400-60627      | G1833-65591 | -           |
| Brass (use with Pt cones)           | G3280-60621         | G8400-60625 | G3666-60311 | G8400-60626      | G1833-65590 | G3666-60401 |

**Note:** Shaded cells denote standard configuration

## TIPS AND TOOLS

If you plan to do cool plasma measurements using your ICP-MS, you should have s-lenses (semiconductor) fitted to your interface.

**Interface Cones For Specialist Applications**

| <b>Description</b>                                                            | <b>Part No.</b> |
|-------------------------------------------------------------------------------|-----------------|
| Copper skimmer cone, for 7700/7900/8800 with s-lens / semicon configuration   | G3280-67067     |
| Copper skimmer cone, for 8900 with semicon configuration                      | G3666-67067     |
| Brass off-set skimmer base, for 7700/8800 with s-lens / semicon configuration | G3280-60381     |
| Brass off-set skimmer base, for 7900 with s-lens / semicon configuration      | G8400-60628     |

**Interface cones, for 8900 fitted with m-lens**

|                                         |             |
|-----------------------------------------|-------------|
| Sampling cone, platinum                 | G3280-67036 |
| Skimmer cone, platinum with nickel base | G3666-67501 |
| Skimmer base, brass                     | G3666-60401 |

**Interface cones, for 8900 fitted with c-lens**

|                                         |             |
|-----------------------------------------|-------------|
| Sampling cone, platinum                 | G3280-67036 |
| Skimmer cone, platinum with copper base | G3280-67064 |
| Skimmer base, brass                     | G3666-60601 |



Skimmer cone, nickel, G3280-67041



Platinum skimmer cone, G3280-67060



Skimmer base, stainless steel, G3280-60608

### Recommendations on What Cone to Use

| Type of Cone                      | For which Model ICP-MS?                                                                                            | Skimmer Base Required | Recommended Applications                                                                                                                                                                                                                                                                                    |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nickel sample and skimmer cones   | Standard on 7500a/i/c/ce/cx, 7700x/e, 7800/7900, and 8800/8900 with x-lens                                         | Stainless steel       | Suitable for most common applications. Provides most economical operation.                                                                                                                                                                                                                                  |
| Nickel plated sampling cone       | Optional for all 77/78/7900 and 88/8900 models                                                                     | Stainless steel       | For samples containing > 0.5 % HCl, or for routine operation with (U)HMI with maximum aerosol dilution ratio.                                                                                                                                                                                               |
| Platinum sample cone              | Standard on 7500s/cs, 7700s, 7900 with s-lens, and 8800/8900 semicon configuration. Optional for all other models. | Brass                 | Required for analysis of aggressive acids (especially HF) and when O <sub>2</sub> /Ar option gas is used for analysis of organic solvents. Use sample cone with larger 18 mm insert for high viscosity and high boiling point acids e.g. H <sub>2</sub> SO <sub>4</sub> or H <sub>3</sub> PO <sub>4</sub> . |
| Platinum skimmer with copper base | Standard on 7700s, 7900s, 8800/8900 semicon configuration, and 8900c                                               | Brass                 | Recommended for the lowest LODs and for higher matrix samples. Required for analysis of aggressive acids (especially HF).                                                                                                                                                                                   |
| Platinum skimmer with nickel base | Standard on 8900m                                                                                                  | Brass                 | Recommended for organics analysis when O <sub>2</sub> /Ar option gas is used                                                                                                                                                                                                                                |

### TIPS AND TOOLS

Did you know you can save money and help the environment by returning your used Agilent platinum ICP-MS cones? Find out more about the trade-in credits on used Pt cones for the 7500/7700/7800/7900 and 8800/8900 ICP-MS at [www.agilent.com/chem/ptcone](http://www.agilent.com/chem/ptcone)

## Interface Cone Guide for Agilent 7500 Series

| Description                              | Part No.    | 7500a  | 7500i  | 7500s  | 7500c | 7500ce/cx | 7500cs | T-mode |
|------------------------------------------|-------------|--------|--------|--------|-------|-----------|--------|--------|
| <b>Sampling Cone</b>                     |             |        |        |        |       |           |        |        |
| Nickel sampling cone                     | G1820-65238 | Std    | Std    | ✓      | Std   | Std       | ✓      |        |
| Platinum sampling cone, 10 mm insert     | G1820-65239 | ✓      | ✓      | Std    | ✓     | ✓         | Std    |        |
| Platinum sampling cone, 18 mm insert     | G1820-65360 | ✓      | ✓      | ✓      | ✓     | ✓         | ✓      |        |
| Nickel sampling cone, for T-mode         | G1820-65480 | T-mode | T-mode | T-mode |       |           |        | ✓      |
| <b>Skimmer Cone</b>                      |             |        |        |        |       |           |        |        |
| Nickel skimmer cone                      | G1820-65050 | Std    | Std    | ✓      |       |           |        |        |
| Nickel skimmer cone                      | G3270-65024 |        |        |        |       | Std       |        |        |
| Nickel skimmer cone                      | G1833-65497 |        |        |        | Std   |           | ✓      |        |
| Platinum skimmer cone                    | G1820-65237 | ✓      | ✓      | Std    |       |           |        |        |
| Platinum skimmer cone                    | G1833-65092 |        |        |        | ✓     |           |        |        |
| Platinum skimmer cone                    | G1833-65132 |        |        |        |       |           | Std    |        |
| Platinum skimmer cone (Ni base)          | G3270-60106 |        |        |        |       | ✓         | ✓      |        |
| Copper skimmer cone                      | G3270-60643 |        |        |        |       |           | ✓      |        |
| Nickel skimmer cone, for T-mode          | G1820-65481 | T-mode | T-mode | T-mode |       |           |        | ✓      |
| <b>Skimmer Base</b>                      |             |        |        |        |       |           |        |        |
| Stainless steel base, for nickel skimmer | G1833-65407 | Std    | Std    | ✓      |       |           |        | ✓      |
| Stainless steel base, for nickel skimmer | G1833-65591 |        |        |        |       | Std       | ✓      |        |
| Stainless steel base, for nickel skimmer | G1833-65498 |        |        |        | Std   |           |        |        |
| Brass base, for platinum skimmer         | G1833-65408 | ✓      | ✓      | Std    |       |           |        |        |
| Brass base, for platinum skimmer         | G1833-65505 |        |        |        | ✓     |           |        |        |
| Brass base, for platinum skimmer         | G1833-65590 |        |        |        |       | ✓         | Std    |        |

## Key

✓: Compatible part

Std: Fitted as standard when instrument shipped from factory

## NOTES:

- 18 mm Pt cone insert is recommended for measuring H<sub>2</sub>SO<sub>4</sub> above 2 %
- Pt T-mode cones are not available
- T-mode is not used with ORS models



Interface wrench for sampling cone,  
G3280-01507



Retaining ring for sampling cone,  
G3280-20504



Magnifier for checking the ICP-MS  
cone orifice, 5190-9614

### Sampling and Skimmer Cone Supplies

| Description                                                                                                         | 77/79/88/8900<br>Part No. | 7500<br>Part No. |
|---------------------------------------------------------------------------------------------------------------------|---------------------------|------------------|
| Interface wrench for sampling cone removal                                                                          | G3280-01507               | G1833-65405      |
| Retaining ring for sampling cone                                                                                    | G3280-20504               |                  |
| Graphite gasket for sampling cone, 3/pk                                                                             | G3280-67009               |                  |
| Interface wrench for skimmer cone removal                                                                           | G3280-60502               | G1833-65079      |
| Screws for skimmer base, 4/pk                                                                                       | G1820-65435               | G1820-65435      |
| Cone cleaning detergent, 1 gallon                                                                                   | 5188-5359                 | 5188-5359        |
| Alumina powder, abrasive, 1 kg                                                                                      | 8660-0791                 | 8660-0791        |
| Cotton swab, ultra-fine cone bud shape, both ends, 100/pk                                                           | 9300-2574                 | 9300-2574        |
| O-ring for sampling cone, FPM                                                                                       |                           | G1820-65025      |
| Magnifier, for checking the ICP-MS cone orifice, 10 x magnification, with LED lighting and +/- 15 mm scaled reticle | 5190-9614                 | 5190-9614        |

### Ion lens System Components for 7900

| Description                      | Part No.    |
|----------------------------------|-------------|
| <b>7900 with x-lens</b>          |             |
| Extraction-omega lens assembly   | G8400-67001 |
| Extraction lens 1                | G8400-60215 |
| Extraction lens 2                | G8400-60216 |
| Omega bias lens                  | G8400-00240 |
| Omega lens                       | G8400-60217 |
| Screw and spacer kit for x-lens  | G8400-67003 |
| <b>7900 with s-lens</b>          |             |
| Extraction-omega lens assembly   | G8400-67002 |
| Extraction lens 1                | G8400-60218 |
| Extraction lens 2                | G8400-60219 |
| Omega bias lens                  | G3280-20646 |
| Omega lens                       | G3280-20653 |
| Screw and spacer kit, for s-lens | G3280-67038 |

**Ion Lens System Components for 8900**

| <b>Description</b>                                                    | <b>Part No.</b> |
|-----------------------------------------------------------------------|-----------------|
| <b>8900 with x-lens</b>                                               |                 |
| Extraction-Omega lens assembly                                        | G3666-67300     |
| Extraction lens 1                                                     | G3666-60302     |
| Extraction lens 2                                                     | G3666-60303     |
| Omega lens                                                            | G8400-60217     |
| Omega bias lens                                                       | G8400-00240     |
| Screw and spacer kit                                                  | G8400-67003     |
| <b>8900 with semicon</b>                                              |                 |
| Extraction-Omega lens assembly, for s-lens                            | G3666-67400     |
| Extraction-Omega lens assembly, for m-lens                            | G3666-67500     |
| Extraction-Omega lens assembly, for c-lens                            | G3666-67600     |
| Extraction lens 1, for s/c-lens                                       | G3666-60402     |
| Extraction lens 1, for m-lens                                         | G3666-60502     |
| Extraction lens 2, for s/c-lens                                       | G3666-60403     |
| Extraction lens 2, for m-lens                                         | G3666-60503     |
| Omega lens, for s/m/c-lens                                            | G3666-20404     |
| Omega bias lens, for s/m/c-lens                                       | G3666-20405     |
| Screw and spacer kit, for s/m/c-lens                                  | G3666-67038     |
| <b>Octopole Reaction System (ORS)</b>                                 |                 |
| Octopole assembly, for 8900 with axial accelerator                    | G3666-67045     |
| Octopole assembly, for 8900 without axial accelerator                 | G3666-67046     |
| Reaction cell (ORS cell) assembly, for 8900 with axial accelerator    | G3666-67141     |
| Reaction cell (ORS cell) assembly, for 8900 without axial accelerator | G3666-67142     |
| Cell entrance lens, for 8900                                          | G3666-20394     |
| Cell exit lens, for 8900                                              | G3666-20396     |
| Cell focus lens, for 8900                                             | G3666-20395     |
| Screw/Spacer/O-ring, for reaction cell for 8900                       | G3666-67044     |



Extraction-offset lens assembly, G3280-67039

**Ion Lens System Components for 7700/8800 Series**

| Description                                      | Part No.    |
|--------------------------------------------------|-------------|
| <b>7700x/e and 8800</b>                          |             |
| Extraction-offset lens assembly                  | G3280-67039 |
| Extraction lens 1                                | G3280-60612 |
| Extraction lens 2                                | G3280-60613 |
| Omega bias lens                                  | G3280-01650 |
| Omega lens                                       | G3280-60609 |
| Screw and spacer kit for x-lens                  | G3280-67037 |
| Spacer (deflect/plated b), 4/pk                  | G3280-67110 |
| <b>7700s and 8800 semicon configuration</b>      |             |
| Extraction-omega lens assembly                   | G3280-67035 |
| Extraction lens 1                                | G1833-65592 |
| Extraction lens 2                                | G1833-65593 |
| Omega bias lens                                  | G3280-20646 |
| Omega lens                                       | G3280-20653 |
| Screw and spacer kit, for s-lens                 | G3280-67038 |
| <b>Octopole Reaction System (ORS)</b>            |             |
| Octopole Reaction System (ORS) cell assembly     | G8400-67701 |
| Octopole                                         | G3280-67045 |
| Cell focus lens                                  | G3280-20633 |
| Cell entrance lens                               | G3280-20618 |
| Cell exit lens                                   | G3280-20664 |
| Tubing for cell gas                              | G3280-20663 |
| Deflect lens                                     | G3280-20628 |
| Plate bias                                       | G3280-60615 |
| Polishing paper kit                              | G1833-65404 |
| Manual vent valve, includes O-ring, for 77/79/88 | G3280-67046 |
| Offset skimmer tool                              | G3280-60671 |
| Screw/spacer/O-ring for cell                     | G3280-67044 |

**Ion lens System Components for 7500 Series**

| Description                                                    | Part No.    |
|----------------------------------------------------------------|-------------|
| <b>7500a/i/s/c/cs</b>                                          |             |
| Plate bias (for Eagle Q-pole)                                  | G1833-65494 |
| Plate bias (for Slim ring Q-pole)                              | G1833-65444 |
| Polishing paper kit                                            | G1833-65404 |
| <b>7500a/i/s</b>                                               |             |
| Extraction lens 1                                              | G1833-65417 |
| Extraction lens 2                                              | G1833-65413 |
| Omega lens assembly                                            | G1833-65418 |
| Screw kit, for extraction lens                                 | G1833-65024 |
| Screw kit, for omega lens                                      | G1833-65025 |
| <b>7500c</b>                                                   |             |
| Einzel lens 1                                                  | G1833-65500 |
| Einzel lens 2                                                  | G1833-65501 |
| Einzel lens 3                                                  | G1833-65502 |
| Extraction lens                                                | G1833-65499 |
| Octopole                                                       | G1833-65094 |
| Octopole assembly (includes cell entrance/exit without O-ring) | G1833-65503 |
| Screw and spacer kit, for extraction Einzel lens               | G1833-65578 |
| Screw kit, for reaction cell                                   | G1833-65088 |
| Tubing, for reaction gas, 2/pk                                 | G1833-65089 |
| <b>7500ce/cx</b>                                               |             |
| O-ring for reaction cell                                       | G1833-66035 |
| Extraction-Omega lens assembly                                 | G3270-65023 |
| Extraction lens 1                                              | G3270-65028 |
| Extraction lens 2                                              | G3270-65029 |
| Omega lens                                                     | G3270-65030 |
| Omega bias lens                                                | G3270-65031 |
| Screw and spacer kit                                           | G3270-60639 |

(Continued)



Extraction lens 1, G1833-65417



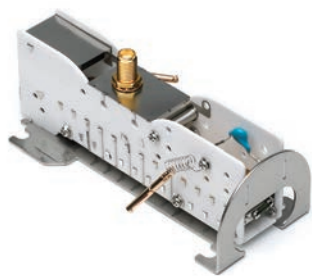
Extraction lens 2, G1833-65413

**Ion lens System Components for 7500 Series**

| <b>Description</b>                                                        | <b>Part No.</b> |
|---------------------------------------------------------------------------|-----------------|
| <b>7500cs</b>                                                             |                 |
| Extraction lens 1                                                         | G1833-65592     |
| Extraction lens 2                                                         | G1833-65593     |
| Extraction-Omega lenses assembly                                          | G1833-65596     |
| Omega bias lens                                                           | G1833-65594     |
| Omega lens                                                                | G1833-65595     |
| Screw and spacer kit, for ion lens                                        | G1833-65125     |
| Cell entrance lens                                                        | G1833-65598     |
| Cell exit lens                                                            | G1833-66000     |
| Cell focus lens                                                           | G1833-65597     |
| <b>7500cs/ce/cx</b>                                                       |                 |
| Focus lens for Q-pole                                                     | G1833-65599     |
| Octopole                                                                  | G1833-65133     |
| Octopole assembly (includes cell focus, cell entrance/exit, and QP focus) | G1833-65134     |
| Reaction cell assembly                                                    | G1833-66001     |
| Screw and spacer kit, for reaction cell                                   | G1833-65138     |
| Plate bias                                                                | G1833-65513     |
| Plate bias                                                                | G1833-65562     |

**Electron Multipliers**

| <b>Description</b>        | <b>8900 Part No.</b> | <b>8800 Part No.</b> | <b>78/7900 Part No.</b> | <b>7700 Part No.</b> | <b>7500 Part No.</b> |
|---------------------------|----------------------|----------------------|-------------------------|----------------------|----------------------|
| Electron multiplier (ETP) |                      |                      |                         |                      | 5184-1983            |
| Electron multiplier (HPK) |                      |                      |                         |                      | G1833-65575          |
| Electron multiplier       | 5190-0154            | 5190-0123            | G8400-60258             | 5190-0108            |                      |



Electron multiplier, 5190-0108

## Vacuum System Supplies

- When plasma is on, check pump oil level every month
- Maintain oil level between maximum and minimum levels on the gauge
- Standard frequency for changing the oil is approximately every six months

### Vacuum System Supplies

| Description                                                            | Unit  | 78/79/8900<br>Part No. | 7700/8800<br>Part No. | 7500<br>Part No. |
|------------------------------------------------------------------------|-------|------------------------|-----------------------|------------------|
| Pump oil, for MS40+, AVF Platinum*                                     | 1 L   | X3760-64004            |                       |                  |
| Foreline pump (rotary pump) oil, AVF Gold**                            | 1 gal |                        | 6040-0798             | 6040-0798        |
| Foreline pump (rotary pump) oil, AVF Gold**                            | 1 L   |                        | 6040-0834             | 6040-0834        |
| Foreline pump fluid, Fomblin 06/6, recommended for strong acid samples | 2 kg  |                        | 5069-4478             |                  |
| Oil mist filter element, for DS402 rotary vane pump                    |       |                        | 9499342M002           |                  |
| Oil mist filter kit, for DS402 rotary vane pump                        |       |                        | 9499392M004           |                  |
| Remote drain oil kit, for DS402 rotary vane pump                       |       |                        | 9499375M003           |                  |
| DS oil return system kit                                               |       |                        | 9499376               | 9499376          |
| Oil mist filter element, for E2M18                                     |       |                        | 1535-4970             | 1535-4970        |
| Oil mist filter element, for MS40+                                     |       | G1960-80039            |                       |                  |
| Odor element, for oil mist filter for E2M18                            | 5/pk  |                        | 5063-9153             | 5063-9153        |
| Oil mist filter kit, for E1M18/E2M28                                   |       |                        | 3162-1056             | 3162-1056        |
| Electrode kit, for penning gauge for 7500                              |       |                        |                       | G1833-65332      |
| Tube AIM gauge, for 7500                                               |       |                        |                       | 5042-0901        |
| O-rings, for vent valve, FPM                                           | 2/pk  | G1833-65332            | G1833-65332           |                  |
| O-ring, for vacuum chamber, FPM                                        |       | 5042-4790              | 5042-4790             |                  |
| Manual vent valve, includes O-ring, for 77/79/88                       |       | G3280-67046            | G3280-67046           |                  |

\* "AVF Platinum" was formerly termed "AVF 60 SHCE". The chemical composition of the oil is exactly the same and the part number is unchanged.

\*\* "AVF Gold" was formerly termed "Inland 45". The chemical composition of the oil is exactly the same and the part numbers are unchanged.

## WARNINGS AND CAUTION

### DO NOT TOUCH THE OIL WITH BARE HANDS

Be careful when changing oil because it may have absorbed dangerous substances.  
The oil in the foreline pump (rotary pump) on the interface side of an ICP-MS equipped with a hydrofluoric acid resistant introduction system is especially hazardous.



Integrated Sample Introduction System

## Peripherals Supplies

The Agilent Integrated Sample Introduction System (ISIS) provides the highest sample throughput, using either high-speed uptake with constant flow nebulization or discrete sampling using a six-port valve and sample loop with time-resolved acquisition. This allows for advanced sample handling and sample delivery options for advanced applications. The system also simplifies handling of high matrix samples by reducing interface exposure to sample matrix. This means less signal drift and improved precision plus less frequent cone cleaning.

### Integrated Sample Introduction System (ISIS) Supplies

| Description                                                                                                                                                                             | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Unit  | 7700/8800<br>Part No. | 7500<br>Part No. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------------|------------------|
| Comprehensive spares for the Integrated Sample Introduction System<br>A complete set of spare sample lines and connectors, plus fittings, mixing coil, block adapters, clamps, and tray | Includes sample tubing (0.5 mm id x 5 m, 0.3 mm id x 3 m, 2.0 mm id x 5 m, 0.8 mm id x 5 m), peristaltic pump tubing (0.89 mm id, 3 stoppers, Tygon, 12/pk), peristaltic pump tubing (flared end, Tygon, 2 stoppers (blue/orange), 0.25 mm id, 12/pk), peristaltic pump tubing (1.02 mm id, 2 stoppers, Tygon, 12/pk), tubing adapter 2/pk, tag for tubing identification (two lots of 10/pk), T-joint, cross joint, union joint, PTFE nut for 3 mm od tubing (10/pk), front and back ferrules for 3 mm od tubing (10/pk), PTFE nut for 1.6 mm od tubing (10/pk), front and back ferrules for 1.6 mm od tubing (10/pk), tubing clamp (small, 10/pk, large, 5/pk), and spiral tubing, 5 m |       | G4911-67001           |                  |
| Preconfigured tubing kit, for autodilution                                                                                                                                              | Includes set of sample lines and connectors for autodilution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       | G4911-68201           |                  |
| Preconfigured tubing kit, for discrete sampling                                                                                                                                         | Includes set of sample lines and connectors for discrete sampling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       | G4911-68202           | G3138-65025      |
| Peristaltic pump tubing, Tygon                                                                                                                                                          | 0.89 mm id, 3 stops                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 12/pk | 5064-8014             | 5064-8014        |
| Peristaltic pump tubing                                                                                                                                                                 | 0.25 mm id, 2 stops, flared end                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 12/pk | G4911-67000           | G4911-67000      |
| Peristaltic pump tubing, Tygon                                                                                                                                                          | 0.25 mm id, 3 stops                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 12/pk |                       | 5064-8034        |
| Peristaltic pump tubing, Tygon                                                                                                                                                          | 0.25 mm id, 2 stops                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 12/pk |                       | 5064-8015        |
| Peristaltic pump tubing, Tygon                                                                                                                                                          | 1.02 mm id, 2 stops                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 12/pk | 5064-8028             | 5064-8028        |
| Peristaltic pump tubing, Tygon                                                                                                                                                          | 2.29 mm id, 2 stops                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 12/pk | 5043-0010             | 5043-0010        |
| Peristaltic pump tubing adapter                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2/pk  | 5064-8026             | 5064-8026        |
| Peristaltic pump tubing adapter                                                                                                                                                         | 2.29 mm id                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       | G4911-20021           |                  |
| Sample tubing, PTFE                                                                                                                                                                     | 0.8 mm id, 1.6 mm od                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |       | 5064-8016             | 5064-8016        |
| Sample tubing, PTFE                                                                                                                                                                     | 2 mm id, 3 mm od                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       | 5064-8020             | 5064-8020        |
| Sample tubing, PFA                                                                                                                                                                      | 0.5 mm id, 1.6 mm od, 5 m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1/pk  |                       | G1820-65105      |
| Internal standard tubing, PFA                                                                                                                                                           | 0.3 mm id, 1.6 mm od, 3 m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1/pk  |                       | G1820-65478      |
| T-joint                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       | 5064-8017             | 5064-8017        |
| T-joint, with earth block                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       | G3280-67062           |                  |
| Cross joint                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       | 5064-8018             | 5064-8018        |
| Union joint                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       | 5064-8019             | 5064-8019        |

(Continued)

**Integrated Sample Introduction System (ISIS) Supplies**

| <b>Description</b>                                           | <b>Comments</b>      | <b>Unit</b> | <b>7700/8800<br/>Part No.</b> | <b>7500<br/>Part No.</b> |
|--------------------------------------------------------------|----------------------|-------------|-------------------------------|--------------------------|
| PTFE nut                                                     | For 3 mm od tubing   | 10/pk       | 5064-8021                     | 5064-8021                |
| Ferrule, front and back                                      | For 3 mm od tubing   | 10/pk       | 5064-8022                     | 5064-8022                |
| PTFE nut for cross joint                                     | For 1.6 mm od tubing | 10/pk       | 5064-8023                     | 5064-8023                |
| Ferrule, front and back                                      | For 1.6 mm od tubing | 10/pk       | 5064-8024                     | 5064-8024                |
| Tubing adapter                                               |                      |             |                               | G3138-65158              |
| Tubing clamp                                                 |                      |             | 5064-8027                     | 5064-8027                |
| Spiral tubing, 5 m                                           |                      |             | 5064-8029                     | 5064-8029                |
| Wrench, for valve maintenance                                |                      |             | 5064-8032                     | 5064-8032                |
| Tag, for tubing identification                               |                      | 10/pk       | 5064-8033                     | 5064-8033                |
| APG remote cable                                             |                      |             | 5182-2581                     | 5182-2581                |
| Joint holder                                                 |                      |             |                               | G3138-65102              |
| Joint holder, for nebulizer pump                             |                      |             | G4911-01201                   |                          |
| Joint holder, for Integrated Sample Introduction System pump |                      |             | G3138-65103                   | G3138-65103              |
| Sample line connector                                        |                      |             |                               | G3138-65104              |
| Rotor seal for valve                                         |                      |             | G3138-65117                   | G3138-65117              |
| Nut for valve                                                |                      | 6/pk        | G3138-65118                   | G3138-65118              |
| Ferrule for valve                                            |                      | 6/pk        | G3138-65119                   | G3138-65119              |
| Mixer                                                        |                      |             | G3138-65121                   | G3138-65121              |
| Sample loop, 100 µL                                          |                      |             | G3138-65122                   | G3138-65122              |
| Plastic tray                                                 |                      |             |                               | G3138-65125              |
| Tray, for Integrated Sample Introduction System              |                      |             | G4911-60011                   |                          |



Front and back ferrule, 5064-8024



Separator gas chamber, G3138-65131

**Integrated Sample Introduction System (ISIS) Hydride Generation Accessory Supplies for 77/8800**

| Description                       | Specifications        | Unit | Common Part No. |
|-----------------------------------|-----------------------|------|-----------------|
| Separator gas chamber             |                       |      | G3138-65131     |
| Exclusive concentric nebulizer    |                       |      | G3138-65134     |
| Cyclone chamber                   |                       |      | G3138-65136     |
| Peristaltic pump tubing, PharMed  | 2.54 mm id, 2 stops   | 6/pk | G3138-65128     |
| Tubing for gas line               | 3 mm id, 4 mm od, 5 m |      | G3138-65138     |
| Plug for cross joint              |                       | 3/pk | G3138-65129     |
| Reducing union connector          | 8 x 4 mm              |      | G3138-65144     |
| Reducing union connector          | 6 x 3 mm              |      | G3138-65139     |
| Reducing union connector          | 6 x 4 mm              |      | G3138-65140     |
| Plug for nebulizer* gas connector | 4 mm od               | 3/pk | G3138-65141     |
| Y connector for pump tubing       | 2.5 mm id             | 5/pk | G3138-65143     |

\*The term "carrier gas" has been replaced with "nebulizer gas" for ICP-MS (from July 2017)

## Integrated Sample Introduction System 3 for 7800/7900/8900

The Integrated Sample Introduction System 3 (ISIS 3) dramatically increases the productivity of the Agilent 7800/7900/8900 ICP-MS while also allowing high matrix samples to be run for extended periods of time. With its fast uptake piston pump and close-coupled 7-port valve located close to the nebulizer, the ISIS 3 enables reduced sample uptake and rinse times with discrete sampling (DS). The ISIS 3 delivers unmatched productivity for high sample matrix analysis in high-throughput laboratories.



### Integrated Sample Introduction System 3 (ISIS 3) Supplies

| Description                                                 | Kit Contents                                                    | Unit  | Part No.    |
|-------------------------------------------------------------|-----------------------------------------------------------------|-------|-------------|
| <b>Tubing and Fittings for ISIS 3</b>                       |                                                                 |       |             |
| PFA sample tubing 1.0 mm id, 1/16 inch od, 5 m              |                                                                 |       | G8411-67117 |
| PFA sample tubing 2.18 mm id, 1/8 inch od, 5 m              |                                                                 |       | G8411-67118 |
| Flangeless tube end fitting 1/16 inch                       | Includes polypropylene nut with orange collapsible CTFE ferrule | 5/pk  | 5023-1519   |
| Flangeless tube end fitting 1/16 inch                       | Includes polypropylene nut with purple collapsible CTFE ferrule | 5/pk  | 5023-1520   |
| Flangeless tube end fitting 1/16 inch                       | Includes polypropylene nut with yellow collapsible CTFE ferrule | 5/pk  | 5023-1521   |
| Flangeless tube end fitting 1/16 inch                       | Includes polypropylene nut with white collapsible CTFE ferrule  | 5/pk  | 5023-1522   |
| Flangeless tube end fitting 1/16 inch                       | Includes polypropylene nut with black collapsible CTFE ferrule  | 5/pk  | 5023-1523   |
| Flangeless tube end fitting 1/16 inch                       | Includes polypropylene nut with blue collapsible CTFE ferrule   | 5/pk  | 5023-1524   |
| Flangeless tube end fitting 1/16 inch                       | Includes polypropylene nut with green collapsible CTFE ferrule  | 5/pk  | 5023-1525   |
| Flangeless tube end fitting 1/8 inch                        | Includes polypropylene nut with red collapsible CTFE ferrule    | 5/pk  | 5023-1526   |
| Flangeless tube end fitting 1/8 inch                        | Includes polypropylene nut with black collapsible CTFE ferrule  | 5/pk  | 5023-1527   |
| Replacement collapsible CTFE ferrules, for 1/16 inch tubing |                                                                 | 10/pk | 5043-0054   |
| Replacement collapsible CTFE ferrules, for 1/8 inch tubing  |                                                                 | 10/pk | 5043-0055   |
| Fitting, male to barb, 1/4-28 UNF, 3.2 mm id, PEEK, natural |                                                                 |       | 5023-1517   |
| Preconfigured kit, for discrete sampling with the ISIS 3    | Includes a set of sample lines and connectors                   |       | G8411-68201 |
| <b>ISIS 3 Valve Supplies</b>                                |                                                                 |       |             |
| Rotor seal replacement kit, for ISIS valve                  |                                                                 |       | G8411-67111 |
| ISIS valve assembly kit                                     |                                                                 |       | G8411-67113 |
| Gas tubing kit, for ISIS 3 valve                            |                                                                 | 3/pk  | G8411-67002 |
| ISIS 3-way valve assembly kit                               |                                                                 |       | G8411-67114 |
| Stator, for 7 port, 2 position inject valve                 |                                                                 |       | G8411-80121 |

(Continued)

**Integrated Sample Introduction System 3 (ISIS 3) Supplies**

| Description                            | Kit Contents | Unit | Part No.    |
|----------------------------------------|--------------|------|-------------|
| <b>ISIS 3 Pump Supplies</b>            |              |      |             |
| Piston pump seal replacement kit       |              |      | G8411-67115 |
| Piston pump seal installation tool kit |              |      | G8411-67116 |
| ISIS piston pump                       |              |      | G8411-80115 |
| Nut, PEEK, for ISIS 3 pump             |              | 1/pk | G8411-80119 |

**Parts and Supplies Kits for 7700/7800/7900 and 8800/8900**

| Description                                                                                                                       | Kit Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Part No.    |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Basic consumables kit, for 7700/7900, and 8800 ICP-MS fitted with x-lens, and Edwards E2M18 vacuum pump using AVF Gold* pump oil  | Peristaltic pump tubes for sample, Tygon, 3-stop, white/white, 12/pk (G1833-65569), peristaltic pump tubes for waste, Ismaprene, 3-stop, yellow/blue (G1833-65570), peristaltic pump tubes for internal standard, Tygon, 2-stop, blue/orange, 12/pk (G3280-67047), PFA sample tubing, 0.5 mm id, 1.6 mm od, 5 m (G1820-65105), graphite gaskets for sampling cone, 3/pk (G3280-67009), rough pump oil, AVF Gold*, 1 quart (6040-0834), and torch, quartz, 2.5 mm id (G3280-80053)   | G3280-67003 |
| Basic consumables kit, for 7700/7800/7900, and 8800/8900 ICP-MS fitted with x-lens, and vacuum pump using AVF Platinum** pump oil | Peristaltic pump tubes for sample, Tygon, 3-stop, white/white, 12/pk (G1833-65569), peristaltic pump tubes for waste, Ismaprene, 3-stop, yellow/blue (G1833-65570), peristaltic pump tubes for internal standard, Tygon, 2-stop, blue/orange, 12/pk (G3280-67047), PFA sample tubing, 0.5 mm id, 1.6 mm od, 5 m (G1820-65105), graphite gaskets for sampling cone, 3/pk (G3280-67009), rough pump oil, AVF Platinum** 1 L (X3760-64004), and torch, quartz, 2.5 mm id (G3280-80053) | G3280-67221 |

(Continued)

## Parts and Supplies Kits for 7700/7800/7900 and 8800/8900

| Description                                                                                                                               | Kit Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Part No.    |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Comprehensive spares, for 7700x/e and 8800 ICP-MS fitted with x-lens, and Edwards E2M18 vacuum pump using AVF Gold* pump oil              | Peristaltic pump tubes for sample, Tygon, 3-stop, white/white (2 x 12/pk), peristaltic pump tubes for waste, Ismaprene, 3-stop, yellow/blue, peristaltic pump tubes for internal standard, Tygon, 2-stop, blue/orange (2 x 12/pk), PFA sample tubes, 0.5 mm id, 1.6 mm od, 5 m, sample inlet tubing (0.5 mm id) for MicroMist nebulizer, online internal standard addition kit, drain tube assembly, spray chamber, spray chamber drain tubing, connector tube with dilution port, dilution gas connector, nebulizer*** gas connector, dilution gas port plug, spray chamber clamps (2/pk), nebulizer*** gas tubing, torch with 2.5 mm id injector, long-life shield plate, bonnet for shield torch, plasma/auxiliary gas tubing with inner sleeve, gas line connector, RF coil, graphite gaskets for sampling cone, 3/pk, Ni sampling cones (2/pk), Ni skimmer cones (2/pk), screw and spacer kit for x-lens, screw and spacer O-ring, PTFE tubing for internal reaction gas line, octopole assembly, polishing paper kit for ion lens (5 sheets No. 400+1200), oil mist filter element and rough pump oil, AVF Gold*, 1 quart, 2/pk (6040-0834) | G3280-67004 |
| Comprehensive spares, for 7700s and 8800 semi-conductor ICP-MS fitted with s-lens, and Edwards E2M18 vacuum pump using AVF Gold* pump oil | Peristaltic pump tubes for sample, Tygon, 3-stop, white/white (2 x 12/pk), peristaltic pump tubes for waste, Ismaprene, 3-stop, yellow/blue, peristaltic pump tubes for internal standard, Tygon, 2-stop, blue/orange (2 x 12/pk), PFA sample tubes, 0.5 mm id, 1.6 mm od, 5 m, online internal standard addition kit, drain tube assembly, spray chamber, spray chamber drain tubing, connector tube with dilution port, dilution gas connector, nebulizer*** gas connector, dilution gas port plug, spray chamber clamps (2/pk), nebulizer*** gas tubing, torch with 2.5 mm id injector, long-life shield plate, bonnet for shield torch, plasma/auxiliary gas tubes with inner sleeve, gas line connector, RF coil, graphite gaskets for sampling cone (3/pk), Pt sampling cone, Pt skimmer cone, screw and spacer kit for s-lens, screw and spacer O-ring, PTFE tubing for internal reaction gas line, octopole assembly, polishing paper kit for ion lens (5 sheets No. 400+1200), oil mist filter element, and rough pump oil, AVF Gold*, 1 quart, 2/pk (6040-0834)                                                                         | G3280-67007 |
| Comprehensive spares, for 7700e ICP-MS, and Edwards E2M18 vacuum pump using AVF Gold* pump oil                                            | Peristaltic pump tubes for sample, Tygon, 3-stop, white/white (2 x 12/pk), peristaltic pump tubes for waste, Ismaprene, 3-stop, yellow/blue, peristaltic pump tubes for internal standard, Tygon, 2-stop, blue/orange (2 x 12/pk), PFA sample tubes, 0.5 mm id, 1.6 mm od, 5 m, sample inlet tubing (0.5 mm id) for MicroMist nebulizer, online internal standard addition kit, drain tube assembly, spray chamber, spray chamber drain tubing, connector rod, nebulizer*** gas connector, spray chamber clamps (2/pk), nebulizer* gas tubing, torch with 2.5 mm id injector, long-life shield plate, bonnet for shield torch, plasma/auxiliary gas tubes with inner sleeve, gas line connector, RF coil, graphite gaskets for sampling cone (3/pk), Ni sampling cones (2/pk), Ni skimmer cones (2/pk), screw and spacer kit for x-lens, screw and spacer O-ring, PTFE tubing for internal reaction gas line, octopole assembly, polishing paper kit for ion lens (5 sheets No. 400+1200), oil mist filter element, and rough pump oil, AVF Gold*, 1 quart, 2/pk (6040-0834)                                                                      | G3280-67085 |

\* "AVF Gold" was formerly termed "Inland 45". The chemical composition of the oil is exactly the same and the part numbers are unchanged.

\*\* "AVF Platinum" was formerly termed "AVF 60 SHCE". The chemical composition of the oil is exactly the same and the part number is unchanged.

\*\*\*The term "carrier gas" has been replaced with "nebulizer gas" for ICP-MS (from July 2017)

**Configurable Supplies Kits for 7700/8800 Series**

| Description                                            | Kit Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Part No. |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| For 7700x/e and 8800 ICP-MS systems fitted with x-lens | Peristaltic pump tubes for sample, Tygon, 3-stop, white/white, 2 x 12/pk<br>Peristaltic pump tubes for waste, Ismaprene, 3-stop, yellow/blue, 2 x 12/pk<br>Peristaltic pump tubes for internal standard, Tygon, 2-stop, blue/orange, 12/pk<br>PFA sample tubing, 0.5 mm id, 1.6 mm od, 5 m<br>EzyFit sample inlet, 0.5 mm id, 10/pk<br>Online internal standard addition kit<br>Drain tubing assembly<br>Spray chamber<br>Tubing for drainage, 4.0 mm id, 2.5 m<br>Quartz connector tube with dilution port<br>Gas connector for dilution gas port<br>Nebulizer EzyLok gas connector<br>Plug for dilution port, 4 mm<br>Clamps for spray chamber, 2/pk<br>Nebulizer/make-up/dilution gas tubing<br>Torch, quartz, 2.5 mm id<br>Long-life Pt shield plate<br>Bonnet for shield torch<br>Plasma/auxiliary gas tubing with inner sleeve<br>Connectors for plasma/auxiliary gas<br>RF coil<br>Graphite gaskets for sampling cone, 3/pk<br>Screw and spacer kit for x-lens<br>Screw/spacer/O-ring for cell<br>PTFE tubing for reaction cell gas<br>Octopole assembly<br>Polishing paper kit for ion lens, 5 sheets, No. 400+1200 | G3690A   |

**Then select your preferred skimmer and sampling cones, and oil/filter to suit your application needs by adding one each from the three following options.**

**Option One - Select your sampling cone**

| Part No.   | Description                                |
|------------|--------------------------------------------|
| G3690A#100 | Adds Ni sampling cone (G3280-67040)        |
| G3690A#101 | Adds Ni plated sampling cone (G3280-67061) |
| G3690A#102 | Adds Pt sampling cone (G3280-67036)        |

**Option Two - Select your skimmer cone**

| Part No.   | Description                          |
|------------|--------------------------------------|
| G3690A#200 | Adds Ni skimmer cone (G3280-67041)   |
| G3690A#201 | Adds Pt sampling cone (G3280-67060)* |

**Option Three - Select the oil/filter element for your vacuum pump**

| Part No.   | Description                                                                                                               |
|------------|---------------------------------------------------------------------------------------------------------------------------|
| G3690A#300 | Adds 2 x Quart AVF Gold** oil, 1 L, (6040-0834) and oil mist filter element (1535-4970) for the Edwards E2M18 vacuum pump |
| G3690A#302 | Adds 2 x AVF Platinum*** oil, 1 L (X3760-64004) and oil mist filter element (9499201) for the Agilent MS40+ vacuum pump   |

\*Requires the brass skimmer base, p/n G3280-60621, which is not included in the kit

\*\* "AVF Gold" was formerly termed "Inland 45". The chemical composition of the oil is exactly the same and the part numbers are unchanged.

\*\*\* "AVF Platinum" was formerly termed "AVF 60 SHCE". The chemical composition of the oil is exactly the same and the part number is unchanged.

**Configurable Supplies Kits for 7900 Series**

| Description                                      | Kit Contents                                                                        | Part No. |
|--------------------------------------------------|-------------------------------------------------------------------------------------|----------|
| For 7900 ICP-MS systems fitted with x- or s-lens | Peristaltic pump tubes for sample, Tygon, 3-stop, white/white, 2 x 12/pk            | G1131A   |
|                                                  | Peristaltic pump tubes for waste, Ismaprene, 3-stop, yellow/blue                    |          |
|                                                  | Peristaltic pump tubes for internal standard, Tygon, 2-stop, blue/orange, 2 x 12/pk |          |
|                                                  | PFA sample tubing, 0.5 mm id, 1.6 mm od, 5 m                                        |          |
|                                                  | Online internal standard addition kit                                               |          |
|                                                  | Drain tubing assembly                                                               |          |
|                                                  | Spray chamber for UHMI                                                              |          |
|                                                  | Tubing for drainage, 4.0 mm id, 2.5 m                                               |          |
|                                                  | Straight quartz connector tube                                                      |          |
|                                                  | Gas connector for dilution gas port                                                 |          |
|                                                  | Dilution nozzle for UHMI                                                            |          |
|                                                  | Plug for dilution port, 4 mm                                                        |          |
|                                                  | Clamp                                                                               |          |
|                                                  | Torch ball joint connector, 2/pk                                                    |          |
|                                                  | Nebulizer/make-up dilution gas tubing                                               |          |
|                                                  | Torch, quartz, 2.5 mm id                                                            |          |
|                                                  | Long-life Pt shield plate                                                           |          |
|                                                  | Bonnet for shield torch                                                             |          |
|                                                  | Low impurity gas tubing kit                                                         |          |
|                                                  | Connectors for plasma/auxiliary gas                                                 |          |
|                                                  | Work coil assembly                                                                  |          |
|                                                  | Graphite gaskets for sampling cone, 3/pk                                            |          |
|                                                  | Screw/spacer/O-ring for cell                                                        |          |
|                                                  | Tubing for reaction cell gas                                                        |          |
|                                                  | Octopole assembly                                                                   |          |
|                                                  | Polishing paper kit for ion lens, 5 sheets, No. 400+1200                            |          |
|                                                  | Exhaust filter.                                                                     |          |

**Then select the mandatory option and your preferred skimmer/sampling cones, and pump oil to suit your application needs by adding one each from the four following options.**

**Option One - Select the mandatory option**

| Part No.   | Description                                                                                                                                                                                             |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G1131A#100 | Mandatory option for a 7900 with x-lens (adds UniFit sample connector, 0.5 mm id, 10/pk (G3266-80012), nebulizer EzyLok gas connector (G3266-80015), and screw and spacer kit for x-lens (G8400-67003)) |
| G1131A#101 | Mandatory option for a 7900 with s-lens (adds nebulizer gas line connector for MicroFlow nebulizer (G1833-65583), and screw and spacer kit for s-lens (G3280-67038))                                    |

(Continued)

**Configurable Supplies Kits for 7900 Series**

| <b>Description</b>                                       | <b>Kit Contents</b>                                                                                       | <b>Part No.</b> |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------|
| <b>Option Two - Select your sampling cone</b>            |                                                                                                           |                 |
| <b>Part No.</b>                                          | <b>Description</b>                                                                                        |                 |
| G1131A#200                                               | Adds Ni sampling cone (G3280-67040)                                                                       |                 |
| G1131A#201                                               | Adds Ni plated sampling cone (G3280-67061)                                                                |                 |
| G1131A#202                                               | Adds Pt sampling cone (G3280-67036)                                                                       |                 |
| G1131A#203                                               | Adds Pt sampling cone with 18 mm insert (G3280-67056)                                                     |                 |
| <b>Option Three - Select your skimmer cone</b>           |                                                                                                           |                 |
| <b>Part No.</b>                                          | <b>Description</b>                                                                                        |                 |
| G1131A#300                                               | Adds Ni skimmer cone for 7900 with x-lens (G8400-67200)                                                   |                 |
| G1131A#301                                               | Adds Pt skimmer cone with Cu base (G8400-67201) and brass skimmer base (G8400-60625) for 7900 with x-lens |                 |
| G1131A#302                                               | Adds Pt skimmer cone with Ni base (G8400-67202) and brass skimmer base (G8400-60625) for 7900 with x-lens |                 |
| G1131A#303                                               | Adds Pt sampling cone (G3280-67064) for 7900 with s-lens                                                  |                 |
| G1131A#304                                               | Adds Ni skimmer cone (G3280-67066) and stainless steel skimmer base (G8400-60627) for 7900 with s-lens    |                 |
| <b>Option Four - Select the oil for your vacuum pump</b> |                                                                                                           |                 |
| G1131A#402                                               | Adds 2 x AVF Platinum* oil, 1 L (p/n X3760-64004) for the Agilent MS40+ vacuum pump                       |                 |

\* "AVF Platinum" was formerly termed "AVF 60 SHCE". The chemical composition of the oil is exactly the same and the part number is unchanged.

**Configurable Supplies Kits for 7800 Series**

| Description                                | Kit Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Part No. |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| For 7800 ICP-MS systems fitted with x-lens | Nebulizer EzyLok gas connector<br>UniFit sample connector, 0.5 mm id, 10/pk<br>Peristaltic pump tubes for sample, Tygon, 3-stop, white/white, 2 x 12/pk<br>Peristaltic pump tubes for waste, Ismaprene, 3-stop, yellow/blue<br>Peristaltic pump tubes for internal standard, Tygon, 2-stop, blue/orange, 2 x 12/pk<br>PFA sample tubing, 0.5 mm id, 1.6 mm od, 5 m, Online internal standard addition kit<br>Drain tubing assembly<br>Spray chamber<br>Tubing for drainage, 4.0 mm id, 2.5 m<br>Quartz connector tube with dilution port<br>Gas connector for dilution gas port<br>Plug for dilution port, 1/8 inch<br>Clamp<br>Torch ball joint connector, 2/pk<br>Nebulizer/make-up dilution gas tubing<br>Torch, quartz, 2.5 mm id<br>Long-life Pt shield plate<br>Bonnet for shield torch<br>Low impurity gas tubing kit<br>Connectors for plasma/auxiliary gas<br>Work coil assembly<br>Graphite gaskets for sampling cone, 3/pk<br>Screw and spacer kit for x-lens<br>Screw/spacer/O-ring for cell<br>Tubing for reaction cell gas<br>Octopole assembly<br>Polishing paper kit for ion lens, 5 sheets, No. 400 + 1200<br>Exhaust filter<br>Rough pump oil, AVF Platinum*, 1 L, 2/pk | M5141A   |

**Then select the mandatory option and your preferred skimmer/sampling cones, and ion lenses to suit your application needs by adding one each from the three following options.**

**Option One – Select your sampling cone**

| Part No.   | Description                                           |
|------------|-------------------------------------------------------|
| M5141A#100 | Adds Ni sampling cone (G3280-67040)                   |
| M5141A#101 | Adds Ni plated sampling cone (G3280-67061)            |
| M5141A#102 | Adds Pt sampling cone (G3280-67036)                   |
| M5141A#103 | Adds Pt sampling cone with 18 mm insert (G3280-67056) |

**Option Two – Select your skimmer cone**

| Part No.   | Description                                                                          |
|------------|--------------------------------------------------------------------------------------|
| M5141A#200 | Adds Ni skimmer cone (G3280-67041)                                                   |
| M5141A#201 | Adds Pt skimmer cone (G3280-67060) and brass skimmer base (G3280-60621)              |
| M5141A#202 | Adds Pt skimmer cone with Ni base (G3280-67063) and brass skimmer base (G3280-60621) |

**Option Three – Select your foreline pump type**

| Part No.   | Description                              |
|------------|------------------------------------------|
| M5141A#300 | Adds oil mist filter element, DS402 pump |
| M5141A#301 | Adds oil mist filter element, MS40+ pump |

\* "AVF Platinum" was formerly termed "AVF 60 SHCE". The chemical composition of the oil is exactly the same and the part number is unchanged.

**Configurable Supplies Kits for 8900 Series**

| Description                                      | Kit Contents                                                                            | Part No. |
|--------------------------------------------------|-----------------------------------------------------------------------------------------|----------|
| For 8900 ICP-MS systems fitted with x- or s-lens | Peristaltic pump tube, Tygon, 3-stop, wht/wht, 2 x 12/pk (for sample intro)             | G1091A   |
|                                                  | Peristaltic pump tube, Ismaprene, 3-stop, yel/blu, 12/pk (for SC drain)                 |          |
|                                                  | Peristaltic pump tube, Tygon, 2-stop, blu/org flared, 2 x 12/pk (for internal standard) |          |
|                                                  | PFA sample tubing, 0.5 mm id, 1.6 mm od, 5 m length                                     |          |
|                                                  | Online internal standard addition kit, ICP-MS                                           |          |
|                                                  | Drain tubing assembly, for ICP-MS                                                       |          |
|                                                  | Tubing, for drainage, 4.0 mm id, 2.5 m                                                  |          |
|                                                  | Clamp, torch ball joint connector, 2/pk                                                 |          |
|                                                  | Nebulizer/make-up/dilution gas tubing (1 each)                                          |          |
|                                                  | Torch quartz, 2.5 mm id, for ICP-MS                                                     |          |
|                                                  | Shield plate, long life, ICP-MS                                                         |          |
|                                                  | Bonnet quartz, for shield torch                                                         |          |
|                                                  | Plasma/auxiliary low impurity gas tubing kit (with inner sleeves)                       |          |
|                                                  | Connectors for plasma and auxiliary gas, 1 each                                         |          |
|                                                  | Work coil assembly, for ICP-MS                                                          |          |
|                                                  | Work coil assembly, for ICP-MS                                                          |          |
|                                                  | Graphite gasket, for sampling cone, 3/pk                                                |          |
|                                                  | Tubing, for reaction cell gas                                                           |          |
|                                                  | Polishing paper kit No. 400 + 1200 (5 sheets each)                                      |          |
|                                                  | Exhaust filter, MS 40+ rotary vane pump                                                 |          |
|                                                  | 2 x AVF Platinum* oil, 1 L bottle                                                       |          |

**Then select the mandatory option and your preferred skimmer/sampling cones, and ion lenses to suit your application needs by adding one each of the four following options.**

**Option One**

|            |                                                 |             |
|------------|-------------------------------------------------|-------------|
| G1091A#100 | Mandatory option for 8900 with x-lens           |             |
| 1          | UniFit sample connector                         | G3266-80012 |
| 1          | Gas connector, for nebulizer                    | G3266-80017 |
| 1          | Screw and spacer kit                            | G8400-67003 |
| 1          | Spray chamber, with UHMI                        | G8400-67150 |
| 1          | Dilution nozzle, UHMI, 7900, ICP-MS             | G8400-67026 |
| 1          | Gas connector, dilution gas port, 8900          | 0100-2703   |
| 1          | Blank plug for dilution port, PTFE, 8900        | G3666-20391 |
| G1091A#101 | Mandatory option for 8900 with s-lens (semicon) |             |
| 1          | Nebulizer** gas line connector                  | G1833-65583 |
| 1          | Screw and spacer kit                            | G3666-67038 |
| 1          | Spray chamber, without UHMI                     | G3280-80008 |

(Continued)

**Configurable Supplies Kits for 8900 Series**

| <b>Description</b>  | <b>Kit Contents</b>                                                                                         | <b>Part No.</b> |
|---------------------|-------------------------------------------------------------------------------------------------------------|-----------------|
| <b>Option Two</b>   |                                                                                                             |                 |
| G1091A#200          | Adds sampling cone, Ni                                                                                      | G3280-67040     |
| G1091A#201          | Adds sampling cone, Ni plated                                                                               | G3280-67061     |
| G1091A#202          | Adds sampling cone, Pt                                                                                      | G3280-67036     |
| G1091A#203          | Adds sampling cone, Pt, 18 mm insert                                                                        | G3280-67056     |
| <b>Option Three</b> |                                                                                                             |                 |
| G1091A#300          | Skimmer cone (Ni) for 7900/8900 with x-lens                                                                 | G8400-67200     |
| G1091A#301          | Skimmer cone (Pt/Cu) for 7900/8900 with x-lens and skimmer base, brass, for 8900 with x-lens (G3666-60311)  | G8400-67201     |
| G1091A#302          | Skimmer cone (Pt/Ni), for 7900/8900 with x-lens and skimmer base, brass, for 8900 with x-lens (G3666-60311) | G8400-67202     |
| G1091A#303          | Skimmer cone (Ni) for 8900 with s-lens                                                                      | G3666-67421     |
| G1091A#304          | Skimmer cone (Pt/Cu) for 8900 with s-lens                                                                   | G3666-67401     |
| G1091A#305          | Skimmer cone (Pt/Ni) for 8900 with s-lens                                                                   | G3666-67411     |
| <b>Option Four</b>  |                                                                                                             |                 |
| G1091A#400          | Mandatory option for an 8900 with ORS <sup>3</sup> without acceleration                                     |                 |
| 1                   | Octopole assembly without acceleration, for 8900                                                            | G3666-67046     |
| 1                   | Screw/spacer/O-ring, for 8900 non-AA cell                                                                   | G3666-67044     |
| 1                   | Quartz connector tube straight                                                                              | G3270-80025     |
| G1091A#401          | Mandatory option for an 8900 with ORS3 with axial acceleration                                              |                 |
| 1                   | Octopole assembly with axial acceleration, for 8900                                                         | G3666-67045     |
| 1                   | Screw/spacer/O-ring, for 8900 AA cell                                                                       | G3666-67049     |
| 1                   | Quartz connector tube, dilution, HMI kit                                                                    | G3270-80024     |
| 1                   | Plug, for dilution port                                                                                     | G3280-20576     |
| 1                   | Gas connector, for dilution gas port                                                                        | 0100-2583       |

\* "AVF Platinum" was formerly termed "AVF 60 SHCE". The chemical composition of the oil is exactly the same and the part number is unchanged.

\*\*The term carrier gas has been replaced with nebulizer gas for ICP-MS (from July 2017)

**GC Interface Supplies for 7500 Series**

| <b>Description</b>                                                  | <b>Part No.</b> |
|---------------------------------------------------------------------|-----------------|
| Injector assembly                                                   | G3158-65001     |
| Torch                                                               | G3158-65007     |
| Stainless steel pipe (Sulfinert) for GC-ICP-MS interface, 1/16 inch | G3158-65003     |

**GC Interface Supplies for 77/78/7900 and 8900 Series**

| <b>Description</b>                                                 | <b>Part No.</b> |
|--------------------------------------------------------------------|-----------------|
| Transfer line for GC interface                                     | G3158-80060     |
| Injector assembly for GC interface                                 | G3158-80150     |
| Torch for GC interface                                             | G3158-80074     |
| Pre-heating pipe with connector, stainless steel, 1/16 inch        | G3158-80080     |
| Stainless steel pipe, 1/16 inch (Sulfinert, 1.05 m)                | G3158-80081     |
| Polyimide/graphite reducing ferrule (1/8 to 1/16 inch, VG1, 10/pk) | 0100-1344       |
| Polyimide/graphite ferrule (1/4 inch, VG1, 10/pk)                  | 0100-1331       |
| Polyimide/graphite ferrule for 320 µm columns (0.5 mm, VG1, 10/pk) | 5062-3506       |
| Polyimide/graphite ferrule (1/16 inch, VG2, 10/pk)                 | 0100-1379       |
| PFA tubing, 1/8 inch, 2 m                                          | G3158-60010     |
| Three-way manual valve                                             | G3158-80024     |
| Swagelok plug, stainless steel, 1/8 inch                           | 0100-0071       |
| Nut with pipe                                                      | G3158-80009     |
| Stainless steel tee for O <sub>2</sub> gas mix, 1/8 inch           | 0100-0542       |

### Speciation Columns and Supplies

| Description                                            | Kit Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Part No.     |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| As speciation column for drinking water                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | G3154-65001  |
| As speciation column for urine                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | G3288-80000  |
| As speciation guard column                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | G3154-65002  |
| Cr speciation column for drinking water                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | G3268-80001* |
| Comprehensive LC connection kit                        | Suitable for LC-ICP-MS applications other than Cr in water and As in water/urine. This is a comprehensive pack of tubing and connectors required to set up LC-ICP-MS.<br>Includes sample tubing (PFA, 0.15 mm id, 0.7 m, 5/pk; PTFE, 0.8 mm id, 0.5 m; PTFE, 2.0 mm id, 5 m); peristaltic pump tubing, Tygon, 3-stop, 0.89 mm id, 12/pk; T-joint, 2/pk; union joint, 5/pk; PTFE nut for 3 mm od tubing, 10/pk; front and back ferrules for 3 mm od tubing, 10/pk; PTFE nut for 1.6 mm od tubing, 10/pk; front and back ferrules for 1.6 mm od tubing, 10/pk; peri-pump tubing adapters, 2/pk; APG remote cable; gender changer connector D9S-FF; manual/setup guide | G1833-65200  |
| Basic LC connection kit                                | Includes sample tubing (PFA, 0.3 mm id, 1.6 mm od, 3 m); union joints, 2/pk; PEEK finger-tight fitting, 3/pk; 10-32 male nut, 1/16 inch, 2/pk; APG remote cable; gender changer connector D9S-FF                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | G1820-65541  |
| Total consumption nebulizer for capillary LC interface |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | G3280-80602  |
| Single-pass spray chamber for capillary LC interface   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | G3280-80603  |

\*Cr speciation handbook, p/n G3268-90001



Strainer for cooling water, G1833-67024

### Miscellaneous Supplies

| Description                                       | Part No.    |
|---------------------------------------------------|-------------|
| 7700 maintenance video DVD                        | G3280-60910 |
| 7800/7900/8900 maintenance video DVD              | G8400-60921 |
| Agilent ICP-MS eFamiliarization video DVD         | G8400-60934 |
| Cooling water hose, 10 m                          | G1820-65020 |
| Strainer for cooling water                        | G1833-67024 |
| Poly-clear fluid for G3292A chiller               | G3292-80010 |
| Fluid filter for G3292A chiller                   | G3292-80109 |
| Air filter for G3292A chiller                     | G3292-80112 |
| Filter for cooling water for 7500 Series          | G1820-65018 |
| Water filter connector for Agilent ICP-MS         | 5069-4524   |
| O-ring for water filter cartridge for 7500 Series | G1833-66042 |

## Gas Line Supplies

### Gas Line Supplies

| Description                                                 | Specifications                                                                | Use                                               | Unit | 77/78/79/88/8900<br>Part No. | 7500<br>Part No. |
|-------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------|------|------------------------------|------------------|
| Tubing, plasma/auxiliary gas, with inner sleeve             | 0.2 m                                                                         | For 7700 only                                     | 2/pk | G3280-67023                  |                  |
| Tubing, plasma/auxiliary gas, with inner sleeve             | 0.2 m                                                                         | For 78/79/88/8900 Series                          | 2/pk | G3660-67040                  |                  |
| Connectors, PTFE, for plasma and auxiliary gas lines        | 6 mm and 4 mm                                                                 | For gas line connection to torch                  |      | G1820-65027                  | G1820-65027      |
| Inner sleeve, for nebulizer*/auxiliary/blend gas line       | CTFE                                                                          | For gas line connection to connector              | 5/pk |                              | 5042-0922        |
| Inner sleeve, for plasma gas line                           | CTFE                                                                          | For gas line connection to connector              | 5/pk |                              | 5042-0923        |
| Tubing, for nebulizer*/make-up/dilution gas                 |                                                                               |                                                   |      | G3280-67022                  |                  |
| Gas connector, for dilution gas port                        |                                                                               | For dilution gas line connection to dilution port |      | 0100-2583 (77/8800)          |                  |
| Gas connector, for dilution gas port                        |                                                                               | For dilution gas line connection to dilution port |      | 0100-2703 (79/8900)          |                  |
| Dilution nozzle, for ultra high matrix introduction         |                                                                               | For 7900/8900                                     |      | G8400-67026                  |                  |
| Argon gas tubing kit                                        |                                                                               | For external line                                 |      |                              | G1820-65023      |
| Tubing, PTFE, for nebulizer*/blend gas                      | 3 mm id, 4 mm od, 35 cm                                                       | For gas line connection to nebulizer              | 2/pk |                              | G1833-65414      |
| Tubing, plasma and auxiliary gas line                       | 3.17 mm id, 6.35 mm od, 35 cm (plasma)<br>2.38 mm id, 3.96 mm od, 35 cm (aux) | For gas line connection to torch                  | 2/pk |                              | G3270-65021      |
| Argon humidifier, for 75/77/8800 Series                     |                                                                               |                                                   |      | G3270-80029                  | G3270-80029      |
| Argon humidifier bottle, for 78/79/8900 Series              |                                                                               |                                                   |      | G8400-60700                  |                  |
| Tubing kit for Argon Humidifier used with 78/79/8900 Series |                                                                               |                                                   |      | G8400-60710                  |                  |
| Argon gas filter                                            |                                                                               |                                                   |      | G1820-80341                  | G1820-80341      |
| Argon clean gas filter                                      |                                                                               | For semicon applications                          |      | 5064-8092                    | 5064-8092        |
| Argon gas tubing kit, for 7700x/e and 7900                  |                                                                               | For external line                                 |      | G3280-60160                  |                  |

(Continued)



Plasma/aux tubing with inner sleeve, G3280-67023



Connectors for plasma/aux, G1820-65027



Nebulizer/make-up/dilution gas tubing, G3280-67022

## Gas Line Supplies

|                                                                                                                   |                  |                            |             |             |
|-------------------------------------------------------------------------------------------------------------------|------------------|----------------------------|-------------|-------------|
| Argon gas tubing kit, for 7700s, 8800 and 7900 with semiconductor option                                          |                  | For external line          | G3280-60163 |             |
| Tubing, stainless steel                                                                                           | 1/8 inch od, 6 m | For external cell gas line | G3270-65035 | G3270-65035 |
| Gas tubing set, for Argon gas purifier (Big Universal Trap)                                                       |                  | For 8900 only              | G3666-67026 |             |
| Big Universal Trap, 1/8 inch fittings, Argon, 750 cc (Ar gas filter set installed on the back panel of 8900 only) |                  |                            | 1/pk        | RMSA-2      |

\*The term "carrier gas" has been replaced with "nebulizer gas" for ICP-MS (from July 2017)



Replacement Agilent Gas Clean nebulizer gas filter, P17973

## Ultra Clean ICP-MS Traps

| Description                                         | Part No. |
|-----------------------------------------------------|----------|
| Replacement Agilent Gas Clean nebulizer* gas filter | CP17973  |
| O-rings, FPM, Gas Clean connecting unit, 2/pk       | CP7983   |

\*The term "carrier gas" has been replaced with "nebulizer gas" for ICP-MS (from July 2017)

**High Purity Gas Regulators – US only**

| Description                       | Comments                                                                                                                                                                                                                                                                                                                                                    | Part No.  |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Regulator for helium              | 2-stage regulator with stainless steel body and stainless steel diaphragms. Maximum inlet pressure 3000 psi. Maximum delivery pressure 15 psi with 0–30 psi outlet gauge and 1/8 inch compression tube fitting outlet. Supplied with wall mounting bracket including 36 inch stainless steel lined pigtail with check valve and CGA580 cylinder connection. | 0101-1398 |
| Regulator for hydrogen            | 2-stage regulator with stainless steel body and stainless steel diaphragms. Maximum inlet pressure 3000 psi. Maximum delivery pressure 15 psi with 0–30 psi outlet gauge and 1/8 inch compression tube fitting outlet. Supplied with wall mounting bracket including 36 inch stainless steel lined pigtail with check valve and CGA350 cylinder connection. | 0101-1399 |
| Regulator for argon               | 2-stage regulator with stainless steel body and stainless steel diaphragms. Maximum inlet pressure 3000 psi. Maximum delivery pressure 100 psi with 0–200 psi outlet gauge and 1/4 inch FPT outlet. Supplied with wall mounting bracket including 36 inch stainless steel lined pigtail with check valve and CGA580 cylinder connection.                    | 0101-1400 |
| Regulator for NH <sub>3</sub> /He | 2-stage regulator with stainless steel body and stainless steel diaphragms. Maximum inlet pressure 3000 psi. Maximum delivery pressure 15 psi with 0–30 psi outlet gauge and 1/4 inch FPT outlet. Supplied with wall mounting bracket including 36 inch stainless steel lined pigtail with check valve and CGA705 cylinder connection.                      | 5188-5374 |

**Gas Regulators – US only**

| Description            | Comments                                                                                                                                                                                                                          | Part No.  |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Regulator for helium   | 2-stage regulator with brass body, stainless steel diaphragms and PTFE seal. CGA580 inlet with maximum inlet pressure 3000 psi. Maximum delivery pressure 15 psi with 0–30 psi outlet gauge and 1/8 inch Swagelok outlet fitting. | 0101-1536 |
| Regulator for hydrogen | 2-stage regulator with brass body, stainless steel diaphragms and PTFE seal. CGA350 inlet with maximum inlet pressure 3000 psi. Maximum delivery pressure 15 psi with 0–30 psi outlet gauge and 1/8 inch Swagelok outlet fitting. | 0101-1537 |
| Regulator for oxygen   | 2-stage regulator with brass body, stainless steel diaphragms and PTFE seal. CGA540 inlet with maximum inlet pressure 3000 psi. Maximum delivery pressure 15 psi with 0–30 psi outlet gauge and 1/8 inch Swagelok outlet fitting. | 0101-1535 |

**TIPS AND TOOLS**

The Agilent ICP-MS Online Resource Library makes it easy by giving you instant access to the latest how-to videos, maintenance procedures, training opportunities, and much more.

Visit [www.agilent.com/chem/icp-ms-resource](http://www.agilent.com/chem/icp-ms-resource)





PTFE connector, G1820-65214



Polypropylene connector, G1820-65052



Connector for blend gas line, G1820-65119

**Gas Line Connectors for 7500 Series**

| Description                                          | Specifications                           | Use                                                      | Part No.    |
|------------------------------------------------------|------------------------------------------|----------------------------------------------------------|-------------|
| Connector for end cap and gas line                   |                                          | For gas line connection to nebulizer                     | 5063-5263   |
| Connectors, PTFE, for plasma and auxiliary gas lines | 6 mm and 4 mm                            | For gas line connection to torch                         | G1820-65027 |
| Connector for nebulizer* gas line, PTFE              | 4 mm tubing, includes ferrule and O-ring | For gas line connection to Babington nebulizer           | G1820-65214 |
| Connector for nebulizer* gas line, polypropylene     | 4 mm tubing, includes ferrule and O-ring | For gas line connection to concentric nebulizer          | G1820-65052 |
| Connector for blend gas line, polypropylene, 2/pk    | 4 mm tubing                              | For gas line connection to CrossFlow/Babington nebulizer | G1820-65119 |
| Connector for make-up gas line, polypropylene        | 4 mm tubing, Luer type                   | For gas line connection to CrossFlow/Babington nebulizer | G1833-65477 |
| Union fitting                                        | 4 mm tubing                              | For PFA concentric nebulizer                             | 5064-8078   |

\*The term "carrier gas" has been replaced with "nebulizer gas" for ICP-MS (from July 2017)

# MP-AES Supplies

## Agilent 4100/4200/4210 MP-AES Supplies

Agilent has revolutionized atomic spectroscopy with the introduction of an instrument that doesn't just redefine a category—it creates a new one.

The next generation of MP-AES technology, the Agilent 4210 MP-AES provides the lowest cost of ownership, improved safety, and superior performance.

The 4210 MP-AES has high sensitivity, detection limits down to sub ppb levels, and is faster than conventional flame atomic absorption. Best of all, it runs on air instead of combustible gases.

The 4210 MP-AES is also easy to use with application-specific software applets and plug-and-play hardware to ensure you can set up quickly without method development or alignment, and with minimal training.

Agilent provides all of the supplies and accessories you need for the 4100/4200/4210 MP-AES.



4210 Microwave Plasma-Atomic  
Emission Spectrometer

### TIPS AND TOOLS

Skipping sample filtration can lead to significant downtime if large particles become trapped in the sample uptake tubing, nebulizer, or injector.

Agilent Captiva Premium Syringe Filters are available in a wide range of sizes, formats, and membranes. With the industry's highest flow rates and loading capacities, they make the filtration process faster than ever.

## MP-AES Torches

| Description                                                                   | Comments                                                                                                                                                                                             | Part No.    |
|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Easy-fit torch for 4200/4210 MP-AES, with a blue base for easy identification | Suitable for the 4200/4210 MP-AES only                                                                                                                                                               | G8003-70000 |
| Easy-fit inert torch for 4200/4210 MP-AES, for use with HF digests            | Features an inert alumina injector and supplied with a PTFE ball joint coupler and inert torch clamp<br>Recommended for use with the inert double pass spray chamber, p/n G8010-80034 (not supplied) | G8003-60018 |
| Easy-fit torch for 4100 MP-AES                                                | Suitable for the 4100 MP-AES only                                                                                                                                                                    | G8000-70002 |
| Torch cleaning stand for MP-AES torches                                       | Provides a stable platform that allows the whole torch to be suspended in the cleaning solution                                                                                                      | G8003-68003 |
| Torch clamp                                                                   |                                                                                                                                                                                                      | G8000-64140 |
| Torch clamp for inert torch                                                   | Secures ball joint socket between inert spray chamber and inert torch for 4200/4210 MP-AES<br>Not suitable for the standard torch                                                                    | G8010-60227 |
| Ball joint adaptor for Easy-fit inert torch used with 4200/4210 MP-AES        | Connects the alumina injector of the inert torch to the ball joint connector of the inert spray chamber<br>Not required with the standard torch                                                      | G8003-20011 |



Easy-fit torch, for 4200/4210 MP-AES,  
G8003-70000



Easy-fit inert torch, for 4200/4210 MP-AES,  
G8003-60018



Easy-fit torch, for 4100 MP-AES,  
G8000-70002



Torch cleaning stand, for MP-AES torches,  
G8003-68003



Torch clamp, G8000-64140



Torch clamp, for inert torch, G8010-60227

**MP-AES Nebulizers and Supplies**

| Description                                                                                                                                                                                                                                                                                               | Part No.    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| OneNeb Series 2 inert concentric nebulizer                                                                                                                                                                                                                                                                | G8010-60293 |
| Concentric nebulizer<br>Recommended for routine analysis of most sample types where high sensitivity is required                                                                                                                                                                                          | G8000-70004 |
| Conikal glass concentric nebulizer<br>Replaces the nebulizer supplied with the Conikal sample introduction kit, p/n G8007AA #012<br>Recommended for routine analysis of most sample types where high sensitivity is required. Not suitable for use with HF digests or samples with suspended particulates | 2010106800  |
| Sample inlet fitting, for OneNeb Series 2 nebulizer<br>Includes capillary connector with captive sample capillary tubing<br>0.5 mm id x 1/16 inch od x 750 mm length capillary tubing                                                                                                                     | G8010-60345 |
| Conical adapter, 1/16 inch od sample line, for OneNeb Series 2 nebulizer<br>Joins 1/16 inch od sample capillary to peristaltic pump tubing. Includes conical PTFE adapter with PTFE nut (female) and PTFE ferrule and lock ring                                                                           | 5043-0502   |
| EzyFit Sample connector, for Conikal glass concentric nebulizer, 10/pk<br>Fitted with 0.75 mm id x 700 mm length capillary tubing. Connects the peristaltic pump tubing for the sample line to the nebulizer. Used with the Conikal nebulizer, p/n 2010106800 only                                        | 9910107700  |
| Nebulizer capillary tubing, per m.<br>Joins to the peristaltic pump tubing for the sample to extend the length of the line to enable sample to be drawn from a container                                                                                                                                  | 2410020500  |



Concentric nebulizer, G8000-70004



Nebulizer gas connector, G8000-64142

OneNeb Series 2 inert concentric nebulizer,  
G8010-60293**Humidifier Accessory**

Compatible with a range of Agilent ICP-OES, ICP-MS, and MP-AES instruments, Agilent's humidifier accessory can significantly improve signal stability for the analysis of challenging sample types.

For more information, turn to **Page 45**.





Single-pass glass cyclonic spray chamber,  
G8000-70006



Double-pass spray chamber, G8000-70007



Inert single-pass cyclonic spray chamber,  
G8000-70008



Nebulizer locking nut for glass cyclonic spray  
chambers, G8003-60019

### MP-AES Spray Chambers and Supplies

| Description                                                                                                                                                                                                                                                     | Part No.    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Double-pass glass cyclonic spray chamber<br>Standard spray chamber supplied with 4200/4210 MP-AES<br>Recommended for use with organic solvents, high matrix, or high TDS samples                                                                                | G8000-70007 |
| Single-pass glass cyclonic spray chamber<br>For use with aqueous and low matrix samples where best sensitivity is required                                                                                                                                      | G8000-70006 |
| Inert double-pass cyclonic spray chamber<br>For use with HF digests and high TDS samples                                                                                                                                                                        | G8010-80034 |
| Inert single-pass cyclonic spray chamber<br>For use with HF digests and low TDS samples                                                                                                                                                                         | G8000-70008 |
| UniFit drain connector, 2.0 mm od x 0.86 mm id, 3/pk<br>Drain connector, for inert spray chambers used with 4200/4210 MP-AES. Fitted with 480 mm length capillary tubing<br>Connects the peristaltic pump tubing for the waste line to the spray chamber outlet | G8010-80036 |
| Nebulizer locking nut, for glass cyclonic spray chambers<br>Features two O-rings inside to centre and seal the nebulizer                                                                                                                                        | G8003-60019 |
| Replacement Helix seal, for inert spray chamber, 4/pk<br>Secures the nebulizer in the side arm of the spray chamber                                                                                                                                             | G8010-80042 |
| Replacement Helix locking screw, for inert spray chamber                                                                                                                                                                                                        | G8010-80043 |
| Drain tube kit                                                                                                                                                                                                                                                  | G8000-64143 |

**MP-AES Peristaltic Pump Tubing**

| Description                                                                                                                                                                                                     | Unit  | Part No.    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------|
| Pump tubing, Solvaflex, orange/green, flared ends, for most sample types including aqueous, HF digests and some organic solvents                                                                                | 6/pk  | 3710068100  |
| Pump tubing, blue/blue, for spray chamber waste, for most sample types including aqueous, HF digests and some organic solvents                                                                                  | 12/pk | 3710067900  |
| Pump tubing, orange/green, for organic solvents and high TDS samples                                                                                                                                            | 12/pk | 3710068000  |
| Organic peristaltic pump tubing kit for MP-AES<br>Includes PVC Solvaflex pump tubing with orange/green tabs for sample inlet and with blue/blue tabs for waste line. Suitable for low volatile organic solvents |       | G8003-67003 |
| Pump tubing, PVC, white/white, for aqueous samples                                                                                                                                                              | 12/pk | 3710034400  |
| Pump tubing, PVC, orange/green, for aqueous and high TDS samples                                                                                                                                                | 12/pk | 3710068200  |
| Pump tubing, PVC, orange/green, flared ends, for aqueous and high TDS samples                                                                                                                                   | 12/pk | 3710068300  |
| Pump tubing, PVC, blue/blue, for spray chamber waste with aqueous samples                                                                                                                                       | 12/pk | 3710034600  |
| Pump tubing, Marprene, orange/green tabs with flared ends, for semivolatile organic samples                                                                                                                     | 12/pk | 3710068500  |
| Pump tubing, Marprene, blue/blue tabs, for semivolatile organic waste                                                                                                                                           | 12/pk | 3710044400  |
| Pump tubing, FPM, orange/green tabs with flared ends, for volatile organic samples                                                                                                                              | 12/pk | 3710068700  |
| Pump tubing, FPM, blue/blue tabs, for volatile organic waste                                                                                                                                                    | 12/pk | 3710043900  |



Pump tubing, blue/blue, 3710067900



Pump tubing, orange/green, 3710068000

## Application Kits for 4200/4210 MP-AES

| Description                                                           | Used In                                                                | Kit Contents                                                                                                                                                                                                                     | Part No.    |
|-----------------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Routine aqueous sample introduction kit                               | Recommended for routine analysis of aqueous or acidic samples          | Includes single-pass glass cyclonic spray chamber, Conikal nebulizer, and PVC peristaltic pump tubing with white/white tabs                                                                                                      | G8003-67001 |
| High sensitivity sample introduction kit, for routine aqueous samples | Recommended for high sensitivity analysis of aqueous or acidic samples | Includes single-pass glass cyclonic spray chamber, concentric nebulizer, and PVC peristaltic pump tubing with white/white tabs                                                                                                   | G8003-67000 |
| Inert sample introduction kit                                         | Recommended for use with HF digests                                    | Includes inert double pass spray chamber with ball joint socket, Easy-fit inert torch with alumina injector and clamp for inert torch<br>Requires but does <i>not</i> include the inert OneNeb Series 2 nebulizer or pump tubing | G8003-67005 |



Inlet cooling air filter, G8000-68002



Onboard argon bottle for plasma ignition, G8000-70001

## MP-AES Miscellaneous Supplies

| Description                                               | Comments                                                                                                                                                                                                            | Part No.     |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Pre-optic window                                          |                                                                                                                                                                                                                     | G8000-64112  |
| Inlet cooling air filter                                  |                                                                                                                                                                                                                     | G8000-68002  |
| Onboard argon bottle, for plasma ignition                 | Contains 60 L of welding grade (99.0 %) argon<br>Disposable<br>Requires but does <i>not</i> include regulator and connecting hose (p/n G8000-63006)                                                                 | G8000-70001* |
| Air inlet filter kit, for Agilent 4107 Nitrogen Generator | Includes replacement filter elements, large 5 µm particle filter (white filter element), small 1 µm particle filter (blue filter element), and activated carbon filter (mesh filter element) for residual oil vapor | G8001-64004  |

## Drain tubing for aqueous solutions

|                                                         |                                                       |            |
|---------------------------------------------------------|-------------------------------------------------------|------------|
| Tubing, 1/8 inch id, 1/4 inch od, 1/16 inch wall, per m | Connects spray chamber to peristaltic pump waste line | 3710031500 |
| Tubing, 1/4 inch id, 1/16 inch od, per m                | Connects sample tray to waste container               | 3710033400 |

## Drain tubing for organic solvents

|                                         |                                                       |            |
|-----------------------------------------|-------------------------------------------------------|------------|
| Tubing, 1/8 inch id, 1/4 inch od, per m | Connects spray chamber to peristaltic pump waste line | 3710035400 |
| Tubing, spray chamber to torch, per m   | Connects sample tray to waste container               | 3710037800 |

\*Not available for sale in China, Japan, or New Zealand

## Multimode Sample Introduction System (MSIS)

The MSIS provides simultaneous vapor generation of environmentally sensitive hydride-forming elements including As, Se, and Hg with low  $\mu\text{g/L}$  detection limits. It provides better performance through thin-film hydride technology, while offering a choice of three modes that eliminates changeover and allows routine and hydride elements to be determined using the same setup.

### MSIS Supplies to Support Routine Operations

| Description                                 | Comments                                                                                                                                                                                              | Part No.    |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Peristaltic pump tubing, black/black, 12/pk | Required to pump reagents to MSIS                                                                                                                                                                     | 3710027200  |
| Peristaltic pump tubing, black/white, 12/pk | Required to pump waste from MSIS                                                                                                                                                                      | 3710068900  |
| MSIS nebulizer bushing                      | Includes O-rings                                                                                                                                                                                      | G8479-20020 |
| O-rings for MSIS nebulizer bushing          | Includes 1 pair of replacement O-rings for the nebulizer bushing (1 internal and 1 external O-ring)                                                                                                   | G8479-67000 |
| MSIS drain tube assembly                    | Includes 0.2 m length of 1/8 in id drain tubing with bushing for waste outlet plus barb adapter and a single peristaltic pump tube, 2 bridged PVC with black/white tabs                               | G8479-60100 |
| MSIS reaction cone assembly                 | Includes reaction cone, bushing, threaded barb adapter, and tubing connector for sample inlet                                                                                                         | G8479-60300 |
| MSIS reagent tubing kit                     | Includes O-rings for nebulizer bushing (1 pair); tubing connectors for reagent/sample inlets; and capillary tubing 0.01 inch id, 0.03 inch od, to join to peristaltic pump tubing for reductant inlet | G8479-68100 |



Multimode Sample Introduction System (MSIS)

| Description                                 | Part No.    |
|---------------------------------------------|-------------|
| Multimode Sample Introduction System (MSIS) | G8000-63003 |



External Gas Control Module (EGCM)

## External Gas Control Module (EGCM)

Add the EGCM to enable determination of organic solvents and sulfur. The EGCM injects air into the plasma, minimizing carbon buildup, and reducing background noise.

| Description                        | Part No.    |
|------------------------------------|-------------|
| External Gas Control Module (EGCM) | G8000-63005 |

## Organics Kit for 4100 MP-AES

The MP-AES Organics Kit includes all items required to adapt the 4100 for determination of organic solvents.

| Description                                                                                                        | Part No.    |
|--------------------------------------------------------------------------------------------------------------------|-------------|
| MP-AES Organics Kit<br>Includes External Gas Control Module (EGCM), OneNeb nebulizer, and solvent resistant tubing | G8000-68004 |

## AVS 4 Advanced Valve System, for 4200/4210 MP-AES

The Advanced Valve System (AVS 4) is an optional accessory for Agilent's 4200/4210 MP-AES instruments. It is designed to increase sample throughput and reduce matrix loads on the sample introduction system. It consists of a four port switching valve positioned between the peristaltic pump and the sample introduction components.

The AVS 4 rinses the sample introduction system during uptake of the next sample, reducing the rinse time and the total analysis time. Shorter analysis times means reduced cost and improved sample throughput.

For more details, see the **AVS 4 Technical Overview**. Please enter 5991-7249EN at [www.agilent.com/search](http://www.agilent.com/search)



Advanced valve system 4-port switching valve (AVS 4) fitted to a 4210 MP-AES

### Supplies for AVS 4, for 4200/4210 MP-AES

| Description                                                  | Comments                                                                                                                                                                                                                        | Part No.    |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Spare valve, 4 port, 2 position, for AVS 4 switching valve   | Replacement valve assembly for AVS 4                                                                                                                                                                                            | G8493-60000 |
| Stator and rotor for 4 port valve, for AVS 4 switching valve |                                                                                                                                                                                                                                 | G8493-60003 |
| Nebulizer connection kit, for AVS switching valve            |                                                                                                                                                                                                                                 | G8010-60304 |
| Autosampler connection kit, for AVS switching valve          | Includes super flangeless one-piece fitting, 1/4-28 Flat-Bottom, for 1/16 inch od tubing used to join the probe line to the valve assembly                                                                                      | G8010-60306 |
| Waste tube kit, for 4 port AVS switching valve               | Includes swivel barb adaptor fitted with 2 m length of 1/8 inch id PVC tubing for the AVS waste line                                                                                                                            | G8010-60334 |
| Sample/rinse connection kit, for AVS switching valve, 2/pk   | Includes super flangeless one-piece fitting, 1/4-28 Flat-Bottom, for 1/16 inch od tubing fitted with 1/16 inch od PFA tubing and a conical adapter to join to the peristaltic pump tubing                                       | G8010-60335 |
| Autosampler peristaltic pump connection kit                  | Allows the user to bypass the switching valve when required, e.g. for wavelength calibration. Includes ferrule fitting for the autosampler line plus a conical PTFE adapter to enable connection to the peristaltic pump tubing | G8010-60348 |
| UniFit sample line, 0.75 mm id x 1/16 inch od                | Replacement part for Unifit nebulizer connection kit (p/n G8010-60336) supplied with the AVS 4                                                                                                                                  | 8003-0493   |

(Continued)

**Supplies for AVS 4, for 4200/4210 MP-AES**

| <b>Description</b>                                     | <b>Comments</b>                                                                                                                                                                                             | <b>Part No.</b> |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Nebulizer adaptor kit, for AVS switching valve         | Includes super flangeless one-piece fitting, 1/4-28 flat-bottom, for 1/16 inch od tubing and 1/16 inch od FEP tubing sleeve used to join the sample capillary of the OneNeb nebulizer to the valve assembly | G8010-60333     |
| Rotor seal for 4 port valve, for AVS 4 switching valve |                                                                                                                                                                                                             | G8493-60002     |
| Drip tray, for 4 port valve of AVS 4 switching valve   |                                                                                                                                                                                                             | G8010-20080     |

**Miscellaneous Supplies for AVS Switching Valves, for 4200/4210 MP-AES**

| <b>Description</b>                                                                          | <b>Comments</b>                                                                                                                                                                                                                                    | <b>Part No.</b> |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Rinse (10 L) and waste (20 L) containers for AVS                                            | Includes 10 L HDPE container for rinse solution and 20 L HDPE container for waste both fitted with safety caps to prevent vapors reaching the lab<br>Supply lines fitted with sinkers to ensure the capillary draws from the base of the container | G8494-60005     |
| Reagent uptake capillary tube, 1.6 mm od x 1.0 mm id x 1400 mm long, with heavy PTFE sinker |                                                                                                                                                                                                                                                    | G8494-60007     |
| Mounting clamp, for AVS 4/6/7 switching valve                                               |                                                                                                                                                                                                                                                    | G8494-60004     |

## IsoMist Temperature-controlled Spray Chamber

Agilent's IsoMist temperature-controlled spray chamber accurately controls the temperature of the sample introduction system. This delivers excellent long-term stability for even the most difficult matrices, including volatile organic solvents and viscous oil samples.

The programmed temperature is controlled using a peltier device providing the ability to either heat or cool the sample introduction system and maintain a stable temperature.



### Supplies for IsoMist (LoL configuration) used with MP-AES

| Description                                                   | Comments                                                                                                                                                                                           | Part No.    |
|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| PuraFlex transfer tube for IsoMist used with 4200/4210 MP-AES | Connects the aerosol outlet from the IsoMist to the Easy-fit MP-AES torch                                                                                                                          | G8007-68000 |
| MP-AES spray chamber, Twister style encapsulated for IsoMist  | Twister style (double pass) glass cyclonic with thermal conductive polymer encapsulation for use with IsoMist for MP-AES (LoL configuration)<br>Will not fit the IsoMist for the 5100/5110 ICP-OES | G8007-68001 |
| UniFit right angle drain fitting for IsoMist, 3/pk            | Fits to waste outlet of IsoMist spray chamber                                                                                                                                                      | G8010-68023 |



## Autosampler Supplies

### SPS 4 Autosampler Supplies

The next-generation SPS 4 is a high-performance autosampler for atomic spectroscopy applications. Designed to meet the needs of high-throughput laboratories requiring a fast, high-capacity (up to 360 samples or 768 microtiter wells), reliable autosampler. Small, quiet, easy-to-use, and affordable, the SPS 4 is suitable for ultratrace analysis by ICP-MS and rugged and robust enough for FAAS, MP-AES, and ICP-OES users.

Built around an innovative gantry design that supports the mechanical components between two rigid pillars, the SPS 4 provides improved accuracy and precision, high speed, ease of access, and corrosion resistance. All contained within a footprint that is nearly 40 % smaller than other autosamplers in its class.

Learn more at [www.agilent.com/chem/sps4-autosampler](http://www.agilent.com/chem/sps4-autosampler)

#### SPS 4 Autosampler Probes

| Description                                                | Notes                                                                                                                                | Part No.    |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-------------|
| SPS 4 probe, 0.25 mm id, red markers, inert, FEP sleeved,  | Recommended when using the Agilent SPS 4 autosampler with ICP-MS instruments                                                         | G8410-80100 |
| SPS 4 probe, 0.5 mm id, yellow markers, inert, FEP sleeved | Recommended when using the Agilent SPS 4 autosampler with ICP-MS instruments                                                         | G8410-80101 |
| SPS 4 probe, 0.8 mm id, green markers, inert, FEP sleeved  | Recommended when using the Agilent SPS 4 autosampler with AA, ICP-OES, MP-AES, and ICP-MS instruments                                | G8410-80102 |
| SPS 4 probe, 1.0 mm id, blue markers, inert, FEP sleeved   | Recommended when using the Agilent SPS 4 autosampler with AA, ICP-OES, and MP-AES instruments                                        | G8410-80103 |
| SPS 4 probe, 1.2 mm id, black markers, inert, FEP sleeved  | Recommended when using the SPS 4 autosampler with AA, ICP-OES, and MP-AES instruments with viscous solutions and high matrix samples | G8410-80104 |

**Miscellaneous SPS 4 Tubing**

| Description                                                                           | Notes                                                                                                                                           | Part No.    |
|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Flexible ducting, PVC, 50 mm id, for SPS 4 autosampler, 5 m length                    | Spare ducting to enable removal of fumes from the autosampler with the cover fitted. Fitted with 56mm od cuffs.                                 | 5043-0065   |
| Waste tubing, PVC, for SPS4, 8 mm od, 5 mm id, 2 m length                             | Replacement tubing to connect from waste outlet of rinse station of SPS 4 autosampler                                                           | G8410-80122 |
| Tubing, for supply of rinse solution to rinse station of SPS 4, 2.5 mm id, 1 m length | Replacement tubing to connect from rinse solution supply to inlet of rinse station of SPS 4 autosampler                                         | G8410-80123 |
| Tubing, solvent-resistant, 2.36 mm (0.093 inch) id, 2 m length                        | Replacement tubing for inlet solvent line to rinse station of SPS 4 autosampler. Allows use of low volatile organic solvents in rinse station   | G8410-20012 |
| Tubing, solvent-resistant, 4.75 mm (0.187 inch) id, 2 m length                        | Replacement tubing for waste solvent outlet of rinse station of SPS 4 autosampler. Allows use of low volatile organic solvents in rinse station | G8410-20013 |

**SPS 4 Autosampler Probe Compatibility**

| Probe Type        | Flame AAS | MP-AES   | ICP-OES  | ICP-MS   |
|-------------------|-----------|----------|----------|----------|
| 0.25 mm id        |           |          |          | ✓        |
| 0.5 mm id         |           |          |          | Standard |
| 0.8 mm id         | Standard  | Standard | Standard | ✓        |
| 1.0 mm id         | ✓         | ✓        | ✓        | ✓        |
| 1.2 mm id         | ✓         | ✓        | ✓        |          |
| ✓ Compatible part |           |          |          |          |



### SPS 4 Standard Racks and Compatible Vessels

| Description                                        | Comments                                                                                                                                                                                                              | Part No.    |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Standards rack, 34 position, for SPS 4 autosampler | Rack provides 12 positions for 50 mL, 30 mm od, centrifuge tubes plus 22 positions for 18 mm od test tubes. Standard rack for AA/MP-AES and ICP-OES configuration (not supported with the ICP-MS MassHunter software) | G8410-40000 |
| Standards rack, 5 position, for SPS 4 autosampler  | Rack provides five positions for 250 mL, 60 mm od, narrow neck sample containers. Standard rack for ICP-MS configuration (not supported with the atomic absorption SpectrAA software)                                 | G8410-40001 |
| Sample bottle, 250 mL, for 5 x 60 mm standard rack | Narrow neck, 60 mm od, LDPE, for five position standard rack used with SPS 4 autosampler                                                                                                                              | 5043-0064   |

### Optional Update Kits for the SPS 4

| Description                                     | Comments                                                                                                                                                                                                                                                                                                             | Part No.    |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| High uptake volume rinse kit, for SPS 4         | Recommended for use with the AVS 6/7, SVS 2+, or ISIS 3. Allows rinse uptake rate to be increased to 25mL/min. Includes sample quantity wide bore peristaltic pump tubing with purple/black tabs (four pump tubes only), barb connectors, and PTFE tubing 2 m                                                        | G8410-68260 |
| SPS 4 rinse tube kit, for low volatile organics | Allows use of low volatile organic solvents in rinse station. Includes capillary tubing 1 m, sample quantity of 3-bridged grey/grey PVC Solvaflex peristaltic pump tubing (four pump tubes only), barb connector 2.5–1.5 mm, and solvent-resistant tubing for solvent inlet and waste outlet from the rinse station  | G8410-68261 |
| Pump drain kit for SPS 4 autosampler            | Provides the components required to allow the liquid overflow to be pumped from the rinse station. Includes sample quantity of wide bore peristaltic pump tubing with purple/white tabs (four pump tubes only), barb connectors, and PVC Solvaflex tubing 2.5 m to enable connection to a remote pump (not supplied) | G8410-68262 |
| SPS 4 Autosampler cover kit                     | Encloses the autosampler to help reduce sample and standard contamination from dust and drafts. Provision for optional purge or exhaust connection to remove corrosive or solvent fumes (requires but does not include the ducting hose, p/n 5043-0065, which should be ordered separately)                          | G8410-60100 |

**Optional Update Kits for the SPS 4 used with ICP-MS (Only)**

| Description                                        | Comments                                                                                                                                                                                                                                        | Part No.    |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Well plate startup kit for SPS 4                   | Allows sampling from deep well 96 well plates. Includes well plates 10/pk, well plate adapter, and sample probe. Supported when using MassHunter software with the ICP-MS                                                                       | G8410-68270 |
| Microflow nebulizer PFA (200) with SPS 4 probe kit | Microflow PFA(200) nebulizer, with integrated probe for SPS 4 autosampler, flow rate 200 µL/min, sample uptake tube ends as a sampling probe. Used with 7700, 7800, 7900, and 8800 Series ICP-MS for high purity and hydrofluoric acid samples. | G3139-68000 |
| Nebulizer probe mount kit for SPS 4 autosampler    | Required to mount a nebulizer-integrated sample probe (supplied separately) onto the probe arm of the SPS 4 autosampler. Note, order G3139-68000 if ordering the PFA nebulizer together                                                         | G8410-60180 |

**Well Plate Supplies for use with SPS 4 (ICP-MS)**

| Description                                            | Comments                                                                                                                                                                                                    | Part No.    |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Well plate tray adaptor kit for SPS 4                  | Allows 96 position deep-well plates to be positioned on the sample tray of the SPS 4 autosampler (raises the height of the well plate on the autosampler). Requires, but does not include the sample probe. | G8410-40003 |
| SPS 4 sample probe, suits SPS 4 microtiter tray        | Required when using the SPS 4 autosampler with microtiter tray for sampling from a 96 position well plate. Requires, but does not include the well plate tray adaptor kit or any compatible well plates.    | G8410-80105 |
| Well plates, 96 position, 0.5 mL, polypropylene, 10/pk | Spare well plates suitable for use with the SPS 4 autosampler when using the optional microtiter tray for sampling from a 96 position well plate.                                                           | 5042-1386   |
| Well plates, 96 position, 0.5 mL, polypropylene 120/pk | Spare well plates suitable for use with the SPS 4 autosampler when using the optional microtiter tray for sampling from a 96 position well plate.                                                           | 5042-1385   |

**Miscellaneous SPS 4 Supplies**

| <b>Description</b>                                    | <b>Comments</b>                                                                                                                                | <b>Part No.</b> |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Single port fixed wash reservoir for SPS 4            |                                                                                                                                                | G8410-60140     |
| Dual port fixed wash reservoir for SPS 4              |                                                                                                                                                | G8410-60150     |
| Standard rack location mat for SPS 4                  |                                                                                                                                                | G8410-80111     |
| Spill tray kit for SPS 4 autosampler                  |                                                                                                                                                | G8410-80605     |
| Tube anchor for SPS 4 autosampler, 2/pk               | Secures transfer tubing from probe to instrument on arm of probe carriage to eliminate tangling.                                               | G8410-40004     |
| Cable ducting for SPS 4 autosampler                   |                                                                                                                                                | G8410-40005     |
| Barb connector, straight through, 4.8–2.4 mm id       |                                                                                                                                                | 0100-2846       |
| Barb connector, straight-through, 2.4 mm id           |                                                                                                                                                | 0100-2848       |
| Nipple, 5 mm id, PVDF, SPS 4 rinse station            | Replacement nipple for outlet waste from rinse station of SPS 4 autosampler.                                                                   | G8410-80120     |
| Nipple, 2.5 mm id, polypropylene, SPS 4 rinse station | Replacement nipple for inlet rinse supply to rinse station of SPS 4 autosampler.                                                               | G8410-80121     |
| Barb connector, 2.5 mm–1.5 mm id, for SPS 4           | Straight-through connector for rinse tube kit used with low volatile organics when using low volatile organic solvents in SPS 4 rinse station. | G8410-80124     |
| Cable ties, natural, polypropylene, 10/pk             |                                                                                                                                                | G8410-67001     |

## SPS 3 Autosampler Supplies

The fast spectroscopy autosampler from Agilent meets the diverse requirements of high-throughput analytical laboratories.

### SPS 3 Start-up and Operating Supplies Kit

| Description                                                   | Kit Quantity | Unit     | Part No.   |
|---------------------------------------------------------------|--------------|----------|------------|
| SPS 3 start-up and operating supplies kit                     |              |          | 190065400  |
| <b>Kit Contents</b>                                           |              |          |            |
| 0.8 mm id inert probe, PTFE-sleeved                           | 1            | each     | 9910111900 |
| Pump tubing, PVC Solvaflex, 3-bridged, gray/gray              | 2            | 12/pk    | 3710049000 |
| Silicon tubing, 1 mm id, 3 mm od                              | 1            | each     | 3710026400 |
| Tubing, 1/8 inch id, 1/4 inch od, 1/16 inch wall, per m       | 2            | meter    | 3710031500 |
| Nebulizer capillary tubing, per m                             | 2            | meter    | 2410020500 |
| Rinse reservoir, 10 L                                         | 1            | each     | 6610011800 |
| Polypropylene tubes, 16 mm od                                 | 1            | 1,000/pk | 190049700  |
| Sample rack for 30 mm od tubes, 21 positions                  | 3            | each     | 6610026600 |
| Centrifuge tubes, screw-capped, 29 mm od, 50 mL polypropylene | 1            | 500/pk   | 190065200  |



SPS 3 Autosampler for AA, MP-AES, ICP-OES, and UV-Vis instruments



Autosampler cover, 910245400

## Optional Accessories for SPS 3

| Description                    | Comments                                                                                                                                                                                  | Part No.   |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Autosampler cover, transparent | Prevents contamination of samples and standards from dust and drafts<br>Has provision for optional purge connection and/or exhaust outlet to enable removal of corrosive or solvent fumes | 910245400  |
| Exhaust port connection        | Installs on rear panel of cover and allows safe removal of corrosive or solvent fumes; suitable for connection to 2 inch (50 mm) diameter exhaust ducting                                 | 9910130600 |

## SPS 3 Autosampler Probes

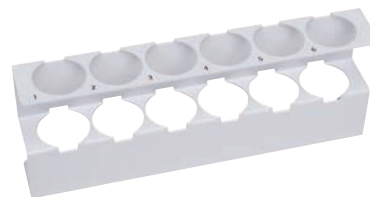


0.8 mm id inert probe, PTFE-sleeved,  
9910111900

| Description                         | Comments                                                                                                                                                                                                                                | Part No.    |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 0.8 mm id inert probe, PTFE-sleeved | For use with MP-AES and ICP-OES instruments without diluter                                                                                                                                                                             | 9910111900  |
| 1.0 mm id inert probe, PTFE-sleeved | For use with AA, MP-AES, ICP-OES, and UV-Vis instruments (or diluter)                                                                                                                                                                   | 9910112000  |
| 1.3 mm id inert probe, PTFE-sleeved | For use with viscous solutions and high matrix samples                                                                                                                                                                                  | 9910130900  |
| 1.2 mm id inert, carbon fiber probe | For use with strong acid digests<br>Straighter than a PTFE probe with good rigidity, meaning less chance of damage if it hits a tube<br>Replacement probe only<br>Requires carbon fiber update kit to be fitted                         | G8480-80002 |
| Carbon fiber probe update kit       | Allows installation of a carbon fiber probe in place of a standard PTFE probe.<br>Includes 3.0 mm od x 1.2 mm id carbon fiber probe, mounting block, nut and ferrule, 1.5 m x 0.8 mm id FEP sample tubing, cable ties, and tube anchors | G8480-80001 |

**Standard Racks for SPS 3 Autosampler**

| Description                                    | Part No.  |
|------------------------------------------------|-----------|
| Standard rack for 16 mm od tubes, 11 positions | 810166900 |
| Standard rack for 29 mm od tubes, 6 positions  | 810167000 |



Standard rack for 29 mm od tubes, 810167000

**Diluter Spares**

| Description                                             | Kit Contents                       | Part No.   |
|---------------------------------------------------------|------------------------------------|------------|
| Syringe, 20 mL                                          |                                    | 4710003000 |
| Replacement tubing kit for auto diluter, screw fittings | Includes all tubing and connectors | 9910083100 |
| Rinse reservoir, 10 L                                   |                                    | 6610011800 |



Rinse reservoir, 6610011800

**Miscellaneous SPS 3 Supplies**

| Description                                             | Use With                                             | Part No.   |
|---------------------------------------------------------|------------------------------------------------------|------------|
| Tubing, 1/8 inch id, 1/4 inch od, 1/16 inch wall, per m | For outlet rinse vessel                              | 3710031500 |
| Silicon tubing, 1 mm id, 3 mm od                        | For connecting nebulizer capillary to SPS probe line | 3710026400 |
| Replacement spill tray                                  |                                                      | 6610025100 |



Replacement spill tray, 6610025100



## Integrated Autosampler (I-AS) Supplies

The integrated autosampler (I-AS) for ICP-MS is ideal for ultratrace analysis and small sample volumes (as low as 0.5 mL). It features a pumped rinse station and offers flexible rack configurations with a maximum capacity of 89 vials, plus three rinse vials. (Not compatible with Agilent AA, MP-AES, and ICP-OES instruments).

### Integrated Autosampler (I-AS) Supplies

| Description                                                                                                                      | Unit   | Common Part No. |
|----------------------------------------------------------------------------------------------------------------------------------|--------|-----------------|
| Tray A, 89-position, for 6 mL vials, polypropylene                                                                               |        | G3160-80060     |
| Tray B, 53-position, for 18 mL vials, polypropylene                                                                              |        | G3160-80061     |
| Tray C, 18-position for 50 mL vials, polypropylene                                                                               |        | G3160-80062     |
| Tray D, 79 x 2 mL + 10 x 18 mL positions, polypropylene                                                                          |        | G3160-80063     |
| Tray E, 79 x 6 mL + 10 x 18 mL positions, polypropylene                                                                          |        | G3160-80064     |
| Tray F, 15-position, for use in special semiconductor applications, holds 15 vials of up to 48 mm od x 55 mm high, polypropylene |        | G3160-80065     |
| Tray G, 28-position, for 20 mL PFA vials of up to 28 mm od, 58 mm tall, polypropylene                                            |        | G3160-80066     |
| Vial, PFA, 1.5 mL, for use with Tray D                                                                                           | 10/pk  | G3160-65317     |
| Vial, polypropylene, 6 mL, for use with tray A and E                                                                             | 200/pk | G3160-65303     |
| Vial, polypropylene, 18 mL, for use with tray B, D, and E                                                                        | 55/pk  | G3160-65304     |
| Vial, polypropylene, 50 mL, for use with tray C                                                                                  | 20/pk  | G3160-65305     |
| Vial, polyethylene, 2 mL, for use with tray D                                                                                    | 200/pk | G3160-65315     |
| Needle, PFA, 0.3 mm id, standard probe                                                                                           |        | G3160-65306     |
| Rinsing bottle, 100 mL                                                                                                           | 6/pk   | G3160-65307     |
| Tray cover                                                                                                                       |        | G3160-65321     |
| Rinse fluid inlet/outlet tubing (for I-AS with diaphragm pump)                                                                   |        | G3160-65320     |
| Needle, PFA, 0.8 mm id, for use with the ISIS                                                                                    |        | G3160-65324     |
| Tubing holder, PEEK, for use with MicroFlow nebulizer (without a sampling probe) and 2 mL vials                                  |        | G3160-65325     |
| Needle holder                                                                                                                    |        | G3160-80041     |
| Holder, for carry tray cover                                                                                                     |        | G3160-60015     |
| Peristaltic pump tubing set with connectors                                                                                      | 1 set  | G3160-65326     |
| Peristaltic pump tubing set with connectors                                                                                      | 5/pk   | G3160-65327     |
| Drain tubing, Tygon, from peristaltic pump to rinse bottle or drain bottle                                                       | 2/pk   | G3160-65328     |
| Serial-USB converter cable, for use with G7201A MassHunter                                                                       |        | G3160-80200     |
| I-AS table, for 7900                                                                                                             |        | G3160-60016     |



Tray B, 53-position for 18 mL vials, polypropylene,  
G3160-80061



Peristaltic pump tubing set with connectors,  
G3160-65326

## ASX-500 Series Autosampler Supplies

The ASX-500 Series autosampler is fully automated, making it ideal for medium to high sample throughput applications. It features a pumped rinse station and offers flexible rack configurations with a maximum capacity of four racks providing up to 360 vial positions with 5 x 250 mL bottle positions and bottles for rinse and tune solutions.

### ASX-500 Series Autosampler Supplies

| Description                                                                                      | Common Part No. |
|--------------------------------------------------------------------------------------------------|-----------------|
| Sample rack, 21-position, 50 mL vials                                                            | G3286-80103     |
| Sample rack for 25 mm od tubes, 24 positions                                                     | 6610026500      |
| Sample rack for 20 mm od tubes, 40 positions                                                     | 6610025500      |
| Sample rack, 60-position, 14 mL vials                                                            | G3286-80106     |
| Sample rack for 13 mm od tubes, 90 positions                                                     | 6610026400      |
| Sample probe, 0.8 mm id (red band)                                                               | G3286-80100     |
| Sample probe, 0.3 mm id (black band)                                                             | G3286-80101     |
| Sample probe, 0.5 mm id (blue band)                                                              | G3286-80102     |
| Carbon fiber sample probe, 0.8 mm id (red band)                                                  | G3286-80110     |
| Carbon fiber sample probe, 0.3 mm id (black band)                                                | G3286-80111     |
| Carbon fiber sample probe, 0.5 mm id (blue band)                                                 | G3286-80112     |
| Carbon fiber sample probe, 1.0 mm id (2 blue bands)<br>For use with G3286-80300 Z-drive assembly | G3286-80119     |
| Rinse/drain tubing hookup kit                                                                    | G3286-80117     |
| Drain pump tubing and connector kit (Tygon)                                                      | G3286-80118     |
| Z-axis drive assembly with nylon cable, PEEK, antikink                                           | G3286-80330     |
| Rinse station                                                                                    | G3286-80224     |
| USB 2.0 cable, 10 feet, for use with G7201A MassHunter                                           | G1680-63720     |



ASX-520 Autosampler



Sample rack, 60-position, G3286-80106



Sample probe, G3286-80102



Drain pump tubing and connector kit (Tygon),  
G3286-80118



Rinse station, G3286-80224

## Common Autosampler Supplies



Sample rack, 6610025400 (shown with the optional rack overlay kit, p/n 6610026100, fitted)



Rack overlay for 60-position sample rack, 6610026100



Pump tubing, PVC Solvaflex, 3710049000

### Racks for SPS 3/4 and ASX 500 Autosamplers

| Description                                  | Part No.   |
|----------------------------------------------|------------|
| <b>Sample Racks</b>                          |            |
| Sample rack for 13 mm od tubes, 90 positions | 6610026400 |
| Sample rack for 16 mm od tubes, 60 positions | 6610025400 |
| Sample rack for 20 mm od tubes, 40 positions | 6610025500 |
| Sample rack for 25 mm od tubes, 24 positions | 6610026500 |
| Sample rack for 30 mm od tubes, 21 positions | 6610026600 |

### Rack Overlays for Sample Racks

|                                                                                                                           |            |
|---------------------------------------------------------------------------------------------------------------------------|------------|
| Rack overlay for 60-position sample rack<br>Allows 13 mm od tubes to be used in 60-position rack (2 recommended per rack) | 6610026100 |
| Rack overlay for 40-position sample rack<br>Allows 18 mm od tubes to be used in 40-position rack (2 recommended per rack) | 6610026000 |

### Peristaltic Pump Tubing for SPS 3/4

| Description                                                                 | Use With                                                                                                                                         | Part No.   |
|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Peristaltic pump tubing, PVC Solvaflex, 3 bridged, purple/white tabs, 12/pk | For use with SPS 4 when pumping acidic or aqueous based rinse                                                                                    | 5043-0063  |
| Peristaltic pump tubing, PVC Solvaflex, 3 bridged, black/black tabs, 12/pk  | For use with SPS 4 when pumping low volatile organic solvents                                                                                    | 3710034800 |
| Pump tubing, PVC Solvaflex, 3-bridged, gray/gray                            | Standard tubing supplied with the autosampler for the rinse pump.<br>For use with aqueous samples on AA, MP-AES, ICP-OES, and ICP-MS instruments | 3710049000 |
| Pump tubing, Santoprene, 3-bridged, gray/gray, 6/pk                         | For ketone-based solvents on AA, MP-AES, ICP-OES, and ICP-MS instruments                                                                         | 3710057500 |
| Pump tubing, PVC Solvaflex, 3-bridged, orange/yellow, flared ends, 12/pk    | For use with low volatile organic solvents on AA, MP-AES, ICP-OES, and ICP-MS instruments                                                        | 3710069000 |
| Pump tubing, PVC Solvaflex, 3-bridged, yellow/yellow, 12/pk                 | For use with low volatile organic solvents on AA, MP-AES, ICP-OES, and ICP-MS instruments                                                        | 3710069300 |
| Pump tubing, PVC Solvaflex, 3-bridged, purple/black, 12/pk                  | For use with aqueous samples on UV instruments                                                                                                   | 3710052000 |
| Pump tubing, FPM, 3-bridged, black/black, flared ends, 12/pk                | For use with aromatic organic solvents on AA, MP-AES, ICP-OES, and ICP-MS instruments                                                            | 3710069100 |
| Pump tubing, PVC Solvaflex, 3-bridged, black/black, flared ends, 12/pk      | For use with low volatile organic solvents on AA, MP-AES, ICP-OES, and ICP-MS instruments                                                        | 3710069200 |

**Test and Digestion Tubes**

| Description                                                   | Unit     | Part No.     |
|---------------------------------------------------------------|----------|--------------|
| Polypropylene tubes, 16 mm od, 125 mm height                  | 125/pk   | 3710051100   |
|                                                               | 1,000/pk | 190049700    |
| Test tubes, 16 x 150 mm, 21 mL                                | 250/pk   | 5190-9092    |
| Polypropylene test tubes, 17 mm od, 16.5 mL                   | 1,000/pk | 00000001600L |
| Centrifuge tubes, screw-capped, 29 mm od, 50 mL polypropylene | 500/pk   | 190065200    |
| Digestion tubes, polypropylene, for 36- and 54-well hot block | 500/pk   | 190047900    |



Polypropylene test tubes, 3710051100

**Sample Filtration**

| Description                                                                         | Part No.  |
|-------------------------------------------------------------------------------------|-----------|
| <b>Agilent Captiva Syringe Filters</b>                                              |           |
| Captiva premium syringe filter, PTFE membrane, 15 mm diameter, 0.45 µm pore, 100/pk | 5190-5085 |
| Captiva premium syringe filter, PTFE membrane, 25 mm diameter, 0.45 µm pore, 100/pk | 5190-5087 |
| Captiva Econofilter, PTFE membrane, 13 mm diameter, 0.45 µm pore, 1000/pk           | 5190-5266 |
| Captiva Econofilter, PTFE membrane, 25 mm diameter, 0.45 µm pore, 1000/pk           | 5190-5268 |
| <b>FilterMate(TM) Filtration System*</b>                                            |           |
| FilterMate, 0.45 µm PTFE-faced polypropylene filter, 100/pk                         | 190048100 |
| FilterMate, 2 µm PTFE-faced polypropylene filter, 100/pk                            | 190048000 |

\*For use with digestion tubes, p/n 190047900



## AA/MP-AES, ICP-OES, and ICP-MS Standards

Agilent offers a comprehensive range of single and multi-element standards, ionization buffers, metallo-organic and biodiesel standards, solvents, and environmental standards for atomic spectroscopy. With the assurance of NIST traceability, Agilent's Certified Reference Materials and standard mixes offer accurate, reliable calibrations at great value.

Every solution is manufactured using high purity starting materials, which are regularly tested in accordance with NIST guidelines to provide traceability. All Agilent inorganic spectroscopy standards include a Certificate of Analysis (CoA) that details the certified concentration, measurement uncertainty, and actual concentration values for up to 68 trace impurities (assayed using an Agilent ICP-MS for ICP-OES/ICP-MS standards).

In addition, the CoA details the method used for certification, intended use, instructions for proper use, and recommendations for appropriate conditions of storage.

- Gives you confidence in your AAS, ICP-OES or ICP-MS, and MP-AES results
- Standards shipped from stock to maximize uptime
- Supplied with a Material Safety Data Sheet (MSDS) and CoA for complete assurance
- All standards packaged in preleached HDPE bottles, secured with a tamper-evident seal

To learn more about Agilent Certified Reference Materials, go to  
[www.agilent.com/chem/spectroscopystandards](http://www.agilent.com/chem/spectroscopystandards)

## AA, MP-AES, and ICP-OES Standards

### Wavelength Calibration Solutions for 5100/5110 ICP-OES, 700 Series, and Vista Series ICP-OES and MP-AES

| Description                                                | Comments                                                                                                                                                                                      | Part No.   |
|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Wavelength calibration concentrate, for ICP-OES and MP-AES | 500 mL, contains 50 mg/L Al, As, Ba, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Se, Sr, Zn, and 500 mg/L K in 5 % HNO <sub>3</sub><br>Dilute 10 times prior to use                                       | 6610030000 |
| Wavelength calibration solution, for ICP-OES and MP-AES    | 500 mL, contains 5 mg/L Al, As, Ba, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Se, Sr, Zn, and 50 mg/L K in 5 % HNO <sub>3</sub><br>Ready to use                                                         | 6610030100 |
| Calibration blank solution for ICP-OES and MP-AES          | 500 mL 0 ppm, contains pure ASTM Type 1A water with 5 % HNO <sub>3</sub><br>Suitable for use as a calibration blank or for dilution of the wavelength calibration concentrate<br>Ready to use | 5190-7001  |

Intended use

Manufactured in an ISO 9001, ISO Guide 34 facility and certified in an ISO/IEC 17025 testing laboratory

Made from the highest purity raw materials and solvents

Agilent ICP-MS\* used to assay the impurities

Traceable to NIST

Instructions for proper use and appropriate conditions of storage

Period of validity

Date of release

Date of expiration verified by short and long-term stability studies for all standards


**Agilent Technologies**

## CERTIFICATE OF ANALYSIS

**Agilent Product Name:** Copper Standard: 1000 µg/mL Cu in 5% HNO<sub>3</sub>  
**Agilent Part No:** 5190-8348  
**Lot No:** Sample

| Analyte | Starting Material | CAS #     | Matrix              | Certified Concentration |
|---------|-------------------|-----------|---------------------|-------------------------|
| Cu      | Cu                | 7440-50-8 | 5% HNO <sub>3</sub> | 994 ± 2 µg/mL (w/v)     |
|         |                   |           |                     | 984 ± 2 µg/g (w/w)      |

**Intended Use:** This solution is intended for use as a certified reference material or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), atomic absorption spectroscopy (flame AAS or GFAAS), microwave plasma atomic emission spectroscopy (MP-AES), x-ray fluorescence spectroscopy (XRF), and other techniques for elemental analysis.

**Certification & Traceability:** This CRM was manufactured under a quality management system that is accredited to ISO Guide 34, ISO/IEC 17025, and registered to ISO 9001. This CRM was prepared to a nominal concentration of 1000 µg/mL by gravimetric methods using 99.999% pure copper (Cu) metal dissolved in high purity nitric acid (HNO<sub>3</sub>) and diluted with ASTM Type I Water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST and both the certified concentration and uncertainty values are traceable to NIST SRM 3114, lot #011017. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

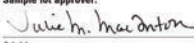
**Uncertified Values:** Agilent ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

| Trace Concentrations (µg/L) |         |         |         |         |         |         |         |         |         |         |         |         |         |         |          |         |        |         |       |        |
|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|---------|--------|---------|-------|--------|
| Ag <0.5                     | Ce <0.2 | Gd <0.2 | Lu <0.2 | Pb <1   | Se <2   | Ti <0.5 | As <2   | Cs <0.5 | Hf <0.2 | Mn <1   | Pr <0.2 | Sm <0.2 | U <0.5  | B <5    | Cu Major | Ho <0.2 | Na <25 | Rb <0.5 | Sr <1 | W <0.5 |
| Ba <1                       | Dy <0.2 | In nd   | Nb <0.5 | Rf <0.2 | Ta <0.5 | Y <0.5  | Be <0.5 | Er <0.2 | Ir <0.2 | Nd <0.2 | Rh <5   | Tb <0.5 | Yb <0.2 | Bi <0.2 | Eu <0.2  | K <25   | Ni 9   | Ru <0.5 | Te <1 | Zn <2  |
| Ca <25                      | Fe <10  | La <0.5 | Os <0.5 | Sb <0.5 | Th <0.5 | Zr <0.5 | Cd <0.5 | Ga <0.5 | Li <2   | P <100  | Sc <5   | Ti <2   |         |         |          |         |        |         |       |        |

**Instructions for Use:** Agilent Technologies recommends that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy the analyst should: (1) use only pre-cleaned containers and transferware, (2) avoid pipetting directly from the CRM's original container, (3) use a minimum sub-sample size of 500 µL, (4) make dilutions using calibrated balances or certified volumetric class A flasks and pipettes, (5) dilute to volume using the same matrix as the original CRM, and (6) never pour used product back into the original container. The solution should be kept tightly capped. Store at controlled room temperature per USP 35 (10.30.60). Do not freeze, heat, or expose to direct sunlight. Minimize exposure to moisture or high humidity.

**Period of Validity:** Agilent Technologies ensures the accuracy of this solution until the expiration date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

**Date of release:** 9 February 2015  
**Date of expiration:** 31 August 2016

**Sample lot approval:**  
  
 QA Manager

Certified concentration(s) reported (with uncertainty values in w/v and w/w)

Assayed by high performance ICP-OES, a method developed by NIST to assure direct traceability to the appropriate NIST 3100 Series of single-element SRMs

Method(s) used to determine certified concentrations

Actual concentration values reported for up to 68 impurity elements

\*Impurities in wear metal, metallo-organic, and biodiesel standards assayed using ICP-OES, XRF, or other elemental analysis techniques

Certificate of Analysis for an Agilent CRM, depicting the additional levels of quality control that are applied during the manufacture of the spectroscopy CRM.

## IntelliQuant Calibration Standards for 5100/5110 SVDV/VDV ICP-OES

Agilent's IntelliQuant feature for the 5100/5110 Dual View ICP-OES identifies and calculates a semiquantitative concentration in a sample, expanding the capabilities of a classic ICP-OES analysis. This allows analysts to quickly check the semiquantitative concentration of many elements in their sample, without changing their routine methods or preparing extra multi-element standards, which can be technically challenging and time consuming.

IntelliQuant includes default calibrations, available for axial, radial and synchronous vertical dual view modes, which allow the estimation of up to 70 elements in a sample without the need to analyze any additional standards. If more accurate results are required, just update the default calibrations by using the multi-element IntelliQuant calibration standards (either individually or the complete kit). When measured, this updates the default IntelliQuant calibration for all 69 elements. These standards are ideal for labs requiring more accurate semiquantitative analysis without time consuming standard preparation.

For more details, please see Rapid Sample Assessment and Simplified Method Development with IntelliQuant, Agilent publication 5991-6876EN.

### IntelliQuant Calibration Standards for 5100/5110 SVDV/VDV ICP-OES

| Description                                                            | Comments                                                                                                                                                                                                                                                                                                                                                                                           | Part No.  |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| IntelliQuant calibration kit, for 5110 DV ICP-OES                      | Contains four solutions that are used to update the presupplied IntelliQuant calibration to achieve a greater level of accuracy for semiquantitative analysis. Includes multi-element standard #1 (p/n 5190-9422), #2 (p/n 5190-9423), and #3 (p/n 5190-9424) plus the nitric acid blank (p/n 5190-7001)*                                                                                          | 5190-9425 |
| <b>Individual IntelliQuant Standards</b>                               |                                                                                                                                                                                                                                                                                                                                                                                                    |           |
| IntelliQuant multi-element standard #1, 500 mL, 100 ppm (ready to use) | Multi-element standard #1 used to update the presupplied IntelliQuant calibration for semiquantitative analysis with 5110 DV ICP-OES. 500 mL bottle<br>Contains 100 mg/L of Al, As, B, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Dy, Er, Eu, Fe, Ga, Gd, Ho, In, K, La, Li, Lu, Mg, Mn, Na, Nd, Ni, P, Pb, Pr, Rb, Re, Sc, Se, Sm, Sr, Tb, Th, Ti, Tm, U, V, Y, Yb, and Zn in 5 % HNO <sub>3</sub> . | 5190-9422 |
| IntelliQuant multi-element standard #2, 500 mL, 100 ppm (ready to use) | Multi-element standard #2 used to update the presupplied IntelliQuant calibration for semiquantitative analysis with 5110 DV ICP-OES. 500 mL bottle<br>Contains 100 mg/L of Ag, Ge, Hf, Mo, Nb, Sb, Si, Sn, Ta, Ti, W, and Zr in 5 % HNO <sub>3</sub> with trace HF.                                                                                                                               | 5190-9423 |

(Continued)

**IntelliQuant Calibration Standards for 5100/5110 SVDV/VDV ICP-OES**

| Description                                                                 | Comments                                                                                                                                                                                                                    | Part No.  |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| IntelliQuant multi-element standard #3, 500 mL, 100 ppm (ready to use)      | Multi-element standard #3 used to update the presupplied IntelliQuant calibration for semiquantitative analysis with 5110 DV ICP-OES. 500 mL bottle<br>Contains 100 mg/L of Au, Ir, Os, Pd, Pt, Rh, Ru, and Te in 10 % HCl. | 5190-9424 |
| IntelliQuant single element standard for Hg, 100 mL, 10 ppm (ready to use)  | Single element Hg standard used to update the presupplied IntelliQuant calibration for semiquantitative analysis with 5110 DV ICP-OES. 100 mL bottle of 10 mg/L Hg in 5 % HNO <sub>3</sub> .                                | 5190-8575 |
| Bottle calibration blank solution for ICP-OES, 500 mL, 0 ppm (ready to use) | Pure ASTM Type 1A water with 5 % HNO <sub>3</sub> . 500 mL bottle.<br>Suitable for use as a calibration blank when updating the presupplied IntelliQuant calibration for semiquantitative analysis with 5110 DV ICP-OES.    | 5190-7001 |

\*A Hg standard is not part of this kit. If a Hg solution is required, it must be ordered as a separate line item

**Multi-element Calibration Standards**

| Description                                                                                                                                  | Part No.   |
|----------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Calibration mix 1 125 mL, contains 100 mg/L Sb, Mo, Sn, and Tl in 2 % HNO <sub>3</sub> + 0.5 % HF                                            | 6610030500 |
| Calibration mix 2 125 mL, contains 100 mg/L Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, Se, Tl, Th, U, V, and Zn in 5 % HNO <sub>3</sub> | 6610030600 |
| Calibration mix majors 125 mL, contains 500 mg/L Ca, Fe, K, Mg, and Na in 5 % HNO <sub>3</sub>                                               | 6610030700 |

**TIPS AND TOOLS**

Store standards at controlled room temperature per USP 35 (10.30.60). Do not freeze, heat, or expose to direct sunlight. Minimize exposure to moisture or high humidity.



Copper (Cu) standard, 5190-8280

**1,000 µg/mL Single Element Standards for AA and MP-AES**

| Description    | Matrix               | Part No. 100 mL | Part No. 500 mL |
|----------------|----------------------|-----------------|-----------------|
| Aluminum (Al)  | 5 % HCl              | 5190-8256       | 5190-8257       |
| Antimony (Sb)  | 30 % HCl             | 5190-8258       | 5190-8259       |
| Arsenic (As)   | 5 % HNO <sub>3</sub> | 5190-8260       | 5190-8261       |
| Barium (Ba)    | 5 % HNO <sub>3</sub> | 5190-8262       | 5190-8263       |
| Beryllium (Be) | 5 % HNO <sub>3</sub> | 5190-8264       | 5190-8265       |
| Bismuth (Bi)   | 5 % HNO <sub>3</sub> | 5190-8266       | 5190-8267       |
| Boron (B)      | H <sub>2</sub> O     | 5190-8268       | 5190-8269       |
| Cadmium (Cd)   | 5 % HNO <sub>3</sub> | 5190-8270       | 5190-8271       |
| Calcium (Ca)   | 5 % HNO <sub>3</sub> | 5190-8272       | 5190-8273       |
| Cesium (Ce)    | 5 % HNO <sub>3</sub> | 5190-8274       |                 |
| Chromium (Cr)  | 5 % HCl              | 5190-8275       | 5190-8276       |
| Cobalt (Co)    | 5 % HNO <sub>3</sub> | 5190-8277       | 5190-8278       |
| Copper (Cu)    | 5 % HNO <sub>3</sub> | 5190-8279       | 5190-8280       |
| Gold (Au)      | 20 % HCl             | 5190-8282       | 5190-8283       |
| Indium (In)    | 5 % HNO <sub>3</sub> | 5190-8284       |                 |
| Iron (Fe)      | 5 % HNO <sub>3</sub> | 5190-8285       | 5190-8286       |
| Lead (Pb)      | 5 % HNO <sub>3</sub> | 5190-8287       | 5190-8288       |
| Lithium (Li)   | 5 % HNO <sub>3</sub> | 5190-8289       | 5190-8290       |
| Magnesium (Mg) | 5 % HNO <sub>3</sub> | 5190-8291       | 5190-8292       |
| Manganese (Mn) | 5 % HNO <sub>3</sub> | 5190-8293       | 5190-8294       |
| Mercury (Hg)   | 5 % HNO <sub>3</sub> | 5190-8295       | 5190-8296       |

(Continued)

**1,000 µg/mL Single Element Standards for AA and MP-AES**

| Description     | Matrix                 | Part No. 100 mL | Part No. 500 mL |
|-----------------|------------------------|-----------------|-----------------|
| Molybdenum (Mo) | 1 % NH <sub>4</sub> OH | 5190-8297       |                 |
| Nickel (Ni)     | 5 % HNO <sub>3</sub>   | 5190-8298       | 5190-8299       |
| Palladium (Pd)  | 20 % HCl               | 5190-8300       | 5190-8301       |
| Platinum (Pt)   | 20 % HCl               | 5190-8302       | 5190-8303       |
| Potassium (K)   | 5 % HNO <sub>3</sub>   | 5190-8304       | 5190-8305       |
| Selenium (Se)   | 5 % HNO <sub>3</sub>   | 5190-8306       | 5190-8307       |
| Silicon (Si)    | H <sub>2</sub> O       | 5190-8308       |                 |
| Silver (Ag)     | 5 % HNO <sub>3</sub>   | 5190-8309       | 5190-8310       |
| Sodium (Na)     | 5 % HNO <sub>3</sub>   | 5190-8311       | 5190-8312       |
| Strontium (Sr)  | 5 % HNO <sub>3</sub>   | 5190-8313       | 5190-8314       |
| Tellurium (Te)  | 5 % HNO <sub>3</sub>   | 5190-8315       |                 |
| Thallium (Tl)   | 5 % HNO <sub>3</sub>   | 5190-8316       | 5190-8317       |
| Tin (Sn)        | 20 % HCl               | 5190-8318       | 5190-8319       |
| Titanium (Ti)   | H <sub>2</sub> O       | 5190-8320       | 5190-8321       |
| Vanadium (V)    | 5 % HNO <sub>3</sub>   | 5190-8323       | 5190-8324       |
| Zinc (Zn)       | 5 % HNO <sub>3</sub>   | 5190-8325       | 5190-8326       |
| Zirconium (Zr)  | 5 % HNO <sub>3</sub>   | 5190-8327       |                 |

**TIPS AND TOOLS**

The shelf life defines the time that the standard can be stored without undergoing physical or chemical change. The chemical stability and transpiration losses (water loss) determine shelf life. Replace standards well before the expiry date to ensure accuracy and minimize contamination risks.



Mixed palladium nitrate/magnesium nitrate,  
5190-8340

### Buffers/Ionization Suppressant for Flame AA

#### Supplied in 500 mL bottles

| Description                                                                   | Part No.  |
|-------------------------------------------------------------------------------|-----------|
| Cesium buffer solution<br>Contains 1 % Cs (from carbonate) in 5 % nitric acid | 5190-8343 |
| Lanthanum buffer solution – 10 % 100,000 mg/L La in 5 % HNO <sub>3</sub>      | 5190-8801 |
| Potassium buffer solution – 10 % 100,000 mg/L K in 5 % HNO <sub>3</sub>       | 5190-9420 |
| Strontium buffer solution – 10 % 100,000 mg/L Sr in 5 % HNO <sub>3</sub>      | 5190-9419 |

### Matrix Modifiers for Graphite Furnace AA

| Description                                                                                                | Matrix                | Part No.  |
|------------------------------------------------------------------------------------------------------------|-----------------------|-----------|
| Palladium nitrate, 0.1 % Pd, 100 mL                                                                        | 5 % HNO <sub>3</sub>  | 5190-8335 |
| Palladium nitrate, 1 % Pd, 100 mL                                                                          | 10 % HNO <sub>3</sub> | 5190-8336 |
| Ammonium phosphate, 10 % NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> , 100 mL                           | 2 % HNO <sub>3</sub>  | 5190-8337 |
| Magnesium nitrate, 1 % Mg(NO <sub>3</sub> ) <sub>2</sub> , 100 mL                                          | 2 % HNO <sub>3</sub>  | 5190-8338 |
| Nickel nitrate, 1 % Ni(NO <sub>3</sub> ) <sub>2</sub> , 100 mL                                             | 2 % HNO <sub>3</sub>  | 5190-8339 |
| Palladium nitrate, magnesium nitrate, 750 µg/mL Pd, 500 µg/mL Mg(NO <sub>3</sub> ) <sub>2</sub> , 250 mL   | 2 % HNO <sub>3</sub>  | 5190-8340 |
| Palladium nitrate, magnesium nitrate, 1,000 µg/mL Pd, 600 µg/mL Mg(NO <sub>3</sub> ) <sub>2</sub> , 250 mL | 2 % HNO <sub>3</sub>  | 5190-8341 |
| Ammonium phosphate, magnesium nitrate, 10 mg/mL, 600 µg/mL Mg(NO <sub>3</sub> ) <sub>2</sub> , 250 mL      | 2 % HNO <sub>3</sub>  | 5190-8342 |
| Triton X-100 surfactant, 50 mL                                                                             |                       | CP3418    |

### 1,000 µg/mL Single Element Standards for ICP-OES and MP-AES

| Description    | Matrix                                     | Part No.<br>100 mL | Part No.<br>500 mL |
|----------------|--------------------------------------------|--------------------|--------------------|
| Aluminum (Al)  | 5 % HNO <sub>3</sub>                       | 5190-8242          | 5190-8243          |
| Antimony (Sb)  | 1 % HNO <sub>3</sub> , trace tartaric acid | 5190-8244          | 5190-8245          |
| Arsenic (As)   | 5 % HNO <sub>3</sub>                       | 5190-8246          | 5190-8247          |
| Barium (Ba)    | 5 % HNO <sub>3</sub>                       | 5190-8248          | 5190-8249          |
| Beryllium (Be) | 5 % HNO <sub>3</sub>                       | 5190-8250          | 5190-8251          |
| Bismuth (Bi)   | 5 % HNO <sub>3</sub>                       | 5190-8252          | 5190-8253          |
| Boron (B)      | H <sub>2</sub> O                           | 5190-8254          | 5190-8255          |
| Cadmium (Cd)   | 5 % HNO <sub>3</sub>                       | 5190-9414          | 5190-8328          |

(Continued)

**1,000 µg/mL Single Element Standards for ICP-OES and MP-AES**

| <b>Description</b> | <b>Matrix</b>                    | <b>Part No.<br/>100 mL</b> | <b>Part No.<br/>500 mL</b> |
|--------------------|----------------------------------|----------------------------|----------------------------|
| Calcium (Ca)       | 5 % HNO <sub>3</sub>             | 5190-8329                  | 5190-8330                  |
| Cerium (Ce)        | 5 % HNO <sub>3</sub>             | 5190-8331                  | 5190-8332                  |
| Cesium (Cs)        | 5 % HNO <sub>3</sub>             | 5190-8333                  | 5190-8334                  |
| Chromium (Cr)      | 5 % HNO <sub>3</sub>             | 5190-8344                  | 5190-8345                  |
| Cobalt (Co)        | 5 % HNO <sub>3</sub>             | 5190-8346                  | 5190-8347                  |
| Copper (Cu)        | 5 % HNO <sub>3</sub>             | 5190-8348                  | 5190-8349                  |
| Dysprosium (Dy)    | 5 % HNO <sub>3</sub>             | 5190-8350                  | 5190-8351                  |
| Erbium (Er)        | 5 % HNO <sub>3</sub>             | 5190-8237                  | 5190-8238                  |
| Europium (Eu)      | 5 % HNO <sub>3</sub>             | 5190-8239                  | 5190-8240                  |
| Gadolinium (Gd)    | 5 % HNO <sub>3</sub>             | 5190-8241                  | 5190-8456                  |
| Gallium (Ga)       | 5 % HNO <sub>3</sub> , 0.5 % HCl | 5190-8457                  | 5190-8458                  |
| Germanium (Ge)     | 5 % HNO <sub>3</sub> , trace HF  | 5190-8459                  | 5190-8460                  |
| Gold (Au)          | 20 % HCl                         | 5190-8461                  | 5190-8462                  |
| Hafnium (Hf)       | 5 % HCl                          | 5190-8463                  | 5190-8464                  |
| Holmium (Ho)       | 5 % HNO <sub>3</sub>             | 5190-8465                  | 5190-8466                  |
| Indium (In)        | 5 % HNO <sub>3</sub>             | 5190-8467                  | 5190-8468                  |
| Iridium (Ir)       | 20 % HCl                         | 5190-8469                  | 5190-8470                  |
| Iron (Fe)          | 5 % HNO <sub>3</sub>             | 5190-8471                  | 5190-8472                  |
| Lanthanum (La)     | 5 % HNO <sub>3</sub>             | 5190-8473                  | 5190-8474                  |
| Lead (Pb)          | 5 % HNO <sub>3</sub>             | 5190-8475                  | 5190-8476                  |
| Lithium (Li)       | 5 % HNO <sub>3</sub>             | 5190-8477                  | 5190-8478                  |
| Lutetium (Lu)      | 5 % HNO <sub>3</sub>             | 5190-8479                  | 5190-8480                  |
| Magnesium (Mg)     | 5 % HNO <sub>3</sub>             | 5190-8481                  | 5190-8482                  |
| Manganese (Mn)     | 5 % HNO <sub>3</sub>             | 5190-8483                  | 5190-8484                  |
| Mercury (Hg)       | 5 % HNO <sub>3</sub>             | 5190-8485                  | 5190-8486                  |
| Molybdenum (Mb)    | 1 % NH <sub>4</sub> OH           | 5190-8487                  | 5190-8488                  |
| Neodymium (Nd)     | 5 % HNO <sub>3</sub>             | 5190-8489                  | 5190-8490                  |
| Nickel (Ni)        | 5 % HNO <sub>3</sub>             | 5190-8491                  | 5190-8492                  |
| Niobium (Nb)       | 2 % HF                           | 5190-8493                  | 5190-8494                  |
| Osmium (Os)        | 20 % HCl                         | 5190-8495                  | 5190-8496                  |
| Palladium (Pd)     | 5 % HNO <sub>3</sub>             | 5190-8497                  | 5190-8498                  |
| Phosphorus (P)     | 5 % HNO <sub>3</sub>             | 5190-8499                  | 5190-8500                  |
| Platinum (Pt)      | 20 % HCl                         | 5190-8501                  | 5190-8502                  |
| Potassium (K)      | 5 % HNO <sub>3</sub>             | 5190-8503                  | 5190-8504                  |

*(Continued)*

## TIPS AND TOOLS

Use balances, not pipettes, for diluting. Try to dilute on a weight/weight basis using calibrated balances; the uncertainty of a balance is much lower than a pipette.

## 1,000 µg/mL Single Element Standards for ICP-OES and MP-AES

| Description       | Matrix                          | Part No.<br>100 mL | Part No.<br>500 mL |
|-------------------|---------------------------------|--------------------|--------------------|
| Praseodymium (Pr) | 5 % HNO <sub>3</sub>            | 5190-8505          | 5190-8506          |
| Rhenium (Re)      | 5 % HNO <sub>3</sub>            | 5190-8507          | 5190-8508          |
| Rhodium (Rh)      | 20 % HCl                        | 5190-8509          | 5190-8510          |
| Rubidium (Rb)     | 5% HNO <sub>3</sub>             | 5190-8511          | 5190-8512          |
| Ruthenium (Ru)    | 20 % HCl                        | 5190-8513          | 5190-8514          |
| Samarium (Sm)     | 5 % HNO <sub>3</sub>            | 5190-8515          | 5190-8516          |
| Scandium (Sc)     | 5 % HNO <sub>3</sub>            | 5190-8517          | 5190-8518          |
| Selenium (Se)     | 5 % HNO <sub>3</sub>            | 5190-8519          | 5190-8520          |
| Silicon (Si)      | H <sub>2</sub> O                | 5190-8521          | 5190-8522          |
| Silver (Ag)       | 5 % HNO <sub>3</sub>            | 5190-8523          | 5190-8524          |
| Sodium (Na)       | 5 % HNO <sub>3</sub>            | 5190-8525          | 5190-8526          |
| Strontium (Sr)    | 5 % HNO <sub>3</sub>            | 5190-8527          | 5190-8528          |
| Sulfur (S)        | H <sub>2</sub> O                | 5190-8529          | 5190-8530          |
| Tantalum (Ta)     | 2 % HF                          | 5190-8531          | 5190-8532          |
| Tellurium (Te)    | 30 % HCl                        | 5190-8533          | 5190-8534          |
| Terbium (Tb)      | 5 % HNO <sub>3</sub>            | 5190-8535          | 5190-8536          |
| Thallium (Tl)     | 5 % HNO <sub>3</sub>            | 5190-8537          | 5190-8538          |
| Thorium (Th)      | 5 % HNO <sub>3</sub>            | 5190-8539          | 5190-8540          |
| Thulium (Tm)      | 5 % HNO <sub>3</sub>            | 5190-8541          | 5190-8542          |
| Tin (Sn)          | 20 % HCl                        | 5190-8543          | 5190-8544          |
| Titanium (Ti)     | H <sub>2</sub> O                | 5190-8545          | 5190-8546          |
| Tungsten (W)      | 5 % HNO <sub>3</sub> , trace HF | 5190-8547          | 5190-8548          |
| Uranium (U)       | 5 % HNO <sub>3</sub>            | 5190-8549          | 5190-8550          |
| Vanadium (V)      | 5 % HNO <sub>3</sub>            | 5190-8551          | 5190-8552          |
| Ytterbium (Yb)    | 5 % HNO <sub>3</sub>            | 5190-8553          | 5190-8554          |
| Yttrium (Y)       | 5 % HNO <sub>3</sub>            | 5190-8555          | 5190-8556          |
| Zinc (Zn)         | 5 % HNO <sub>3</sub>            | 5190-8557          | 5190-8558          |
| Zirconium (Zr)    | 5 % HCl                         | 5190-8559          | 5190-8560          |

**10,000 µg/mL Single Element Standards for ICP-OES and MP-AES**

| <b>Description</b> | <b>Matrix</b>                            | <b>Part No. 100 mL</b> | <b>Part No. 500 mL</b> |
|--------------------|------------------------------------------|------------------------|------------------------|
| Aluminum (Al)      | 5 % HNO <sub>3</sub>                     | 5190-8352              | 5190-8353              |
| Antimony (Sb)      | 1 % HNO <sub>3</sub> , 1 % tartaric acid | 5190-8354              | 5190-8355              |
| Arsenic (As)       | 5 % HNO <sub>3</sub>                     | 5190-8356              | 5190-8357              |
| Barium (Ba)        | 5 % HNO <sub>3</sub>                     | 5190-8358              | 5190-8359              |
| Beryllium (Be)     | 5 % HNO <sub>3</sub>                     | 5190-8360              | 5190-8361              |
| Bismuth (Bi)       | 5 % HNO <sub>3</sub>                     | 5190-8362              | 5190-8363              |
| Boron (B)          | 1 % NH <sub>4</sub> OH                   | 5190-8364              | 5190-8365              |
| Cadmium (Cd)       | 5 % HNO <sub>3</sub>                     | 5190-8366              | 5190-8367              |
| Calcium (Ca)       | 5 % HNO <sub>3</sub>                     | 5190-8368              | 5190-8369              |
| Cerium (Ce)        | 5 % HNO <sub>3</sub>                     | 5190-8370              | 5190-8371              |
| Cesium (Cs)        | 5 % HNO <sub>3</sub>                     | 5190-8372              | 5190-8373              |
| Chromium (Cr)      | 5 % HNO <sub>3</sub>                     | 5190-8374              | 5190-8375              |
| Cobalt (Co)        | 5 % HNO <sub>3</sub>                     | 5190-8376              | 5190-8377              |
| Copper (Cu)        | 5 % HNO <sub>3</sub>                     | 5190-8378              | 5190-8379              |
| Dysprosium (Dy)    | 5 % HNO <sub>3</sub>                     | 5190-8380              | 5190-8381              |
| Erbium (Er)        | 5 % HNO <sub>3</sub>                     | 5190-8382              | 5190-8383              |
| Europium (Eu)      | 5 % HNO <sub>3</sub>                     | 5190-8384              | 5190-8385              |
| Gadolinium (Gd)    | 5 % HNO <sub>3</sub>                     | 5190-8386              | 5190-8387              |
| Gallium (Ga)       | 5 % HNO <sub>3</sub> , 0.5 % HCl         | 5190-8388              | 5190-8389              |
| Germanium (Ge)     | 5 % HNO <sub>3</sub> , trace HF          | 5190-8390              | 5190-8391              |
| Gold (Au)          | 20 % HCl                                 | 5190-8392              | 5190-8393              |
| Hafnium (Hf)       | 5 % HCl                                  | 5190-8394              | 5190-8395              |
| Holmium (Ho)       | 5 % HNO <sub>3</sub>                     | 5190-8396              | 5190-8397              |
| Indium (In)        | 5 % HNO <sub>3</sub>                     | 5190-8398              | 5190-8399              |
| Iridium (Ir)       | 20 % HCl                                 | 5190-8400              | 5190-8401              |
| Iron (Fe)          | 5 % HNO <sub>3</sub>                     | 5190-8402              | 5190-8403              |
| Lanthanum (La)     | 5 % HNO <sub>3</sub>                     | 5190-8404              | 5190-8405              |
| Lead (Pb)          | 5 % HNO <sub>3</sub>                     | 5190-8406              | 5190-8407              |
| Lithium (Li)       | 5 % HNO <sub>3</sub>                     | 5190-8408              | 5190-8409              |
| Lutetium (Lu)      | 5 % HNO <sub>3</sub>                     | 5190-8410              | 5190-8411              |
| Magnesium (Mg)     | 5 % HNO <sub>3</sub>                     | 5190-8412              | 5190-8413              |
| Manganese (Mn)     | 5 % HNO <sub>3</sub>                     | 5190-8414              | 5190-8415              |
| Mercury (Hg)       | 5 % HNO <sub>3</sub>                     | 5190-8416              | 5190-8417              |
| Molybdenum (Mb)    | 1% NH <sub>4</sub> OH                    | 5190-8418              | 5190-8419              |
| Neodymium (Nd)     | 5 % HNO <sub>3</sub>                     | 5190-8420              | 5190-8421              |
| Nickel (Ni)        | 5 % HNO <sub>3</sub>                     | 5190-8422              | 5190-8423              |

(Continued)

## TIPS AND TOOLS

“Matrix matching” of major sample components can be valuable with many spectrometric techniques. Our 1 % (10,000 µg/mL) standards work well as stock materials for matrix matching.

## 10,000 µg/mL Single Element Standards for ICP-OES and MP-AES

| Description       | Matrix                          | Part No. 100 mL | Part No. 500 mL |
|-------------------|---------------------------------|-----------------|-----------------|
| Niobium (Nb)      | 2 % HF                          | 5190-8424       | 5190-8425       |
| Palladium (Pd)    | 10 % HNO <sub>3</sub>           | 5190-8426       | 5190-8427       |
| Phosphorus (P)    | 5 % HNO <sub>3</sub>            | 5190-8428       | 5190-8429       |
| Platinum (Pt)     | 20% HCl                         | 5190-8430       | 5190-8431       |
| Potassium (K)     | 5 % HNO <sub>3</sub>            | 5190-8432       | 5190-8433       |
| Praseodymium (Pr) | 5 % HNO <sub>3</sub>            | 5190-8434       | 5190-8435       |
| Rhenium (Re)      | 5 % HNO <sub>3</sub>            | 5190-8436       | 5190-8437       |
| Rhodium (Rh)      | 20 % HCl                        | 5190-8438       | 5190-8439       |
| Rubidium (Rb)     | 5 % HNO <sub>3</sub>            | 5190-8440       | 5190-8441       |
| Ruthenium (Ru)    | 20 % HCl                        | 5190-8442       | 5190-8443       |
| Samarium (Sm)     | 5 % HNO <sub>3</sub>            | 5190-8444       | 5190-8445       |
| Scandium (Sc)     | 5 % HNO <sub>3</sub>            | 5190-8446       | 5190-8447       |
| Selenium (Se)     | 5 % HNO <sub>3</sub>            | 5190-8448       | 5190-8449       |
| Silicon (Si)      | H <sub>2</sub> O                | 5190-8450       | 5190-8451       |
| Silver (Ag)       | 5 % HNO <sub>3</sub>            | 5190-8452       | 5190-8453       |
| Sodium (Na)       | 5 % HNO <sub>3</sub>            | 5190-8454       | 5190-8206       |
| Strontium (Sr)    | 5 % HNO <sub>3</sub>            | 5190-8207       | 5190-8208       |
| Sulfur (S)        | H <sub>2</sub> O                | 5190-8209       | 5190-8210       |
| Tantalum (Ta)     | 2 % HF                          | 5190-8211       | 5190-8212       |
| Tellurium (Te)    | 30 % HCl                        | 5190-8213       | 5190-8214       |
| Terbium (Tb)      | 5 % HNO <sub>3</sub>            | 5190-8215       | 5190-8216       |
| Thallium (Tl)     | 5 % HNO <sub>3</sub>            | 5190-8217       | 5190-8218       |
| Thulium (Tm)      | 5 % HNO <sub>3</sub>            | 5190-8219       | 5190-8220       |
| Tin (Sn)          | 20 % HCl                        | 5190-8221       | 5190-8222       |
| Titanium (Ti)     | H <sub>2</sub> O                | 5190-8224       | 5190-8225       |
| Tungsten (W)      | 5 % HNO <sub>3</sub> , trace HF | 5190-8226       | 5190-8227       |
| Vanadium (V)      | 5 % HNO <sub>3</sub>            | 5190-8228       | 5190-8229       |
| Ytterbium (Yb)    | 5 % HNO <sub>3</sub>            | 5190-8230       | 5190-8231       |
| Yttrium (Y)       | 5 % HNO <sub>3</sub>            | 5190-8232       | 5190-8233       |
| Zinc (Zn)         | 5 % HNO <sub>3</sub>            | 5190-8234       | 5190-8235       |
| Zirconium (Zr)    | 5 % HNO <sub>3</sub>            | 5190-8236       |                 |

**Environmental Standards for ICP-OES**

| Description                                                                                                                                                                                                                                                                                                                      | Application                                                                         | Part No.  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------|
| INTF-A quality control standard, 500 mL<br>Contains Al, Ca, and Mg at 5,000 mg/L; Fe at 2,000 mg/L in 20 % HCl, 500 mL                                                                                                                                                                                                           | Interference check standard, for preparation of US EPA CLP standards ICSA and ICSAB | 5190-8599 |
| ICV quality control standard, in 5 % HNO <sub>3</sub> with traces of tartaric acid, 500 mL<br>Contains Ca, Mg, K & Na at 500 mg/L; Al and Ba at 200 mg/L; Fe at 100 mg/L; Sb at 60 mg/L; Co & V at 50 mg/L; Ni at 40 mg/L; Cu at 25 mg/L; Zn at 20 mg/L; Mn at 15 mg/L; As, Cr, Ag & Tl at 10 mg/L; Be, Cd, Pb, and Se at 5 mg/L | Initial/continuing calibration verification standard, for US EPA CLP analyses       | 5190-9408 |
| QCSTD-27 quality control standard, 100 mL<br>Contains Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Si, Ag, Sr, Na, Ti, V, and Zn at 100 mg/L                                                                                                                                                        | Quality control standard, for environmental analyses                                | 5190-9418 |

**Internal Standard/Ionization Suppressant for ICP-MS/ICP-OES/MP-AES**

| Description                                                                                                                                                  | Unit          | Part No.   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| Cesium buffer solution<br>Contains 1 % Cs (from carbonate) in 5 % nitric acid                                                                                | 500 mL bottle | 5190-8343  |
| Yttrium solution – 1 %<br>10,000 mg/L in 5 % nitric acid<br>Also used for instrument optimization                                                            | 500 mL bottle | 5190-8233  |
| ICP internal standard<br>contains 100 mg/L <sup>6</sup> Li, Sc, Y, In, Tb, and Bi in 5 % HNO <sub>3</sub>                                                    | 125 mL bottle | 6610030400 |
| Multi-element internal standard (mix 4)<br>Contains 50 µg/mL <sup>6</sup> Li, Sc, 25 µg/mL Ge, Te, 10 µg/mL Bi, In, Tb in 2 % HNO <sub>3</sub> with trace HF | 100 mL bottle | 5190-8593  |

**TIPS AND TOOLS**

Don't underestimate the importance of good mixing when preparing standards.  
A simple swirl is not enough. Make a habit of inverting and shaking the container several times.

## ICP-MS Standards

### Installation and Check-out Solutions

| Description                                                                        | Kit Contents                                                                                                                                                                                   | Part No.  |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| ICP-MS checkout solutions for 7700/8800 and 7500 ce/cx/cs, system installation kit | Contains tuning solution, dual mode (1), dual mode (2), wash, and water blank solutions                                                                                                        | 5185-5850 |
| ICP-MS Checkout Solution for 7500s system installation kit                         | Contains tuning solution, dual mode (1), dual mode (2), abundance sensitivity (1), abundance sensitivity (2), detection limit solution, high sensitivity tune, wash, and water blank solutions | 5184-3564 |
| ICP-MS Checkout Solution for 7500a 7500i /i/c system installation kit              | Contains tuning solution, dual mode (1), dual mode (2), wash, and water blank solutions                                                                                                        | 5184-3565 |

### Tuning Solution

| Description                                                                                                                                                                                                                                                                                                                                                                                                          | Part No.  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| PA tuning solution kit<br>Tuning 1: 20 mg/L each of Zn, Be, Cd, and As; 10 mg/L each of Ni, Pb, and Mg; 5 mg/L each of Tl, Na, Al, U, Cu, Th, Ba, Co, Sr, V, Cr, Mn, <sup>6</sup> Li, Sc, In, Lu, and Bi; 2.5 mg/L each of Y, and Yb; matrix 2-5 % HNO <sub>3</sub><br>Tuning 2: 10 mg/L each of Mo, Sb, Sn, Ge, Ru, and Pd; 5 mg/L of Ti, and Ir; matrix 10 % HCl and 1 % HNO <sub>3</sub> with trace amounts of HF | 5188-6524 |
| PA tuning solution kit<br>Li, Y, Ce, Tl and Co; 100 mL, 10 mg/L; matrix 2 % HNO <sub>3</sub>                                                                                                                                                                                                                                                                                                                         | 5188-6564 |
| PA tuning solution kit<br>Li, Mg, Y, Ce, Tl and Co; 100 mL, 10 mg/L; matrix 2 % HNO <sub>3</sub>                                                                                                                                                                                                                                                                                                                     | 5190-0465 |
| Tuning solution<br>Li, Y, Ce, Tl and Co; 2 x 500 mL, 10 µg/L; matrix 2 % HNO <sub>3</sub>                                                                                                                                                                                                                                                                                                                            | 5184-3566 |
| Tuning solution<br>Li, Mg, Y, Ce, Tl, and Co; 2 x 500 mL, 1 µg/L; matrix 2 % HNO <sub>3</sub>                                                                                                                                                                                                                                                                                                                        | 5185-5959 |

### Aqueous Internal Standards

#### Supplied in 100 mL bottles

| Description                                                    | Matrix                         | Part No.  |
|----------------------------------------------------------------|--------------------------------|-----------|
| Aqueous internal standard, 10 µg/mL iridium (Ir)               | 2% HCl                         | 5190-8588 |
| Aqueous internal standard, 10 µg/mL lithium ( <sup>6</sup> Li) | 2 % HNO <sub>3</sub>           | 5190-8589 |
| Aqueous internal standard, 10 µg/mL terbium (Tb)               | 2 % HNO <sub>3</sub>           | 5190-8590 |
| Aqueous internal standard, 10 µg/mL lutetium (Lu)              | 2 % HNO <sub>3</sub>           | 5190-8591 |
| Aqueous internal standard, 10 µg/mL germanium (Ge)             | 2% HNO <sub>3</sub> , trace HF | 5190-8592 |

**Multi-Element Calibration Standards**

| Description                                                                                                                                                                                                                                                  | Part No.  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Multi-element calibration standard-1, 100 mL: 10 mg/L of Ce, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Sc, Sm, Tb, Th, Tm, Y, Yb; matrix 5 % HNO <sub>3</sub>                                                                                                      | 8500-6944 |
| Multi-element calibration standard-2A, 2 x 100 mL: 1 bottle: 10 mg/L of Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cs, Cu, Fe, Ga, K, Li, Mg, Mn, Na, Ni, Pb, Rb, Se, Sr, Ti, U, V, Zn; matrix 5 % HNO <sub>3</sub><br>2 bottles: 10mg/L Hg in 5 % HNO <sub>3</sub> | 8500-6940 |
| Multi-element calibration standard-3, 100 mL: 10 mg/L of Sb, Au, Hf, Ir, Pd, Pt, Rh, Ru, Te, Sn; matrix 10 % HCl/1 % HNO <sub>3</sub>                                                                                                                        | 8500-6948 |
| Multi-element calibration standard-4, 100 mL: 10 mg/L of B, Ge, Mo, Nb, P, Re, S, Si, Ta, Ti, W, Zr; matrix HNO <sub>3</sub> /trace HF                                                                                                                       | 8500-6942 |

**10 µg/mL Single Element Standards for ICP-MS**

| Description    | Matrix                                     | Part No.  |
|----------------|--------------------------------------------|-----------|
| Aluminum (Al)  | 5 % HNO <sub>3</sub>                       | 5190-8561 |
| Antimony (Sb)  | 1 % HNO <sub>3</sub> , trace tartaric acid | 5190-8562 |
| Arsenic (As)   | 2 % HNO <sub>3</sub>                       | 5190-8563 |
| Barium (Ba)    | 2 % HNO <sub>3</sub>                       | 5190-8564 |
| Beryllium (Be) | 2 % HNO <sub>3</sub>                       | 5190-8565 |
| Boron (B)      | H <sub>2</sub> O                           | 5190-8566 |
| Cadmium (Cd)   | 2 % HNO <sub>3</sub>                       | 5190-8567 |
| Chromium (Cr)  | 2 % HNO <sub>3</sub>                       | 5190-8568 |
| Copper (Cu)    | 2 % HNO <sub>3</sub>                       | 5190-8569 |
| Iridium (Ir)   | 2 % HCl                                    | 5190-8570 |
| Lead (Pb)      | 2 % HNO <sub>3</sub>                       | 5190-8571 |
| Lithium (Li)   | 2 % HNO <sub>3</sub>                       | 5190-8572 |
| Lutetium (Lu)  | 2 % HNO <sub>3</sub>                       | 5190-8573 |
| Manganese (Mn) | 2 % HNO <sub>3</sub>                       | 5190-8574 |
| Mercury (Hg)   | 5 % HNO <sub>3</sub>                       | 5190-8575 |
| Nickel (Ni)    | 2 % HNO <sub>3</sub>                       | 5190-8576 |
| Platinum (Pt)  | 5 % HCl                                    | 5190-8577 |
| Scandium (Sc)  | 2 % HNO <sub>3</sub>                       | 5190-8578 |
| Selenium (Se)  | 2 % HNO <sub>3</sub>                       | 5190-8579 |
| Silver (Ag)    | 2 % HNO <sub>3</sub>                       | 5190-8580 |
| Strontium (Sr) | 2 % HNO <sub>3</sub>                       | 5190-8581 |
| Terbium (Tb)   | 2 % HNO <sub>3</sub>                       | 5190-8582 |
| Tin (Sn)       | 5 % HCl                                    | 5190-8583 |
| Uranium (U)    | 2 % HNO <sub>3</sub>                       | 5190-8584 |
| Vanadium (V)   | 5 % HNO <sub>3</sub>                       | 5190-8585 |
| Yttrium (Y)    | 2 % HNO <sub>3</sub>                       | 5190-8586 |
| Zinc (Zn)      | 2 % HNO <sub>3</sub>                       | 5190-8587 |

**TIPS AND TOOLS**

10 and 100 µg/mL standards are ideal for ICP-MS, GFAA, or other trace level elemental techniques

**10 and 100 µg/mL Single Element Standards for ICP-OES and ICP-MS**

| Description            | Matrix               | Part No.  |
|------------------------|----------------------|-----------|
| Bismuth (Bi), 10 µg/mL | 2 % HNO <sub>3</sub> | 8500-6936 |
| Cobalt (Co), 10 µg/mL  | 2 % HNO <sub>3</sub> | 8500-6947 |
| Gold (Au), 100 µg/mL   | 2 % HCl              | 8500-7000 |
| Indium (In), 10 µg/mL  | 2 % HNO <sub>3</sub> | 8500-6946 |
| Mercury (Hg), 10 µg/mL | 5 % HNO <sub>3</sub> | 8500-6941 |
| Rhodium (Rh), 10 µg/mL | 2 % HCl              | 8500-6945 |

**Interference Check Mixes**

| Description                                                                                                                                                                                                                                             | Part No.  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 6020 interference check solution A, 100 mL: 20,000 mg/L of Cl; 3,000 mg/L of Ca; 2,500 mg/L each of Fe and Na; 2,000 mg/L of C; 1,000 mg/L each of Al, Mg, P, K, and S; 20 mg/L each of Ti and Mo; matrix 5 % HNO <sub>3</sub> with trace amounts of HF | 5188-6526 |
| 6020 interference check solution B, 100 mL: 20 mg/L each of Cr, Co, Cu, Mn, Ni, and V; 10 mg/L each of As, Cd, Se, and Zn; 5 mg/L of Ag; matrix 5 % HNO <sub>3</sub>                                                                                    | 5188-6527 |

**Environmental Standards**

| <b>Description</b>                                                                                                                                                                                                                                                     | <b>Part No.</b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Environmental calibration standard, 100 mL<br>1,000 mg/L of Fe, K, Ca, Na, and Mg; 10 mg/L of Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Ti, V, Zn, Th, and U; matrix 5 % HNO <sub>3</sub> with trace amounts of tartaric acid                        | 5183-4688       |
| Initial calibration verification standard, 100 mL<br>1,000 mg/L of Fe, K, Ca, Na, and Mg; 100 mg/L of Sr; 10 mg/L of Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Ti, V, Zn, Th, and U; matrix 5 % HNO <sub>3</sub> with trace amounts of tartaric acid | 5183-4682       |
| Internal standard mix, 100 mL<br>100 mg/L of <sup>6</sup> Li, Sc, Ge, Rh, In, Tb, Lu, and Bi; matrix 10 % HNO <sub>3</sub>                                                                                                                                             | 5188-6525       |
| Internal standard mix, 100 mL<br>10 mg/L of <sup>6</sup> Li, Sc, Ge, Y, In, Tb, and Bi; matrix 5 % HNO <sub>3</sub>                                                                                                                                                    | 5183-4681       |
| Environmental spike mix, 100 mL<br>1,000 mg/L of Fe, K, Ca, Na, and Mg; 100 mg/L of Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Ti, V, Zn, and U; matrix 5% HNO <sub>3</sub>                                                                           | 5183-4687       |

**EPA Method Standards**

| <b>Description</b>                                                                                | <b>Matrix</b>        | <b>Volume (mL)</b> | <b>Similar to PerkinElmer Part No.</b> | <b>Part No.</b> |
|---------------------------------------------------------------------------------------------------|----------------------|--------------------|----------------------------------------|-----------------|
| ICS interference A for EPA 200.7<br>Contains 5,000 µg/mL Al, Ca, and Mg; 2,000 µg/mL Fe           | 20 % HCl             | 500                |                                        | 5190-8599       |
| CLP instrument calibration solution 1<br>Contains 5,000 µg/mL Ca, Mg, K, and Na                   | 5 % HNO <sub>3</sub> | 125                | N9300218                               | 5190-9409       |
| CLP instrument calibration mix 4<br>Contains 100 µg/mL As and Ti; 50 µg/mL Cd and Se; 30 µg/mL Pb | 5 % HNO <sub>3</sub> | 125                | N9300221                               | 5190-9412       |

## Initial Calibration Verification Standards

| Description                                                                                                                                                                                                                                                                           | Matrix                                     | Volume (mL) | Similar to PerkinElmer Part No. | Part No.  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------|---------------------------------|-----------|
| Alternate trace metal drinking pollution and wastewater standards I for ICP and AA<br>Contains 20 µg/mL Al, Fe, and V; 10 µg/mL Co, Cu, Mn, Ni, and Zn; 5 µg/mL Sb, Be, and Tl                                                                                                        | 2 % HNO <sub>3</sub>                       | 100         | N9300214                        | 5190-9406 |
| Alternate trace metal drinking pollution and wastewater standards II for ICP and AA<br>Contains 500 µg/mL Ca and Na; 100 µg/mL Mg and K                                                                                                                                               | 2 % HNO <sub>3</sub>                       | 100         | N9300215                        | 5190-9407 |
| Initial calibration verification for ICP, AA, or GFAA<br>Contains 500 µg/mL Ca, K, Mg, and Na; 200 µg/mL Al and Ba; 100 µg/mL Fe; 60 µg/mL Sb; 50 µg/mL Co and V; 40 µg/mL Ni; 25 µg/mL Cu; 20 µg/mL Zn; 15 µg/mL Mn; 10 µg/mL Ag, As, Cr, and Tl; 5 µg/mL Be, Cd, and Se; 3 µg/mL Pb | 5 % HNO <sub>3</sub> , trace tartaric acid | 500         | N9300224                        | 5190-9408 |



ICP-MS Semi-Quant standard, 5190-8594

## Semi-Quant Standards for ICP-MS

| Description                                                                                                                                                                                     | Matrix                    | Part No.  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|
| ICP-MS semiquantitative standard I<br>Contains 10 µg/mL Ag, Al, As, Ba, Bi, Ca, Cd, Ce, Dy, Er, Eu, Ga, Gd, Ho, La, Lu, Mg, Na, Nd, P, Pb, Pr, Rb, Sc, Se, Sm, Sr, Tb, Th, Tl, Tm, U, Y, and Yb | 40 % aqua regia           | 5190-8594 |
| ICP-MS semiquantitative standard II<br>Contains 10 µg/mL Au, B, Be, Co, Cr, Cu, Fe, Ge, Hf, Ir, K, Li, Mn, Mo, Nb, Ni, Os, Pd, Pt, Re, Rh, Ru, Sb, Si, Sn, Ta, Te, Ti, V, W, Zn, and Zr         | 40 % aqua regia, trace HF | 5190-8595 |

## Wear Metal and Metallo-organic Standards

- Highest quality metallo-organic mixes in the industry manufactured in accordance with the requirements of ISO Guide 34 and ISO 17025
- Accuracy ensured by quality testing with NIST Standard Reference Materials
- CoA includes trace metal concentrations confirmed by ICP-OES

### Wear Metal Standards

| Description                                                                                                                     | Unit (µg/g) | Matrix                 | Part No.  |
|---------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------|-----------|
| A21 Wear metal standards, 100 g<br>Contains Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, Mg, Mn, Mo, Na, Ni, P, Pb, Si, Sn, Ti, V, and Zn | 100         | 75 cSt hydrocarbon oil | 5190-8603 |
|                                                                                                                                 | 300         | 75 cSt hydrocarbon oil | 5190-8604 |
|                                                                                                                                 | 500         | 75 cSt hydrocarbon oil | 5190-8605 |
|                                                                                                                                 | 900         | 75 cSt hydrocarbon oil | 5190-8706 |
| A21+K Wear metal standards, 100 g<br>Contains all A21 elements plus K                                                           | 100         | 75 cSt hydrocarbon oil | 5190-8710 |
|                                                                                                                                 | 300         | 75 cSt hydrocarbon oil | 5190-8711 |
|                                                                                                                                 | 500         | 75 cSt hydrocarbon oil | 5190-8712 |
|                                                                                                                                 | 900         | 75 cSt hydrocarbon oil | 5190-8713 |

**Base Oil and Solvents**

| Description                                                                                                                                                                                                                       | Matrix              | Quantity | Part No.  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------|-----------|
| Base mineral oil, < 1 µg/g<br>Used for blending and preparation of calibration standards for spectrometric analysis of metals in hydrocarbon/petrochemical samples.                                                               | 75 cSt mineral oil  | 500 mL   | 5190-8715 |
|                                                                                                                                                                                                                                   |                     | 1/2 gal  | 5190-8716 |
| V-Solv solvent<br>Used for diluting metallo-organic standards, oils and other organic solutions when preparing for spectrometric analysis of metals in hydrocarbon/petrochemical samples. Use as a matrix blank and as a diluent. | Proprietary solvent | 1 gal    | 5190-8717 |
| Biodiesel blank<br>Excellent matrix match for almost all biodiesel fuels.<br>Use as calibration blanks for analysis of metals or sulfur in biodiesel.                                                                             | B100 biodiesel      | 100 mL   | 5190-8718 |
|                                                                                                                                                                                                                                   |                     | 500 mL   | 5190-8719 |

**TIPS AND TOOLS**

Many of these compounds are sulfonate-based, and therefore contain high levels of sulfur. If absence of sulfur is important for your application, use sulfur-free standards.

**Internal Standard for Oil Analysis (200 g)**

| Description                                        | Matrix          | Part No.  |
|----------------------------------------------------|-----------------|-----------|
| Cobalt internal standard<br>Contains 5,000 µg/g Co | Hydrocarbon oil | 5190-8714 |

**Single Element Standards in Hydrocarbon Oil, 50 g**

| Description    | Matrix                 | Conc. (µg/g) | Part No.  |
|----------------|------------------------|--------------|-----------|
| Aluminum (Al)  | 75 cSt hydrocarbon oil | 1,000        | 5190-8731 |
|                |                        | 5,000        | 5190-8732 |
| Antimony (Sb)  | 75 cSt hydrocarbon oil | 1,000        | 5190-8733 |
|                |                        | 5,000        | 5190-8734 |
| Arsenic (As)   | 75 cSt hydrocarbon oil | 1,000        | 5190-8735 |
| Barium (Ba)    | 75 cSt hydrocarbon oil | 1,000        | 5190-8736 |
|                |                        | 5,000        | 5190-8737 |
| Beryllium (Be) | 75 cSt hydrocarbon oil | 1,000        | 5190-8738 |
| Bismuth (Bi)   | 75 cSt hydrocarbon oil | 1,000        | 5190-8739 |
| Boron (B)      | 75 cSt hydrocarbon oil | 1,000        | 5190-8740 |
|                |                        | 5,000        | 5190-8741 |
| Cadmium (Cd)   | 75 cSt hydrocarbon oil | 1,000        | 5190-8742 |
|                |                        | 5,000        | 5190-8743 |
| Calcium (Ca)   | 75 cSt hydrocarbon oil | 1,000        | 5190-8744 |
|                |                        | 5,000        | 5190-8745 |
| Cerium (Ce)    | 75 cSt hydrocarbon oil | 1,000        | 5190-8746 |
|                |                        | 5,000        | 5190-8747 |
| Chromium (Cr)  | 75 cSt hydrocarbon oil | 1,000        | 5190-8748 |
|                |                        | 5,000        | 5190-8749 |
| Cobalt (Co)    | 75 cSt hydrocarbon oil | 1,000        | 5190-8750 |
|                |                        | 5,000        | 5190-8751 |
| Copper (Cu)    | 75 cSt hydrocarbon oil | 1,000        | 5190-8752 |
|                |                        | 5,000        | 5190-8753 |
| Iron (Fe)      | 75 cSt hydrocarbon oil | 1,000        | 5190-8754 |
|                |                        | 5,000        | 5190-8755 |
| Lanthanum (La) | 75 cSt hydrocarbon oil | 1,000        | 5190-8756 |
|                |                        | 5,000        | 5190-8757 |
| Lead (Pb)      | 75 cSt hydrocarbon oil | 1,000        | 5190-8758 |
|                |                        | 5,000        | 5190-8759 |
| Lithium (Li)   | 75 cSt hydrocarbon oil | 1,000        | 5190-8760 |
|                |                        | 5,000        | 5190-8761 |
| Magnesium (Mg) | 75 cSt hydrocarbon oil | 1,000        | 5190-8762 |
|                |                        | 5,000        | 5190-8763 |

*(Continued)*

**TIPS AND TOOLS**

Thorough mixing is especially important when using oil-based standards. Due to their viscosity they are difficult to homogenize. For best results, always mix the standard by vigorously shaking the container for at least a few minutes. Alternately, shake the container and sonicate the standard in an ultrasonic bath for a few minutes.

**TIPS AND TOOLS**

Store metallo-organic standards in a cool, dry place.

**Single Element Standards in Hydrocarbon Oil, 50 g**

| Description     | Matrix                 | Conc. (µg/g) | Part No.  |
|-----------------|------------------------|--------------|-----------|
| Manganese (Mn)  | 75 cSt hydrocarbon oil | 1,000        | 5190-8764 |
|                 |                        | 5,000        | 5190-8765 |
| Mercury (Hg)    | 75 cSt hydrocarbon oil | 1,000        | 5190-8766 |
| Molybdenum (Mo) | 75 cSt hydrocarbon oil | 1,000        | 5190-8767 |
|                 |                        | 5,000        | 5190-8768 |
| Nickel (Ni)     | 75 cSt hydrocarbon oil | 1,000        | 5190-8769 |
|                 |                        | 5,000        | 5190-8770 |
| Phosphorus (P)  | 75 cSt hydrocarbon oil | 1,000        | 5190-8771 |
|                 |                        | 5,000        | 5190-8772 |
| Potassium (K)   | 75 cSt hydrocarbon oil | 1,000        | 5190-8773 |
|                 |                        | 5,000        | 5190-8774 |
| Scandium (Sc)   | 75 cSt hydrocarbon oil | 1,000        | 5190-8775 |
| Selenium (Se)   | 75 cSt hydrocarbon oil | 1,000        | 5190-8776 |
| Silicon (Si)    | 75 cSt hydrocarbon oil | 1,000        | 5190-8777 |
|                 |                        | 5,000        | 5190-8778 |
| Silver (Ag)     | 75 cSt hydrocarbon oil | 1,000        | 5190-8779 |
|                 |                        | 5,000        | 5190-8780 |
| Sodium (Na)     | 75 cSt hydrocarbon oil | 1,000        | 5190-8781 |
|                 |                        | 5,000        | 5190-8782 |
| Strontium (Sr)  | 75 cSt hydrocarbon oil | 1,000        | 5190-8783 |
| Sulfur (S)      | 75 cSt hydrocarbon oil | 1,000        | 5190-8784 |
|                 |                        | 5,000        | 5190-8785 |
| Thallium (Tl)   | 75 cSt hydrocarbon oil | 1,000        | 5190-8786 |
| Tin (Sn)        | 75 cSt hydrocarbon oil | 1,000        | 5190-8787 |
|                 |                        | 5,000        | 5190-8788 |
| Titanium (Ti)   | 75 cSt hydrocarbon oil | 1,000        | 5190-8789 |
|                 |                        | 5,000        | 5190-8790 |
| Tungsten (W)    | 75 cSt hydrocarbon oil | 1,000        | 5190-8791 |
|                 |                        | 5,000        | 5190-8792 |
| Vanadium (V)    | 75 cSt hydrocarbon oil | 1,000        | 5190-8793 |
|                 |                        | 5,000        | 5190-8794 |
| Yttrium (Y)     | 75 cSt hydrocarbon oil | 1,000        | 5190-8795 |
|                 |                        | 5,000        | 5190-8796 |
| Zinc (Zn)       | 75 cSt hydrocarbon oil | 1,000        | 5190-8797 |
|                 |                        | 5,000        | 5190-8798 |
| Zirconium (Zr)  | 75 cSt hydrocarbon oil | 1,000        | 5190-8799 |
|                 |                        | 5,000        | 5190-8800 |

## Biodiesel Standards

### Metals in Biodiesel Standards

- Formulated specifically for analysis of metals in biodiesel fuel to ASTM D6751 and EN14214
- Matrix is 100 % biodiesel to eliminate matrix variations
- Made from soybean oil, which is an excellent matrix match for most biodiesels

#### Metals in Biodiesel Standards, 100 g

| Description                                                   | Matrix                 | Conc. (µg/g) | Part No.  |
|---------------------------------------------------------------|------------------------|--------------|-----------|
| Metals additives standard, MA5 Contains Ba, Ca, Mg, P, and Zn | 75 cSt hydrocarbon oil | 900          | 5190-8720 |
| Metals in biodiesel standard Contains Ca, K, Mg, Na, and P    | B100 biodiesel         | 5            | 5190-8721 |
|                                                               |                        | 10           | 5190-8722 |
|                                                               |                        | 20           | 5190-8723 |

### Sulfur in Biodiesel Standards

- Formulated specifically for analysis of sulfur in biodiesel fuel to ASTM D2622, D4294, D5453, D6751, and others
- Matrix is 100 % biodiesel to eliminate matrix variations
- Made from soybean oil, which is an excellent matrix match for most biodiesels

#### Sulfur in Biodiesel Standards

##### Supplied in 100 mL bottles

| Description                             | Matrix         | Conc. (µg/g) | Part No.  |
|-----------------------------------------|----------------|--------------|-----------|
| Sulfur in biodiesel standard Contains S | B100 biodiesel | 10           | 5190-8724 |
|                                         |                | 15           | 5190-8725 |
|                                         |                | 20           | 5190-8726 |
|                                         |                | 25           | 5190-8727 |
|                                         |                | 50           | 5190-8728 |
|                                         |                | 100          | 5190-8729 |
|                                         |                | 500          | 5190-8730 |



## Agilent 8453/8454 UV-Vis and Cary UV-Vis-NIR Supplies

Agilent 8453/8454 UV-Vis and Cary UV-Vis and UV-Vis-NIR spectrophotometers are synonymous with excellence and high performance. Our range of consumables for these products includes high quality cuvettes and flow cells, fiber optic probes, lamps, and detectors.

The genuine Agilent cells, tubing, fittings, and supplies in this section have been tested with the Agilent 8453/8454 and Cary range for reliable and repeatable results. Agilent UV-Vis cells and supplies are manufactured in an EN ISO 9001:2000/EN ISO 14001:2004 certified environment. Additionally, Agilent UV-Vis cells are individually checked and certified to be within specifications, so you can be confident that it will conform to stringent protocols such as NIST, GLP, GMP, and NAMAS.

This section will help you identify the cells that fit your unique applications. You will also learn how to enhance your lab's productivity by choosing the correct spectrophotometer equipment, tubing, fittings, and dissolution testing supplies.

## UV-Vis and UV-Vis-NIR Flow Cells and Cuvettes

### Cell Materials

Cells are available in four materials. Select the cell material depending on the wavelength range of your measurements.

For applications with a wavelength range of interest in the visible range, either use our economical single use cuvettes or our lower priced Agilent optical quality glass cells, made from exceptionally pure raw materials. Alternatively, if your application requires measurement in the UV range, select our quartz cuvettes, which give transmission values of > 80 % between 200 nm and 2,500 nm for an empty cell. Optical glass gives transmission values of > 80 % between 330 nm and 2,500 nm for an empty cell. To extend the measurement range into the NIR range, select the Infrasil quartz cells (made from Suprasil 300 material).

| Material                 | Wavelength (nm) |
|--------------------------|-----------------|
| Quartz                   | 170 to 2,700    |
| Infrasil quartz (NIR)    | 220 to 3,800    |
| Optical glass            | 334 to 2,500    |
| Polystyrene (disposable) | 340 to 800      |

## Cell Shapes

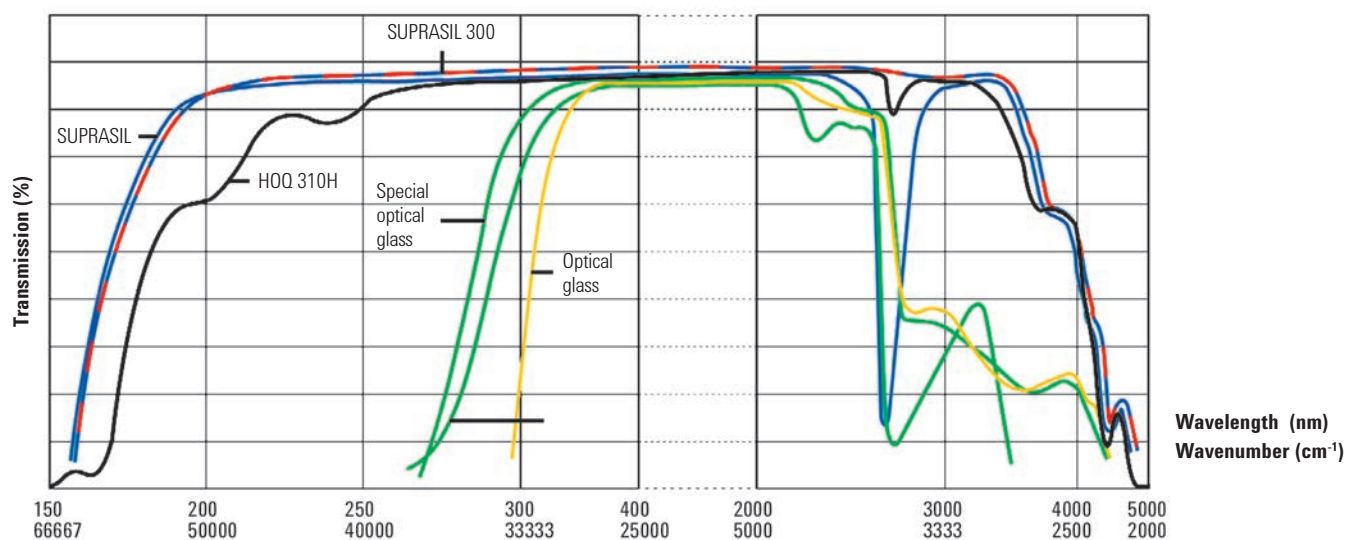
### Rectangular Cells

Rectangular cells are the most commonly used cell type and vary in shape from square to longer rectangles, depending on the cell pathlength. We offer standard cells, semi-microcells with about 40 % of the volume of a standard cell of the same pathlength, microcells with about 20 % of the volume of a standard cell, sub, and ultra-microcells that have microliter volumes, and disposable cells. Semi-microcells can be used with all Cary 50/60/100/300/4000/5000/6000i/7000 multicell holders and with all standard single cell holders. In addition, they can be used with the Temperature Probe Accessory for cell temperature monitoring.

Cells sold as matched pairs are used for most UV-Vis and UV-Vis-NIR routine analyses. Matched pairs ensure these cells will give a similar absorbance or transmission reading when empty or filled with water.

Long pathlength cells are ideal for use when extra sensitivity is needed for low concentration samples. These cells must be used with the long pathlength rectangular cell holder.

### Transmission of empty cells made of different materials





Cell tray, 5063-6577

### Cell Volumes

#### Macrocells

The macrocell, which is defined by DIN 58963 as a rectangular cell with an inner width greater than 5 mm, has emerged as the standard for spectrophotometry. The most widely used macrocell is a rectangular cell with typical outer dimensions of 45 x 12.5 mm (height x width). The length of the cell is dependent on the desired pathlength. Macro or standard cells have about the same wall thickness on all sides, and are used for most liquid UV-Vis and UV-Vis-NIR measurements. They require the largest sample size for a given pathlength.

#### Semi-microcells

Semi-microcells have an inner width of 4 mm to 2 mm. The thickness of the base is typically 9 mm. Semi-microcells also have thicker side walls to reduce the volume to about 40 % of the volume of a standard cell of the same pathlength. These cells are useful when only small sample volumes are available for testing. Cells that are black self-masking are listed with their aperture size. The aperture is located at the correct Z-height for both Agilent 8453/8454 and the Cary UV-Vis and UV-Vis spectrophotometers — but note that the 8453/8454 uses a different Z-height, so check compatibility. Semi-microcells can be used with Cary 100/300 and 4000/5000/6000/7000 multicell holders and with all standard single cell holders. They can also be used with the Temperature Probe Accessory for cell temperature monitoring. The semi-microcell, with a stirring well for a magnetic stirring bar, is suitable for all Cary 100/300 and 4000/5000/6000/7000 series Peltier thermostatted multicell and single cell holders.

**Microcells**

Microcells have thicker sidewalls to reduce the volume to about 20 % of the volume of a standard cell of the same pathlength. These cells are useful when limited sample volumes are available for testing.

**Ultra-microcells**

Ultra-microcells are specifically designed for use in the  $\mu\text{L}$  range (with typical volumes in the 5 to 135  $\mu\text{L}$  range). They fit into any standard cell holder and have the advantage of requiring much smaller sample volumes — so they're ideal for highly concentrated samples, highly absorbing solvents, or when sample volumes are very limited. These quartz cells offer low volume, short pathlength, and excellent heat transfer. They are ideal for temperature-controlled work, and all except the 1 mm pathlength cell can be used with the Temperature Probe. Cells that are black self-masking are listed with their aperture size. The cells are constructed so that filling and emptying can be easily accomplished with commonly available pipette tips. Ultra-microcells with Eppendorf pipette filling/emptying are designed to handle extremely small volumes. When only a minimum amount of sample is available, these cells provide a filling volume only slightly larger than the measuring chamber volume.

## Macrocells



Macrocell with PTFE lid



Macrocell with PTFE lid, 6610000800

### Macrocells with PTFE Lid

| Path Length<br>(mm)                                     | Ext. Dimensions<br>(H x W x T (mm)) | Int. Dimensions<br>(H x W (mm)) | Volume (µL) | Part No.<br>Glass | Part No.<br>Quartz                             |
|---------------------------------------------------------|-------------------------------------|---------------------------------|-------------|-------------------|------------------------------------------------|
| <b>Use with 8453/8454 UV-Vis</b>                        |                                     |                                 |             |                   |                                                |
| 1                                                       | 45 x 12.5 x 3.5                     | 43.5 x 9.5                      | 350         | 5063-6546**       | 5061-3384**                                    |
| 2                                                       | 45 x 12.5 x 4.5                     | 43.5 x 9.5                      | 700         | 5063-6547**       | 5061-3385**                                    |
| 5                                                       | 45 x 12.5 x 7.5                     | 43.5 x 9.5                      | 1750        | 5063-6548**       | 5061-3386**                                    |
| 10                                                      | 45 x 12.5 x 12.5                    | 43.5 x 9.5                      | 3500        | 5063-6549         | 5061-3387                                      |
| 10                                                      | 45 x 12.5 x 12.5                    | 43.5 x 9.5                      | 3500        | 5063-6550*        | 1000-0544*                                     |
| 20                                                      | 45 x 12.5 x 22.5                    | 43.5 x 9.5                      | 7000        | 5063-6551         | 5063-6553                                      |
| 50                                                      | 45 x 12.5 x 52.5                    | 43.5 x 9.5                      | 17500       | 5063-6552         | 5063-6554                                      |
| <b>Use with Cary 50/60/100/300/4000/5000/6000i/7000</b> |                                     |                                 |             |                   |                                                |
| 10                                                      | 45 x 12.5 x 12.5                    | 43.5 x 9.5                      | 3500        | 6610008800*       | 6610000800*<br>6618000100<br>(Infrasil quartz) |
| 20                                                      | 45 x 12.5 x 22.5                    | 43.5 x 10 7000                  |             |                   | 6610016200                                     |
| 50                                                      | 45 x 12.5 x 52.5                    | 43.5 x 9.5                      | 17500       | 6610016400        | 6610016100                                     |
| 100                                                     | 45 x 12.5 x 102.5                   | 43.5 x 9.5                      | 35000       | 6610016300        | 6610016000                                     |

\*\*Spacers are required for cells with an outer thickness of less than 12.5 mm to hold them securely in the cell holder.

\*Matched pair

### Macrocells with PTFE Stopper

| Path Length<br>(mm)                                | Ext. Dimensions<br>(H x W x T (mm)) | Int. Dimensions<br>(H x W (mm)) | Volume (μL) | Part No. Glass | Part No. Quartz |
|----------------------------------------------------|-------------------------------------|---------------------------------|-------------|----------------|-----------------|
| <b>Use with 8453/8454 UV-Vis</b>                   |                                     |                                 |             |                |                 |
| 5                                                  | 46 x 12.5 x 7.5                     | 44.5 x 9.5                      | 1750        |                | 5063-6557**     |
| 10                                                 | 46 x 12.5 x 12.5                    | 44.5 x 9.5                      | 3500        | 5063-6556      |                 |
|                                                    |                                     |                                 |             |                | 5062-2477       |
| <b>Use with Cary 50/60/100/300/4000/5000/6000i</b> |                                     |                                 |             |                |                 |
| 10                                                 | 46 x 12.5 x 12.5                    | 44.5 x 9.5                      | 3500        |                | 6610001100*     |

\*\*Spacers are required for cells with an outer thickness of less than 12.5 mm to hold them securely in the cell holder.

\*Matched pair



Macrocell with PTFE stopper

Agilent high-precision cells are individually tested to meet the highest optical standards. Every Agilent cell is certified to confirm that the following areas have been tested and are within specifications:

- Homogeneity of the raw material
- Dimensional and angle tolerances of the component parts
- Flatness and finish of the optical surfaces
- Transmission of the cells

Test equipment is calibrated regularly using standards certified by PTB (Physikalisch Technische Bundesanstalt) and/or National Institute of Standards and Technology.





Spacer for 2 mm pathlength cell, 5061-3389

## Quartz Block Inserts

| Description           | Part No.  |
|-----------------------|-----------|
| 1.0 or 5.0 mm insert  | 190029200 |
| 1.0 or 2.0 mm insert  | 190029201 |
| 1.0 or 0.5 mm insert  | 190029202 |
| 1.0 or 0.05 mm insert | 190029203 |

Inserts are used with standard rectangular 10 mm pathlength cells when a reduced pathlength is required. This avoids the need for a specialized cell. Each insert provides two different pathlengths as indicated, by rotating through 90 degrees.

## Spacers\*

| Description                     | Part No.  |
|---------------------------------|-----------|
| Spacer for 1 mm pathlength cell | 5061-3388 |
| Spacer for 2 mm pathlength cell | 5061-3389 |
| Spacer for 5 mm pathlength cell | 5061-3390 |

\*Spacers are required to hold cells with an outer thickness of less than 12.5 mm in the cell holder, where there is no pathlength adjustment facility on the cell holder.

## TIPS AND TOOLS

The number on the top of the spacer indicates the pathlength of the cuvette it should be used with. For example, a #1 spacer is to be used with a 1 mm pathlength cuvette; a #2 spacer is to be used with a 2 mm pathlength cuvette.

To ensure the correct orientation of the spacer, the engraved number located on top of the spacer should be readable to the operator.

The spacer can be located before or after the cuvette in the light path because the light is collimated.



## Disposable Polystyrene Cells

Disposable polystyrene cells are useable from 340 to 800 nm, are economical, can be used with magnetic stirrers, but cannot be used at elevated temperatures.

### Disposable Cells

| Description   | Cell Type   | Cell Material | Volume (mL) | Path Length (mm) | Sample Chamber Width (mm) | Unit   | Part No.   |
|---------------|-------------|---------------|-------------|------------------|---------------------------|--------|------------|
| Standard cell | Rectangular | Polystyrene   | 3.5         | 10               | 10                        | 500/pk | 6610018800 |
| Microcell     | Rectangular | Polystyrene   | 1.5         | 10               | 4                         | 500/pk | 6610018700 |



Microcell, polystyrene, 6610018700



Standard cell, disposable, 6610018800

### TIPS AND TOOLS

The best way to clean quartz or glass cuvettes is to soak in a dilute 2 % solution of cell cleaning solution (p/n 5190-0530).

This is suitable for use with glass, quartz, sapphire, porcelain, ceramics, plastics, and ferrous metals.

The use of demineralized water improves the cleaning characteristics



Semi-microcell with PTFE lid



Semi-microcell with PTFE stopper



Cary 50/60 semi-microcell, 6610021100

## Semi-microcells

### Semi-microcells with PTFE Lid

| Path Length<br>(mm)              | Ext. Dimensions<br>(H x W x T (mm)) | Int. Dimensions<br>(H x W (mm)) | Volume<br>( $\mu$ L) | Part No.<br>Glass | Part No.<br>Quartz |
|----------------------------------|-------------------------------------|---------------------------------|----------------------|-------------------|--------------------|
| <b>Use with 8453/8454 UV-Vis</b> |                                     |                                 |                      |                   |                    |
| 10                               | 45 x 12.5 x 12.5                    | 41.8 x 2                        | 700                  | 5063-6558         | 5061-3391          |
|                                  |                                     | 36 x 4                          | 1000                 |                   | 5063-6559          |
|                                  |                                     |                                 |                      |                   |                    |

### Semi-microcells with PTFE Stopper

| Path Length<br>(mm)              | Ext. Dimensions<br>(H x W x T (mm)) | Int. Dimensions<br>(H x W (mm)) | Volume<br>( $\mu$ L) | Part No.<br>Glass | Part No.<br>Quartz |
|----------------------------------|-------------------------------------|---------------------------------|----------------------|-------------------|--------------------|
| <b>Use with 8453/8454 UV-Vis</b> |                                     |                                 |                      |                   |                    |
| 10                               | 46 x 12.5 x 12.5                    | 37 x 4                          | 1000                 | 5063-6560         |                    |
|                                  |                                     |                                 |                      |                   | 5063-6561          |

### Use with Cary 50/60/100/300/4000/5000/6000i/7000 Self masking black walls

|    |                  |          |      |  |               |
|----|------------------|----------|------|--|---------------|
| 5  | 48 x 12.5 x 12.5 | 39 x 4   | 450  |  | 6610019800 *  |
| 2  | 48 x 12.5 x 12.5 | 39 x 4   | 180  |  | 6610019700 *  |
| 1  | 48 x 12.5 x 12.5 | 39 x 4   | 90   |  | 6610019600 *  |
| 10 | 45 x 12.5 x 12.5 | 42.5 x 4 | 1400 |  | 6610001800    |
|    | 48 x 12.5 x 12.5 | 45.5 x 4 | 1300 |  | 6610015400 ** |
|    | 48 x 12.5 x 12.5 | 39 x 4   | 900  |  | 6610012700 *  |

### Use with Cary 50/60 only

#### Top section features two black walls and two translucent side walls

|    |                  |       |     |  |            |
|----|------------------|-------|-----|--|------------|
| 10 | 45 x 12.5 x 12.5 | 2 x 7 | 135 |  | 6610021100 |
|----|------------------|-------|-----|--|------------|

\*Matched pair

\*\*Designed for use with a magnetic stir bar. Includes a circular recess in the base for the stir bar. Use with magnetic stirrer bars (p/n 6610018900)

## Sub-microcells

### Sub-microcells

| Path Length (mm)                                                           | Ext. Dimensions<br>(H x W x T (mm)) | Int. Dimensions<br>(H x W (mm)) | Volume (μL) | Part No.      |
|----------------------------------------------------------------------------|-------------------------------------|---------------------------------|-------------|---------------|
| <b>Use with Cary 50/60/100/300/4000/5000/6000i/7000</b>                    |                                     |                                 |             |               |
| 5                                                                          | 45 x 12.5 x 12.5                    | 4 x 2                           | 40          | 6610024000*** |
|                                                                            | 45 x 12.5 x 12.5                    | 4 x 2                           | 80          | 6610024100*** |
| 10                                                                         | 45 x 12.5 x 12.5                    | 2.5 x 2                         | 50          | 6610010400*** |
|                                                                            | 45 x 12.5 x 12.5                    | 4 x 2                           | 80          | 6610014900*   |
| <b>Use with Cary 50/60 only</b>                                            |                                     |                                 |             |               |
| <b>Top section features two black walls and two translucent side walls</b> |                                     |                                 |             |               |
| 10                                                                         | 45 x 12.5 x 12.5                    | 2 x 2                           | 40          | 6610019500    |

\*\*\*Low head space design for thermal melt applications

\*Matched pair



Sub-microcell, black wall, 6610021100

## Ultra-microcells

### Ultra-microcells with Eppendorf Pipette Filling/Emptying

| Path Length<br>(mm)       | Ext. Dimensions<br>(H x W x T<br>(mm)) | Aperture  | Center<br>Height<br>(mm) | Volume<br>(μL) | Filling<br>Volume<br>(μL) | Part No.  |
|---------------------------|----------------------------------------|-----------|--------------------------|----------------|---------------------------|-----------|
| <b>Use with 8453/8454</b> |                                        |           |                          |                |                           |           |
| 0.1                       | 40 x 12.5 x 12.5                       | 5 x 1     | 15                       | 0.5            | 5                         | 5063-6562 |
| 1                         | 40 x 12.5 x 12.5                       | 5 x 1     | 15                       | 5.0            | 10                        | 5063-6563 |
| 5                         | 40 x 12.5 x 12.5                       | 0.8 round | 15                       | 2.5            | 5                         | 5063-6564 |
| 10                        | 40 x 12.5 x 12.5                       | 0.8 round | 15                       | 5.0            | 10                        | 5063-6565 |



Ultra-microcell with Eppendorf filling



Ultra-microcell with PTFE stopper

## Ultra-microcells with PTFE Stopper

| Path Length (mm)                                  | Ext. Dimensions (H x W x T (mm)) | Aperture | Center Height (mm) | Filling Volume (L) | Unit | Part No.       |
|---------------------------------------------------|----------------------------------|----------|--------------------|--------------------|------|----------------|
| <b>Use with 8453/8454</b>                         |                                  |          |                    |                    |      |                |
| 2                                                 | 45 x 12.5 x 12.5                 | 2.5 x 2  | 15                 | 10                 | 1/ea | 5062-2497      |
| 10                                                | 45 x 12.5 x 12.5                 | 2.5 x 2  | 15                 | 50                 | 1/ea | 5062-2496      |
| <b>Use with Cary 50/60/100/300/4000/5000/6000</b> |                                  |          |                    |                    |      |                |
| 1                                                 | 45 x 12.5 x 12.5                 | 4 x 2    | 20                 | 8                  | 1/ea | 6610023900 *** |
| 10                                                | 48 x 12.5 x 12.5                 | 1 x 1    | 20                 | 10                 | 1/ea | 6610013800     |

\*\*\*Low head space design for thermal melt applications

## TrayCell

The micro-volume TrayCell is a fiber-optic ultra-microcell designed for the UV-Vis analysis of DNA/RNA and proteins. The dimensions of the TrayCell are equivalent to a standard cuvette, ensuring compatibility with most spectrophotometers. The TrayCell allows simple, rapid absorbance and transmission measurements in ultralow volumes using the Cary 50/60 UV-Vis spectrophotometer.

The TrayCell consists of a measuring cell and a cap with an integrated mirror. The sample drop is pipetted onto the measuring window, then the cap is applied. The distance between the window and the mirror in the cap ensures a defined light path. The internal optics in the TrayCell, which incorporate an internal prism and optical fiber, ensure that the light is transmitted through the sample and to the detector.



Micro-volume TrayCell, G6871A

### TrayCell

| Description                                                                 | Part No.   |
|-----------------------------------------------------------------------------|------------|
| Micro-volume TrayCell with 1.0 mm lid for volumes less than 5 $\mu\text{L}$ | G6871A     |
| Add 0.2 mm pathlength lid for volumes 4 $\mu\text{L}$ or less               | G6871A#100 |
| Add 2.0 mm pathlength lid                                                   | G6871A#200 |
| Add 0.1 mm pathlength lid for highly concentrated samples                   | G6871A#300 |

### Specifications

|                     |                      |
|---------------------|----------------------|
| Volume capacity     | 0.5-10 $\mu\text{L}$ |
| Pathlength          | 0.2-2.0 mm           |
| Maximum temperature | 50° C                |
| Wavelength range    | 190-1100 nm          |

Single cell holder with optimum tilt and height adjustment

## Cylindrical Cells

A cylindrical cell is a cell with plane-parallel optical surfaces whose inner volume is cylindrical in shape, and has a longitudinal axis parallel to the direction of the radiation beam. They are recommended when sample volume is not a limitation and when very short to long pathlengths are needed. All cylindrical cells can be used with the cylindrical cell holder or the thermostatted cylindrical cell holder. Cylindrical cells are available as standard cells, long pathlength cells for extra sensitivity when measuring low concentrations, and microcells, suitable for concentrated samples, or to overcome solvent absorbance, for example, water in the NIR or low UV regions.



Cylindrical cell with PTFE stoppers,  
6610002300

### Cylindrical Cells with 2 PTFE Stoppers

| Path Length<br>(mm)                                | Ext. Dimensions<br>(L x od (mm)) | Int. Dimensions<br>(id mm) | Volume (mL) | Part No.<br>Glass | Part No.<br>Quartz |
|----------------------------------------------------|----------------------------------|----------------------------|-------------|-------------------|--------------------|
| <b>Use with 8453/8454 UV-Vis</b>                   |                                  |                            |             |                   |                    |
| 100                                                | 102.5 x 22                       | 19                         | 28          | 5063-6566         | 5061-3392          |
| <b>Use with Cary 50/60/100/300/4000/5000/6000i</b> |                                  |                            |             |                   |                    |
| 10                                                 | 12.5 x 22                        | 19                         | 2.8         |                   | 6618000600*        |
| 50                                                 | 52.5 x 22                        | 19                         | 14          |                   | 6610002200         |
| 100                                                | 102.5 x 22                       | 19                         | 28          |                   | 6610002300         |

\*Has only a single PTFE stopper

## Flow-through Cells

Flow cells allow the sample to pass through the cell and are connected to the sample source via tubing. Flow cells require the use of a pump to ensure sample is pumped into the cell for measurement and out again afterwards. This can improve productivity - but care needs to be taken to ensure there is no carryover from one sample to another and to ensure there are no bubbles in the cell during measurement. Long pathlength flow cells are useful for low concentration samples and require the long pathlength rectangular cell holder. They can be used with a Cary 100/300 Series Routine Sampler Accessory or a Cary 50/60 Series Sipper. Sub-micro flow cells are suitable for use with the Cary 100/300 Series Routine Sampler Accessory.

Until recently, flow-through cells had measuring chambers that were either rectangular or circular in shape. These shapes were dictated by limitations in the manufacturing process and did not offer the best geometry for clean flushing and reduction of contamination. Agilent has developed oval aperture cells that combine low volume with excellent flow characteristics. These oval flow cells are strongly recommended for automated analyses such as dissolution testing. Black quartz is used in the vicinity of the aperture to ensure that no light passes through the side walls of the cell.



### Flow-through Cells with Oval Aperture and Screw Fitting Connection

| Path Length (mm)                                  | Ext. Dimensions (H x W x T (mm)) | Aperture (H x W (mm)) | Center Height (mm) | Volume (μL) | Part No. Quartz |
|---------------------------------------------------|----------------------------------|-----------------------|--------------------|-------------|-----------------|
| <b>Use with 8453/8454</b>                         |                                  |                       |                    |             |                 |
| 10                                                | 35 x 12.5 x 12.5                 | 2                     | 15                 | 30          | 0100-1224       |
|                                                   | 35 x 12.5 x 12.5                 | 3                     | 15                 | 70          | 0100-1225       |
| <b>Use with Cary 50/60/100/300/4000/5000/6000</b> |                                  |                       |                    |             |                 |
| 10                                                | 40 x 12.5 x 12.5                 | 3                     | 20                 | 70          | 6610008900*     |

\* Supplied with inlet and outlet PTFE tubing (1.6 mm od) fitted with M6 threaded connectors.

#### NOTES:

Flow-through cells do not include tubing/fittings (unless indicated otherwise).

**Flow-through Cells with Rectangular Aperture and Screw Fitting Connection**

| Path Length<br>(mm)                               | Ext. Dimensions<br>(H x W x T (mm)) | Aperture<br>(H x W (mm)) | Center Height<br>(mm) | Volume<br>(µL) | Part No.<br>Quartz |
|---------------------------------------------------|-------------------------------------|--------------------------|-----------------------|----------------|--------------------|
| <b>Use with 8453/8454</b>                         |                                     |                          |                       |                |                    |
| 0.1                                               | 35 x 12.5 x 12.5                    | 17.5 x 3.5               | 15                    | 6.2            | 5188-8003          |
| 0.2                                               | 35 x 12.5 x 12.5                    | 17.5 x 3.5               | 15                    | 12.4           | 5188-8004          |
| 0.5                                               | 35 x 12.5 x 12.5                    | 17.5 x 3.5               | 15                    | 31             | 5188-8005          |
| 1                                                 | 35 x 12.5 x 12.5                    | 17.5 x 3.5               | 15                    | 62             | 5061-3396          |
| 2                                                 | 35 x 12.5 x 12.5                    | 17.5 x 3.5               | 15                    | 124            | 5061-3397          |
| 5                                                 | 35 x 12.5 x 12.5                    | 10 x 2.5                 | 15                    | 230            | 5065-9918          |
| 10                                                | 35 x 12.5 x 12.5                    | 11 x 3.5                 | 15                    | 390            | 5061-3398          |
| 10                                                | 35 x 12.5 x 12.5                    | 8 x 2                    | 15                    | 160            | 5062-2476          |
| <b>Use with Cary 50/60/100/300/4000/5000/6000</b> |                                     |                          |                       |                |                    |
| 10                                                | 35 x 12.5 x 12.5                    | 11 x 4                   | 20                    | 450            | 6610012600         |
| 50                                                | 35 x 12.5 x 12.5                    | 6 x 3                    | 20                    | 1000           | 6610010000         |
| 100                                               | 45 x 12.5 x 12.5                    | 6 x 3                    | 20                    | 2100           | 6610010100         |
| <b>Use with Cary 50/60</b>                        |                                     |                          |                       |                |                    |
| 1                                                 | 40 x 12.5 x 12.5                    | 11 x 6.5                 | 20                    | 113            | 6610019900         |
| 2                                                 | 40 x 12.5 x 12.5                    | 11 x 6.5                 | 20                    | 227            | 6610020000         |
| 5                                                 | 40 x 12.5 x 12.5                    | 11 x 6.5                 | 20                    | 568            | 6610020100         |
| 10                                                | 40 x 12.5 x 12.5                    | 11 x 6.5                 | 20                    | 715            | 6610020200         |
| <b>Use with Cary 100</b>                          |                                     |                          |                       |                |                    |
| 1                                                 | 40 x 12.5 x 12.5                    | 11 x 6.5                 | 20                    | 72             | 6610014100         |
| 2                                                 | 40 x 12.5 x 12.5                    | 11 x 6.5                 | 20                    | 290            | 6610014200         |
| 10                                                | 40 x 12.5 x 12.5                    | 11 x 6.5                 | 20                    | 420            | 6610015200         |

\*Supplied with inlet and outlet PTFE tubing (1.6 mm od) fitted with M6 threaded connectors.

**Flow-through Cells with Oval Aperture and Screw Fitting Connection**

| Path Length<br>(mm) | Ext. Dimensions<br>(H x W x T (mm)) | Aperture<br>(H x W<br>(mm)) | Center Height<br>(mm) | Volume<br>(µL) | Part No.  |
|---------------------|-------------------------------------|-----------------------------|-----------------------|----------------|-----------|
| 1                   | 39 x 12.5 x 12.5                    | 10 x 2                      | 15                    | 40             | 5063-6570 |
| 1                   | 39 x 12.5 x 12.5                    | 8 x 3                       | 15                    | 40             | 5065-9907 |
| 2                   | 39 x 12.5 x 12.5                    | 10 x 2                      | 15                    | 80             | 5063-6571 |
| 5                   | 39 x 12.5 x 12.5                    | 10 x 2                      | 15                    | 200            | 5063-6572 |
| 10                  | 39 x 12.5 x 12.5                    | 10 x 2                      | 15                    | 430            | 5063-6573 |

**Miscellaneous**

| Description                                                          | Comments                                                                                                                                                                                                                                                                 | Unit  | Part No.   |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------|
| UV convenience kit                                                   | Includes open top UV quartz cell, 10 mm, 3.0 mL volume, 2/pk; disposable polystyrene cells, 10 mm, 3.5 mL volume, 500/pk; tray for 16 cells, lens cleaning paper, lint free, and cell cleaning solution, 1 L                                                             |       | 5067-4666  |
| Magnetic stirring bar, 7 mm long x 4 mm diameter, PTFE coated*       |                                                                                                                                                                                                                                                                          | 2/pk  | 9301-1161  |
| Magnetic stirrer bar, PTFE, star type, 7.9 mm diameter x 9.5 mm high |                                                                                                                                                                                                                                                                          |       | 7418000400 |
| Magnetic stirrer bars, 6 mm long x 3 mm diameter, PTFE coated        | Suitable for use with spectrophotometer cells designed specifically to accommodate magnetic stir bars (includes p/n 6610015400)                                                                                                                                          | 10/pk | 6610018900 |
| Cell cleaning solution                                               | An alkaline liquid concentrate which is mixed with water to a concentration of 2 % to yield an effective cleaning solution for all quartz and glass cells. Also suitable for cleaning other sensitive optical components made of glass, quartz, sapphire, and porcelain. | 1 L   | 5190-0530  |
| Lens cleaning paper, lint-free                                       |                                                                                                                                                                                                                                                                          | 50/pk | 9300-0761  |
| Tray, for 16 cells                                                   |                                                                                                                                                                                                                                                                          | 10 mm | 5063-6577  |

\*For use with Agilent 89054A cell-stirring multicell transport and Agilent 89090A Peltier temperature controller. Stirring bars are used with cells having internal dimensions of 10 x 10 mm (W x D) and cell holders with magnetic stirring capability.



Magnetic stirring bar, 9301-1161



Magnetic stirrer bars, 6610018900



Cell cleaning solution, 5190-0530



Lens cleaning paper, lint-free, 9300-0761



Cell tray, 5063-6577

**TIPS AND TOOLS**

Never use an ultrasonic bath for cleaning cuvettes. This can permanently damage the cuvette, especially if the cuvette is placed on the bottom of the cleaning chamber.

## Cell Holders and Accessories



Standard cell holder, 08451-60104



Long pathlength cell holder, 89076C



Thermostatable cell holder, 89054A



Cell stirring module, 89055A



Cell base, 110648190



Cary 50/60 cell holder, spare, 110645090



Cell holder base, 110716190

### Cell Holders and Bases

| Description                                         | Comments                                                                                                                                                           | Use With            | Part No.    |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------|
| Standard cell holder                                |                                                                                                                                                                    | 8453/8454           | 08451-60104 |
| Long pathlength cell holder                         | Holds cylindrical and rectangular cells with up to 10 cm pathlength. Includes stops at 1, 2, and 5 cm.                                                             | 8453/8454           | 89076C      |
| Thermostatable cell holder                          | A jacketed cell holder for standard 1 cm cuvettes with provisions for connecting a water bath (not supplied) to temperature regulate the cells during measurement. | 8453/8454           | 89054A      |
| Cell stirring module for thermostatable cell holder | Provides cell stirring capability with the thermostatable cell holder. Stirrer is driven by circulating water from water bath (not included).                      | 8453/8454           | 89055A      |
| Cell base                                           |                                                                                                                                                                    | Cary 50/60          | 110648190   |
| Cell holder, spare                                  |                                                                                                                                                                    | Cary 50/60          | 110645090   |
| Cell holder base                                    |                                                                                                                                                                    | Cary 400 and 500    | 10048100    |
| Cell holder base                                    |                                                                                                                                                                    | Cary 4000/5000/6000 | 110716190   |
| Standard cell holder, 10 mm                         | Includes cell lifter and cell height adjustment screw. Supplied as standard with Cary 100/300 and Cary 5000/6000i                                                  | All Cary            | 110260190   |

(Continued)

## Cell Holders and Bases

| Description                                                                                                     | Comments                                                                                                                                                                                                                | Use With                   | Part No.   |
|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| Standard cell holder, 10 mm, with Z-height adjustment from 0-20 mm, lifter, and ball bearing cuvette stabilizer | Supplied as standard with Cary 4000                                                                                                                                                                                     | All Cary except Cary 50/60 | 110721900  |
| Test tube holder                                                                                                | Allows use of 16 mm od test tubes in the sample compartment instead of conventional cuvettes                                                                                                                            | Cary 50/60                 | 7910033500 |
| Long pathlength rectangular cell holder                                                                         | Holds 20, 50, and 100 mm rectangular cells and rectangular flowcells                                                                                                                                                    | All Cary                   | 110059900  |
| Variable pathlength cell holder                                                                                 | For use with rectangular cells of 5, 10, 20, 30, 40, and 50 mm pathlength and a solid sample holder. Must be fitted in slide-mount solid sample holder kit in Cary 50/60 (p/n 10072300) or Cary 100/300 (p/n 10046500). | All Cary                   | 210125300  |
| Variable pathlength cell holder                                                                                 | For use with rectangular cells up to 100 mm pathlength and a solid sample holder. Must be fitted in slide-mount solid sample holder kit in Cary 50/60 (p/n 10072300) or Cary 100/300 (p/n 10046500).                    | All Cary                   | 6610014000 |
| Dual rectangular thermostatable cell holder                                                                     | Allows thermostating of standard 10 mm pathlength cuvettes with height 45 mm. Requires the extended sample compartment and an external water bath.                                                                      | All Cary                   | 10046800   |
| Cylindrical single cell holder, ambient                                                                         | Allows use of cylindrical cells with up to 100 mm pathlength                                                                                                                                                            | All Cary                   | 110026900  |
| Dual cylindrical thermostatable cell holder                                                                     | Allows use of cylindrical cells with up to 100 mm pathlength. Requires extended sample compartment and an external water bath.                                                                                          | All Cary                   | 10046700   |



Standard cell holder, 110721900



Standard cell holder, 10 mm, 110260190



Variable pathlength cell holder, 210125300



Cylindrical single cell holder, ambient, 110026900



Cary 8454 UV-Visible Spectrophotometer



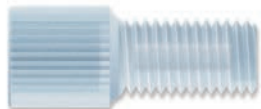
Union, 5022-2155



Cell fittings (black), 5022-2156



Conical adapter kit, 5022-2157



PTFE nuts, 5022-2158



PEEK fittings and ferrules, 5042-1337

# Agilent 8453/8454 UV-Vis Supplies

## 8453/8454 Tubings and Fittings

### 8453/8454 Tubings and Fittings

| Description                                                                                                                                                                                                                             | Unit  | Part No.  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| PTFE tubing, 1.6 mm od                                                                                                                                                                                                                  | 10 m  | 5041-2191 |
| Pump tubing, 2.06 mm id                                                                                                                                                                                                                 | 15/pk | 5041-2166 |
| Pump tubing, 1.3 mm id                                                                                                                                                                                                                  | 12/pk | 5041-2184 |
| Pump tubing, 2.8 mm id                                                                                                                                                                                                                  | 12/pk | 5041-2185 |
| Tefzel ferrules and stainless steel lock rings, 1/16 inch                                                                                                                                                                               | 10/pk | 5022-2154 |
| Union, 1/4-28 thread, polypropylene                                                                                                                                                                                                     | 10/pk | 5022-2155 |
| Cell fittings, black (short, 4/pk and long, 4/pk)<br>Replacement fittings used to connect the tubing to the flow cell used with the Sipper system for the 8453/8454<br>Includes headless PPS M6 nuts, 4/pk and short PEEK M6 nuts, 4/pk | 8/pk  | 5022-2156 |
| Conical adapter kit<br>Replacement fittings for the flow cell-pump tubing used with the Sipper system for the 8453/8454<br>Includes conical PTFE adapters, 2/pk, PTFE female nuts, 2/pk, and PTFE ferrules, 2/pk                        | 2/pk  | 5022-2157 |
| PTFE nuts, for 1/16 inch od tubing                                                                                                                                                                                                      | 10/pk | 5022-2158 |
| Tubing, heat exchanger, FEP, 12 cm                                                                                                                                                                                                      |       | 5042-1336 |
| Fittings and ferrules, 1/16 in, PEEK, for 8-port valve                                                                                                                                                                                  | 10/pk | 5042-1337 |
| Mounting tool, for flangeless nut                                                                                                                                                                                                       |       | 0100-1710 |

## Instrument Parts and Supplies

### G1120A 8-Position Multicell Transport Supplies

| Description                                                                                                                                      | Part No.    |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Optical filter kit                                                                                                                               |             |
| Set of three optical filters to prevent photosensitive samples from being irradiated by UV light (265 and 295 nm cut-off and UV roll-off filter) | G1120-68707 |
| Stirring module kit                                                                                                                              |             |
| Stirrer is driven by circulating water from water bath (not included)                                                                            | G1120-60006 |
| Magnetic stirring bar for use with 10 x 10 mm (W x D) cells, 2/pk                                                                                | 9301-1161   |
| Multicell transport adjustment tool                                                                                                              | 89075-23800 |



Optical filter kit, G1120-68707



Stirring module kit, G1120-60006

### 89090A Peltier Temperature Controller Supplies

| Description                                 | Part No.  |
|---------------------------------------------|-----------|
| Union, cell holder                          | 5021-1870 |
| Flow cell, 10 mm, 8 x 2 mm aperture, 160 µL | 5062-2476 |
| Quartz cuvette, 10 mm, with PTFE stopper    | 5062-2477 |
| Tubing, heat exchanger, FEP                 | 5042-1336 |
| Magnetic stirring bar                       | 9301-1161 |



Tubing, heat exchanger, FEP, 5042-1336

### Spectrophotometer Lamps

| Description             | Part No.    |
|-------------------------|-------------|
| Deuterium lamp assembly | 2140-0605   |
| Tungsten lamp assembly  | G1103-60001 |



Deuterium lamp assembly, 2140-0605



Tungsten lamp assembly, G1103-60001



Needle, beveled edge for G1811A, G1811-23200



Autosampler tubing and fittings kit, 5042-1334



Sipper tubing kit, 5042-1333



Cassette, fixed pressure, 5041-2167



Cassette, variable pressure, 5042-1356

## Autosampler Supplies

| Description                         | Part No.    |
|-------------------------------------|-------------|
| Needle, beveled edge, for G1811A    | G1811-23200 |
| Test tubes, 12 x 100 mm, 250/pk     | 5022-6531   |
| Autosampler tubing and fittings kit | 5042-1334   |

## Sipper Supplies

| Description                                                                                                                                                                                             | Part No.  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Sipper tubing kit for 8452                                                                                                                                                                              |           |
| Includes inlet tubing (1.5 m), inlet to flow cell tubing (0.35 m), flow cell to pump tubing (0.35 m), flow cell to pump tubing (0.5 m), flow cell to waste tubing (1.5 m) with fittings and connectors. | 5042-1333 |
| Flow cell, 10 mm, 80 µL                                                                                                                                                                                 | 0100-1225 |
| Cassette, fixed pressure                                                                                                                                                                                | 5041-2167 |
| Cassette, variable pressure                                                                                                                                                                             | 5042-1356 |

## Dissolution Testing Supplies

### Dissolution Testing Supplies for 8453/8454

| Description                                                 | Part No.  |
|-------------------------------------------------------------|-----------|
| Multicell system tubing kit                                 | 5042-1330 |
| Valve tubing kit for one bath                               | 5042-1331 |
| Dissolution probes kit, 0.9 mm id, tubes with fittings      | 5042-1332 |
| Fittings and ferrules, 1/16 in, PEEK, for 8-port valve      | 5042-1337 |
| 8-port valve for dissolution system                         | 5063-6575 |
| Rotor seal, for 5063-6575 valve (UV-Vis) dissolution system | 5067-1539 |
| Dissolution filters, for 1/8 inch probe, 45 µm pore size    | 5181-1246 |



Multicell tubing kit, 5042-1330



Valve tubing kit, 5042-1331



Dissolution probes kit, 5042-1332



PEEK fittings and ferrules, 5042-1337



Dissolution filters for 1/8 inch probe, 5181-1246



8-port valve for dissolution system, 5063-6575



Cary 5000 UV-Vis-NIR Spectrophotometer

# Agilent Cary UV-Vis and UV-Vis-NIR Supplies

## Cary Fiber Optic Probes



Cary 60 UV-Vis Spectrophotometer



Fiber optic dip probe, Torlon, body only,

7910032600

### Fiber Optic Probes

| Use With | Description                                                                                                                                                                                                                                  | Part No.   |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|          | Fiber optic dip probe, stainless steel, body only<br>Requires stainless steel tip, see the section on Replaceable Tips for compatible tips                                                                                                   | 7910035700 |
|          | Fiber optic dip probe, stainless steel, fixed 10 mm path tip                                                                                                                                                                                 | 7910036400 |
|          | Fiber optic dip probe, stainless steel, replaceable 10 mm path tip                                                                                                                                                                           | 7910036500 |
|          | Fiber optic dip probe, Torlon probe, 7.9 mm in diameter x 159 mm                                                                                                                                                                             | 7910029900 |
|          | Fiber optic dip probe, Torlon, body only<br>Probe is 7.9 mm in diameter by 144 mm (excluding tip).<br>Not recommended for use with solutions that attack epoxy, requires Torlon tip, see the section on Replaceable Tips for compatible tips | 7910032600 |
|          | Fiber optic dip probe, 7.9 mm in diameter x 159 mm, Torlon, replaceable 10 mm path tip (tip can be exchanged for other pathlengths)                                                                                                          | 7910035100 |
|          | Fiber optic dip probe, 12.7 mm in diameter x 70 mm, quartz construction, for use with corrosive samples, fixed 10 mm pathlength                                                                                                              | 7910030300 |
|          | Fiber optic stainless steel micro probe, 3.05 mm in diameter x 140 mm, fixed 10 mm pathlength.<br>Not recommended for use with strong acids.                                                                                                 | 7910035600 |
|          | Hand-held fiber optic remote read probe, 6.35 mm in diameter x 104 mm, stainless steel, replaceable 10 mm path tip                                                                                                                           | 7910030200 |

(Continued)

**Fiber Optic Probes**

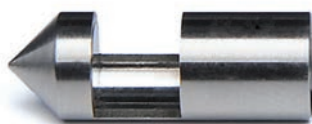
| Use With             | Description                                                                                                                                                                                                                         | Part No.   |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Cary 100/300         | Hand-held fiber optic probe, quartz, long body 265 mm, 10 mm pathlength. Suitable for use up to 150 °C and with corrosive acids.                                                                                                    | 7910032100 |
|                      | UV-Vis reflectance probe and probe holder for measuring total reflectance from a sample surface. Illumination area is 1 mm.                                                                                                         | 7910036200 |
|                      | Absorbance dip probe with switch, stainless steel, 10 mm pathlength                                                                                                                                                                 | 9910085000 |
|                      | UV-Vis reflectance probe                                                                                                                                                                                                            | 7910035500 |
| Cary 50/60/100/300   | Hand-held stainless steel fiber optic probe, 6.35 mm diameter x 104 mm, 10 mm pathlength, 3 m fiber. Includes light shield                                                                                                          | 9910076600 |
|                      | Hand-held fiber optic probe, quartz, corrosion resistant, 12.7 mm diameter, 10 mm pathlength                                                                                                                                        | 9910080800 |
|                      | Versi remote read fiber optics probe with replaceable quartz tips. Can be hand held or mounted on the Cary Fiber Optic Dip Probe Coupler. Ideally suited for samples that are corrosive, toxic, radioactive or cross contamination. | 190055700  |
| Cary 4000/5000/6000i | UV-Vis absorption probe, stainless steel, 2.5 m, 10 mm pathlength                                                                                                                                                                   | 9910069400 |



Hand-held fiber optic probe with replaceable tip,  
9910076600



Replaceable tip, Torlon, 20 mm pathlength,  
7910034600



Replaceable tip, stainless steel, 10 mm pathlength,  
7910035800

## Replaceable Tips and Miscellaneous Supplies

The stainless steel probe tips are suitable for use with the two stainless steel dip probes — either the stainless steel probe body (p/n 7910035700) or the stainless steel probe with the replaceable tip (p/n 7910036500).

The Torlon probe tips are suitable for use with the Torlon probe body (p/n 7910032600) or the Torlon fiber optic dip probe with the replaceable tip (p/n 7910035100). They feature a single arm design to reduce bubble formation. The tip is 7.9 mm in diameter and is suitable for operation in temperatures up to 85 °C.

### Replaceable Tips and Miscellaneous Supplies

| Use With   | Description                                                                                           | Part No.     |
|------------|-------------------------------------------------------------------------------------------------------|--------------|
| Cary 50/60 | Replaceable tip, stainless steel, 2 mm pathlength                                                     | 7910036000*  |
|            | Replaceable tip, stainless steel, 5 mm pathlength                                                     | 7910035900*  |
|            | Replaceable tip, stainless steel, 10 mm pathlength                                                    | 7910035800*  |
|            | Replaceable tip, stainless steel, 40 mm pathlength                                                    | 7910036100*  |
|            | Replaceable tip, Torlon, 2 mm pathlength                                                              | 7910032800** |
|            | Replaceable tip, Torlon, 5 mm pathlength                                                              | 7910032900** |
|            | Replaceable tip, Torlon, 10 mm pathlength                                                             | 7910033000** |
|            | Replaceable tip, Torlon, 20 mm pathlength                                                             | 7910034600** |
|            | Replaceable tip, Torlon, 40 mm pathlength                                                             | 7910034500** |
| All Cary   | 10 mm pathlength tips to suit the Versi remote fiber optics probe, p/n 190055700                      | 190055900    |
|            | Fiber optic alignment loop                                                                            | 7910027200   |
|            | Fiber optic probe light shield. Provides light immunity for fiber optic probes used with Cary 100/300 | 7910028900   |
|            | UV-Vis reflectance probe holder, spare                                                                | 9910068500   |

## Kits and Supplies for UV-Vis and UV-Vis-NIR Accessories

### Accessory Supplies

| Description                                                | Comments                                                                                                                                                                                                                                                           | Part No.    |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Temperature Probe Accessory Supplies</b>                |                                                                                                                                                                                                                                                                    |             |
| Probe holder                                               | Includes square end probes, 2/pk, for use in rectangular cuvettes with internal dimensions of 10 x 10 mm and regular end probe, 2/pk, for use in rectangular cuvettes with internal dimensions of 10 x 9.5 mm                                                      | 9910066800  |
| Probe holder, tapered end                                  | Includes tapered end probes, 4/pk, suitable for use in microcells                                                                                                                                                                                                  | 9910066900  |
| Extension lead, short, for probe holder                    | Required for mounting the probe inside the sample compartment                                                                                                                                                                                                      | 110381100   |
| Extension lead, long, for probe holder                     | Required for mounting the probe outside the sample compartment                                                                                                                                                                                                     | 110380500   |
| <b>Cary 50/60 Solid Sample Holder Accessory Supplies</b>   |                                                                                                                                                                                                                                                                    |             |
| End holder                                                 | Side mounting support for the solid sample holder for Cary 50/60<br>Used to position the polarizer/depolarizer or other accessories                                                                                                                                | 810137000   |
| Solid sample holder spares kit #2                          | Includes V plate, 3 x 45 mm, 2/pk; V plate, 6 x 45 mm, 2/pk; assorted screws and nuts for fixing samples onto the sliding plates on the sample holder                                                                                                              | 9910056200  |
| <b>Cary 100/300 Solid Sample Holder Accessory Supplies</b> |                                                                                                                                                                                                                                                                    |             |
| Film holder spares kit #1                                  | Includes magnetic strips, 4/pk; V plates, 20/pk; gel-boat holders, resting plates, 2/pk; masks, 8/pk; clamps, 4/pk                                                                                                                                                 | 9910064600  |
| Solid sample holder spares kit #1                          | Includes aperture sample slide holder, 10 mm; aperture sample slide holder, 5 mm; aperture sample slide holder, 1 mm; V plate, 3 x 45 mm, 2/pk; V plate, 6 x 45 mm, 2/pk; assorted screws and nuts for fixing samples onto the sliding plates on the sample holder | 9910059400  |
| Solid sample holder spares kit #2                          | Includes V plate, 3 x 45 mm, 2/pk; V plate, 6 x 45 mm, 2/pk; assorted screws and nuts for fixing samples onto the sliding plates on the sample holder                                                                                                              | 9910056200  |
| <b>Cary 7000 UMA Solids Autosampler Sample Holders</b>     |                                                                                                                                                                                                                                                                    |             |
| Sample holder, 1 inch round                                | Two configurations provided. Mount up to 32 x 1 in diameter, samples up to 10 mm thick with maximum angle of incidence 45°; or mount up to 24 x 1 in diameter samples up to 10 mm thick with maximum angle of incidence 65°                                        | G6876-60003 |
| Sample holder, 8 inch round                                | Wafer holder: Mount single 8 in diameter samples up to 3 mm thick. Maximum angle of incidence 65°                                                                                                                                                                  | G6876-60002 |
| Sample holder, universal                                   | Permits mounting of irregular shaped samples of up to 10 mm thickness. The universal sample holder has 24 x 1 inch holes, evenly spaced around the 200 mm (8 inch) diameter ring. %R or %T measurement can be made through any of these 24 holes                   | G6876-60004 |

(Continued)



Cary temperature probe accessory



Cary 100/300 diffuse reflectance accessory

## Accessory Supplies

| Description                                                                       | Comments                                                                                                                                                                                                                                                                  | Part No.   |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Cary 7000 UMA Sample Holders</b>                                               |                                                                                                                                                                                                                                                                           |            |
| Standard sample holder                                                            | Supplied as standard with all UMA and UMS systems.                                                                                                                                                                                                                        | G6874A#100 |
| Cube beam splitter holder                                                         | For use with cube beam splitters from 1 cm <sup>3</sup> to 5 cm <sup>3</sup>                                                                                                                                                                                              | G6874A#200 |
| Edge mount sample holder                                                          | Fully adjustable for use with samples 1 inch (25.4 mm) to 6 inch (150 mm) in diameter and 5 mm thick                                                                                                                                                                      | G6874A#300 |
| Round sample holder                                                               | 3 fixed diameter sample holders. Designed for %R or %T measurement of round samples of 1 inch, 1.5 inch, or 2 inch diameters. Each holder has a 2 mm selva perimeter which will contact the sample. Horizontal cut outs ensure large angles of incidence can be achieved. | G6874A#400 |
| <b>Cary 4000/5000/6000 Solid Sample Holder Accessory Supplies</b>                 |                                                                                                                                                                                                                                                                           |            |
| Film holder spares kit #1                                                         | Includes magnetic strips, 4/pk; V plates, 20/pk; gel-boat holders, resting plates, 2/pk; masks, 8/pk; clamps, 4/pk                                                                                                                                                        | 9910064600 |
| Solid sample end support                                                          | Solid sample mount for the attachment of polarizers, depolarizers or apertures to the standard solid sample mounting accessory for the Cary 4000/5000/6000                                                                                                                | 5810008100 |
| Solid sample masking aperture, 1 mm                                               | Replacement aperture plate with 1 mm hole                                                                                                                                                                                                                                 | 410204100  |
| Solid sample masking aperture, 5 mm                                               | Replacement aperture plate with 5 mm hole                                                                                                                                                                                                                                 | 410204300  |
| Solid sample masking aperture, 10 mm                                              | Replacement aperture plate with 10 mm hole                                                                                                                                                                                                                                | 410203900  |
| Solid sample mounting plate                                                       | Provides attachment points for solid sample supports                                                                                                                                                                                                                      | 410204500  |
| Solid sample holder spares kit #1                                                 | Includes aperture sample slide holder, 10 mm; aperture sample slide holder, 5 mm; aperture sample slide holder, 1 mm; V plate, 3 x 45 mm, 2/pk; V plate, 6 x 45 mm, 2/pk; assorted screws and nuts for fixing samples onto the sliding plates on the sample holder        | 9910059400 |
| Solid sample holder spares kit #2                                                 | Includes V plate, 3 x 45 mm, 2/pk; V plate, 6 x 45 mm, 2/pk; assorted screws and nuts for fixing samples onto the sliding plates on the sample holder                                                                                                                     | 9910056200 |
| <b>Diffuse Reflectance Accessory (DRA) Supplies</b>                               |                                                                                                                                                                                                                                                                           |            |
| <b>Cary 100/300 Internal DRA Supplies</b>                                         |                                                                                                                                                                                                                                                                           |            |
| Powder cell holder kit                                                            | Includes a prepacked PTFE powder cell for use as a reflectance standard and powder cell holder. Quartz window covers sample so holder can be positioned at port of sphere.                                                                                                | 7910036600 |
| 10 mm pathlength cuvette holder, for DRA-CA-30I                                   | Suitable for positioning 10 mm pathlength cells in the transmittance port                                                                                                                                                                                                 | 7910028200 |
| Fabric sample holder, for DRA-CA-30I                                              | Includes UG11 filter                                                                                                                                                                                                                                                      | 7910027900 |
| Light trap (for performing 0 % T baseline correction)                             |                                                                                                                                                                                                                                                                           | 7910028100 |
| Transmittance sample holder, for DRA-CA-30I                                       |                                                                                                                                                                                                                                                                           | 7910028000 |
| Calibrated 1.25 inch diameter 99 % Spectralon reflectance standard for DRA-CA-30I |                                                                                                                                                                                                                                                                           | 7910036900 |
| <b>Cary 4000/5000/6000 Internal DRA Supplies</b>                                  |                                                                                                                                                                                                                                                                           |            |
| Small reference disk                                                              | PTFE packed diffuse reflectance disk, 30 mm diameter                                                                                                                                                                                                                      | 410198890  |
| Large reference disk                                                              | PTFE packed diffuse reflectance disk, 45 mm diameter                                                                                                                                                                                                                      | 410143990  |
| Cuvette holder                                                                    | Suitable for both transmission and reflectance measurements using 10 mm pathlength cells                                                                                                                                                                                  | 210187900  |
| Powder cell kit                                                                   | Includes a prepacked PTFE powder cell for use as a reflectance standard, powder cell holder, funnel, and small sample holder                                                                                                                                              | 9910111400 |

(Continued)

**Accessory Supplies**

| Description                                                                                                                         | Comments                                                                                                                                                                                                                                                                                       | Part No.   |
|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Cary 4000/5000/6000 External DRA Supplies</b>                                                                                    |                                                                                                                                                                                                                                                                                                |            |
| Spectralon 99 % reflectance standard                                                                                                | Calibrated, for diffuse reflectance, 2 inch diameter, in durable Delrin holder with protective cover. Includes diffuse reflectance data from 250 to 2500, every 50 nm                                                                                                                          | 7910037700 |
| Center mount cuvette holder                                                                                                         | Suitable for mounting a standard 10 mm pathlength cuvette inside the sphere normal to the incident beam. Ideal for measuring turbid samples such as proteins and other biological solutions.                                                                                                   | 7910038700 |
| External mount cuvette holder                                                                                                       | Suitable for measuring the transmission or absorbance of liquid samples using standard 10 mm pathlength cuvettes. Mounts on the transmission holder and can be positioned in either the sample or reference beams.                                                                             | 7910038300 |
| Center mount holder, clip type                                                                                                      | Allows samples to be positioned at the center of the DRA for measurement. The clip style holder is suitable for mounting thin and flexible samples. Incorporates a rotating dial so the user can quickly set the desired incidence angle to the nearest degree.                                | 7910047600 |
| Center mount holder, jaw type                                                                                                       | Allows samples to be positioned at the center of the DRA for measurement. The jaw style holder is suitable for mounting rigid, opaque samples such as mirrors and painted samples. Incorporates a rotating dial so the user can quickly set the desired incidence angle to the nearest degree. | 7910047500 |
| Powder cell holder                                                                                                                  | Allows reflectance measurements of powdered samples and samples. Mounts on the standard sample holder against the reflectance port. Includes a prepacked PTFE powder cell for use as a reflectance standard and an empty powder cell holder for sample. Sample is retained by a plunger.       | 7910047700 |
| Small spot kit                                                                                                                      | Consists of an iris, mirror assembly, and three lens options to focus the beam to a smaller diameter spot at the selected measurement location. The beam size is ~ 3 mm diameter at the transmission position and 3.5 mm tall by 1.5 mm wide at the reflectance position.                      | 7910047200 |
| Variable angle transmittance holder                                                                                                 | Allows transmittance measurements of solid samples at various incident angles. The sample can be positioned through 360 degrees to the incident beam and is selectable to 1 degree. Suitable for rigid samples such as mirrors and glasses.                                                    | 7910047400 |
| <b>Miscellaneous Accessory Supplies</b>                                                                                             |                                                                                                                                                                                                                                                                                                |            |
| Aperture mask kit, for the variable angle specular reflectance accessory                                                            | Contains 1 inch disk holder, 2/pk, and two each of the 2, 10, and 20 mm sample holder                                                                                                                                                                                                          | 9910064700 |
| Attenuation filter kit with neutral density screens and blue filter, for use with the variable angle specular reflectance accessory | Used for high levels of attenuation from 0.5 Abs to 3.1 Abs                                                                                                                                                                                                                                    | 9910047700 |



Cary 4000/5000/6000 solid sample holder

Cary 4000/5000/6000  
diffuse reflectance accessory



Deuterium lamp, for Cary 100/300 UV,  
G9820-80000



Visible source lamp, for Cary 100/300 UV,  
5610021700



Xenon lamp module, 110639690



Visible QI lamp, for Cary 4000 to 7000,  
5610013900



Deuterium lamp, for Cary 4000 to 7000,  
110713990

## Cary Source Lamps

Agilent offers high quality lamps that produce top level performance for your Cary spectrophotometer.

### Cary Source Lamps

| Description                                           |                   | Part No.    |
|-------------------------------------------------------|-------------------|-------------|
| Deuterium UV lamp                                     | Cary 100/300      | G9820-80000 |
| Visible source lamp                                   | Cary 100/300      | 5610021700  |
| Xenon lamp module                                     | Cary 50/60        | 110639690   |
| UV source lamp, less than 190 nm                      | Cary 400          | 5610135500  |
| Deuterium UV lamp                                     | Cary 4000 to 7000 | 110713990   |
| Visible QI lamp                                       | Cary 4000 to 7000 | 5610013900  |
| Mercury lamp<br>Used for UV-Vis wavelength validation | Cary 4000 to 7000 | 5610136300  |

## Cary Tubing

### Tubing

| Description                                                                    | Comments                                  | Part No.   |
|--------------------------------------------------------------------------------|-------------------------------------------|------------|
| Silicon pump tubing, 3/16 inch id, 5/16 inch od, per m                         | Tubing only, no connectors                | 2410023800 |
| Peristaltic pump tubing replacement kit for Routine Sampler Accessory          | Includes silicon pump tubing and fittings | 9910052900 |
| PTFE tubing (to sample) for Routine Sampler Accessory, per m                   |                                           | 3710030800 |
| Silicon tubing, 1 mm id, 3 mm od                                               |                                           | 3710026400 |
| Silicon tubing, used to connect Routine Sampler Accessory to flow cells, per m |                                           | 910146400  |
| Dissolution tubing spares kit, Cary 50/60                                      |                                           | 6610020500 |
| Dissolution tubing spares kit, Cary 100/300                                    |                                           | 6610020600 |

# UV Filters, Standards, and Reagents

## Optical Filters

| Description                                                                                                    | Comments                                                                                                                                                                                                                                                                                                                                                                                                                  | Part No.   |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Attenuator filter kit with neutral density screens and blue filter, for use with Cary 100/300/4000/5000/6000i. | Used for high levels of attenuation from 0.5 Abs to 3.1 Abs.<br>Filters mount in filter holders supplied. Filter holders mount onto liquid sample holder base.<br>Two filter holders (V-Holders) are supplied with three neutral density mesh filters (0.5 Abs, 1.1 Abs and 1.5 Abs). Also supplied are three blue glass filters for attenuation at visible wavelengths or for demonstration of system photometric range. | 9910047700 |
| Holmium oxide filter                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                           | 118020790  |
| Holmium oxide/didymium glass filter kit                                                                        | Includes holmium oxide and didymium glass filters in a 10 mm rectangular cell holder                                                                                                                                                                                                                                                                                                                                      | 10030200   |
| Certified holmium glass filter                                                                                 | Holmium glass filter mounted in a 10 mm rectangular holder, with certificate                                                                                                                                                                                                                                                                                                                                              | 2010094300 |
| Certified didymium glass filter                                                                                | Didymium glass filter mounted in a 10 mm rectangular holder, with certificate                                                                                                                                                                                                                                                                                                                                             | 2010094400 |
| Photometric linearity neutral density filter kit                                                               | Contains tandem cell holder and two each neutral density filters of 0.3, 0.5, 1.0, and 1.5 Abs                                                                                                                                                                                                                                                                                                                            | 9910056100 |



Photometric linearity neutral density filter kit,  
9910056100



OO/PV chemical standards kit I,  
5063-6503



OO/PV chemical standards kit II,  
5063-6521



OO/PV hardware kit,  
5063-6523



Tubing kit for UV-Vis OO/PV test,  
5063-6522



Caffeine OO/PV sample for dissolution test,  
5042-6476

## Standards and Reagents

Our chemical standards and accessory kits provide an inexpensive and time-saving solution for operational qualification and performance verification (OO/PV) of UV-Vis spectrophotometers. The kits are designed for analysts who need to conform closely to both quality and regulatory requirements when performing UV-Vis measurements.

The chemical kits can be used with any UV-Vis spectrophotometer and consist of preprepared solutions in sealed ampoules. The solutions are traceable to NIST standards and specified by the European Pharmacopeia (EP) and include holmium oxide for wavelength accuracy measurement; potassium dichromate for photometric accuracy measurement; sodium nitrite, sodium iodide, and potassium chloride for stray light measurements at 340, 220, and 198 nm; and toluene in hexane for resolution measurement.

Each standard includes a Certificate of Analysis for traceability.

### 8453/8454 Certified Calibration Standards and Accessory Kits

| Description                                                                                        | Kit Contents                                                                                                                                                                                                                     | Part No.  |
|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| OO/PV chemical standards kit I, for photometric accuracy, stray light, and resolution measurements | Contains ampoules, 10 mL each, 12/pk, including 4 potassium dichromate in sulfuric acid (2 each of 60 and 600 mg/L), 2 sulfuric acid (blank), sodium nitrite, sodium iodide, potassium chloride, toluene in hexane, and 2 hexane | 5063-6503 |
| OO/PV chemical standards kit II, for wavelength accuracy                                           | Contains ampoules, 10 mL each, 2/pk, including perchloric acid (blank) and holmium oxide in perchloric acid                                                                                                                      | 5063-6521 |
| OO/PV hardware kit                                                                                 | Contains flow cells, 2/pk; cell passivating fluid; tubing kit; MCT adjustment tool; temperature sensor support; syringes; and OO/PV manual                                                                                       | 5063-6523 |
| Tubing kit, for UV-Vis OO/PV test                                                                  | Contains tubings, fittings, and adapter to flush flow cell                                                                                                                                                                       | 5063-6522 |
| Caffeine OO/PV sample, for dissolution test, 150 mg/L caffeine in water, 500 mL                    |                                                                                                                                                                                                                                  | 5042-6476 |

### 8453/8454 Checkout Samples

| Description                                                   | Part No.  |
|---------------------------------------------------------------|-----------|
| Test sample for UV-Vis (caffeine solution, 10 µg/mL in water) | 5063-6524 |

## Cary Standards

| Description                                                                                | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Part No.    |
|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Calibrated solution standards kit                                                          | Solution validation test kit of 12 sealed cells for testing performance of a UV spectrophotometer (wavelength accuracy, photometric accuracy, stray light, etc). Includes potassium dichromate 40 mg/L, 60 mg/L, 120 mg/L, 600 mg/L plus perchloric acid blank for photometric accuracy tests, holmium perchlorate 4 % in 10 % perchloric acid for wavelength accuracy tests, potassium chloride solution 12 g/L, sodium nitrite solution 50 g/L, sodium iodide - 1 % solution plus water blank for stray light tests, 0.02 % toluene in hexane plus a hexane blank for resolution tests. Each solution is sealed in a quartz cuvette. A certificate of traceability and performance is included for each solution. | 9910085200  |
| Holmium perchlorate 4 % in perchloric acid, sealed in a quartz cuvette                     | Includes certificate of traceability and performance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 6610022100  |
| Toluene in hexane resolution test kit                                                      | Includes 10 mL ampoules of 0.02 % toluene in n-hexane, 2/pk and 10 mL ampoules of n-hexane, 6/pk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 9910101000  |
| Certified standard, for specular reflectance at 7 degree angle of incidence                | Features Al coating on 40 mm diameter Pyrex substrate. Covers range 250–2500 nm with >80 % reflectance >250 nm and >85 % reflectance >800 nm. Includes NIST traceable certification at 10 nm intervals (250–1100 nm) and 25 nm intervals (1100–2500 nm).                                                                                                                                                                                                                                                                                                                                                                                                                                                            | G6874-80000 |
| Spectralon 99 % reflectance standard, calibrated, for diffuse reflectance, 2 inch diameter | PTFE diffuse reflectance standard which has typical reflectance value of 99 % and is spectrally flat over the UV-VIS-NIR spectrum in the range from 250–2500 nm. Reflective area 2 inch diameter. Supplied with complete diffuse reflectance data from 250–2500 nm. Housed in a durable Delrin holder with a protective cover. For use with the Cary 7000/UMA when performing scattering measurements that need to be referenced (ratioed) to a scattering material.                                                                                                                                                                                                                                                | 7910037700  |
| Calibrated color standard, 1.25 inch od, 4/pk                                              | Includes four colored standards (red, green, blue, yellow) with values traceable to NIST. Includes tristimulus values, chromaticity coordinates, UCS coordinates, and CIELAB and CIELUV values. Certified values are in 10 nanometer increments from 380–830 nm.                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 9910084300  |
| Certified diffuse reflectance wavelength and wave number standard                          | PTFE diffuse reflectance standard which has typical reflectance value of 99 % and is spectrally flat over the UV-VIS-NIR spectrum in the range from 250-2500 nm. Reflective area 2 inch diameter. Supplied with complete diffuse reflectance data in both wavelength and wavenumbers, directly traceable to NIST. Housed in a durable Delrin holder with a protective cover.                                                                                                                                                                                                                                                                                                                                        | 9910081100  |
| Certified diffuse reflectance wavenumber standard                                          | PTFE diffuse reflectance standard which has typical reflectance value of 99 % and is spectrally flat over the UV-VIS-NIR spectrum in the range from 250–2500 nm. Reflective area 2 inch diameter. Supplied with complete diffuse reflectance data in wavenumbers, directly traceable to NIST. Housed in a durable Delrin holder with a protective cover.                                                                                                                                                                                                                                                                                                                                                            | 9910081000  |
| Certified reference standard for certification of UV instruments to USP requirements       | Includes 0.006 % potassium dichromate plus perchloric acid blank and neutral density filters of 0.5, 0.7, and 1.0 Abs. for photometric accuracy tests. Also includes 4 % holmium perchlorate in 10 % perchloric acid for wavelength accuracy tests. Each solution is sealed in a quartz cuvette. A certificate of calibration with NIST traceability is included for each solution/filter.                                                                                                                                                                                                                                                                                                                          | 190034200   |
| Certified Neutral Density standards, set of three                                          | Set of three neutral density glass filters of 0.5, 0.7, and 1.0 Abs. required for the determination of photometric accuracy. Traceable to NIST.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 190032100   |



The Agilent Cary Eclipse fluorescence spectrophotometer

## Agilent Cary Eclipse Fluorescence Supplies

Agilent fluorescence spectrophotometers are augmented by a wide range of accessories and supplies, including a fast filter accessory, solid sample holder, 96- and 384-well microplates, and fiber optic probes and couplers.

### Kits and Supplies for Fluorescence Accessories

#### Fast Filter Accessory Supplies



Fura-2 filters for  $\text{Ca}^{++}$  measurements, 7910043800

The Fast Filter Accessory quickly adapts the Cary Eclipse to a filter based instrument for measurement of rapid intracellular ion movements into and out of cells using ratiometric fluorescent probes. Such measurements are used in processes exhibiting fast kinetics that cannot be measured using high-speed scanning monochromators. A pair of bandpass filters appropriate to the fluorophore under investigation must be mounted in the fast filter accessory. Agilent offers filter pairs appropriate for measurement of the calcium binding dyes Fura-2 and Indo-1. The filters are 25 mm in diameter and are mounted in a black anodized aluminum ring.

#### Kits and Supplies for Fluorescence Accessories



Indo-1 filters for  $\text{Ca}^{++}$  measurements, 7910043900

| Description                                                                                                                    | Part No.   |
|--------------------------------------------------------------------------------------------------------------------------------|------------|
| Fura-2 filters for $\text{Ca}^{++}$ measurements (340 and 380 nm bandpass filters, 20 nm SBW); requires fast filter accessory. | 7910043800 |
| Indo-1 filters for $\text{Ca}^{++}$ measurements (405 and 495 nm bandpass filters, 20 nm SBW); requires fast filter accessory  | 7910043900 |

**Cary Eclipse Fluorescence Accessory Supplies**

| Description                                   | Comments                                                                                                                                                                                                                                                                                                                                                               | Part No.   |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Solid Sample Holder Accessory Supplies</b> |                                                                                                                                                                                                                                                                                                                                                                        |            |
| Edge mounting sample holder                   | Used with solid sample holder accessory. Allows measurement of optical components including optical filters and other samples that cannot be mounted using the standard solid sample holder kit. Consists of an adjustable sample clamp plate; additional sample brackets, 2/pk; a sliding bracket; ball driver; and positioning screws, four each                     | 9910102900 |
| Powder cell and single crystal holder         | Used with solid sample holder accessory. Allows measurement of powders and a variety of small crystals, gems and rocks. Consists of a mounting bracket; positioning screws, four each; cylindrical powder holder shell and powder holder lid; sample cups, two each; silica disks; and a crystal holder bracket                                                        | 9910103000 |
| Cuvette sample holder                         | Allows measurement of liquid samples located in traditional cuvettes. Consists of a cuvette holder for standard 10 mm pathlength cuvettes and mounting screws, two each, to secure the cuvette holder to the solid sample holder mounting plate. Allows for flexible front face cuvette measurements at a variety of angles for highly scattering or absorbing samples | 9910103100 |
| <b>Temperature Probe Accessory Supplies</b>   |                                                                                                                                                                                                                                                                                                                                                                        |            |
| Probe holder                                  | Includes square end probes, 2/pk, for use in rectangular cuvettes with internal dimensions of 10 x 10 mm and regular end probe, 2/pk, for use in rectangular cuvettes with internal dimensions of 10 x 9.5 mm                                                                                                                                                          | 9910066800 |
| Probe holder, tapered end                     | Includes tapered end probes, 4/pk, suitable for use in microcells                                                                                                                                                                                                                                                                                                      | 9910066900 |
| Extension lead, short, for probe holder       | Required for mounting the probe inside the sample compartment                                                                                                                                                                                                                                                                                                          | 110381100  |
| Extension lead, long, for probe holder        | Required for mounting the probe outside the sample compartment                                                                                                                                                                                                                                                                                                         | 110380500  |



Cary Eclipse solid sample holder

**Base Plate for Custom Accessories**

This base plate incorporates locating holes and the Cary Eclipse rapid lockdown mechanism common to most Eclipse accessories. It can be used to mount custom accessories in the Eclipse sample compartment.

| Description                                     | Part No.  |
|-------------------------------------------------|-----------|
| Base plate for custom accessories, fluorescence | 210167490 |



Base plate for custom accessories, fluorescence, 210167490

## Fluorescence Cuvettes and Flow Cells

Rectangular cells are the most commonly used cell type. We offer standard cells, sub-microcells with about 40 % of the volume of a standard cell of the same pathlength, and microcells with about 20 % of the volume of a standard cell. Low-volume triangular cells that fit directly into the standard 10 mm cuvette holder are also available. The microcell cuvettes are ideal for use when you have only a small amount of sample. All the listed cuvettes have the optimum Z-height (the distance between the base of the cell and the center of the light beam) for the Cary Eclipse fluorescence spectrophotometer.

### Fluorescence Cuvettes and Flow Cells

| Cell Type   | Description                                                            | Cell Material | Volume | Path Length (mm) | Part No.    |
|-------------|------------------------------------------------------------------------|---------------|--------|------------------|-------------|
| Flow Cell   | Flow cell, 2 x 2 mm emission window                                    | Far UV quartz | 40 µL  | 10               | 6610023700  |
| Rectangular | Fluorescence cell, open top, pair                                      | Far UV quartz | 3.5 mL | 10               | 6610000900* |
|             | Fluorescence cell, stoppered, pair                                     | Far UV quartz | 3.5 mL | 10               | 6610001200* |
|             | Fluorescence cell, anaerobic                                           | Far UV quartz | 3 mL   | 10               | 6610021400  |
|             | Fluorescence cell, two sides mirrored with black-backed mirrored sides | Far UV quartz | 3 mL   | 10               | 6610023500  |
|             | Sub-microcell, 4 x 10 mm window                                        | Far UV quartz | 400 µL | 10               | 6610021500  |
|             | Sub-microcell, 2 x 2 mm window                                         | Far UV quartz | 40 µL  | 10               | 6610021600  |
|             | Sub-microcell, low head space, stoppered                               | Far UV quartz | 40 µL  | 10               | 6610024200  |
|             | Microcell, stoppered, square base                                      | Far UV quartz | 1.7 mL | 10               | 6610021200  |
| Triangular  | Microcell, open top, square base                                       | Far UV quartz | 1.7 mL | 10               | 6610021300  |

\*Matched pair

### Cell Holder and Base

| Description                    | Part No.  |
|--------------------------------|-----------|
| Cell holder, fluorescence      | 110664700 |
| Cell holder base, fluorescence | 210167200 |

## Microplates

Our microplates are available in white for best overall well-to-well reproducibility, or black for the lowest background signal levels. Both types have high binding surfaces that bind medium and large biomolecules (greater than 10 kDa) that have hydrophobic and/or ionic groups. These microplates are recommended for the Cary Eclipse Microplate Reader Accessory.

### 96-well Microplates

| Surface Treatment | Sterile | Color | Unit   | Part No.   |
|-------------------|---------|-------|--------|------------|
| High binding      | No      | White | 10/pk  | 6610022400 |
| High binding      | No      | Black | 10/pk  | 6610022500 |
| High binding      | No      | White | 100/pk | 6610022800 |
| High binding      | No      | Black | 100/pk | 6610022900 |
| Untreated         | Yes     | White | 10/pk  | 6610022300 |

### 384-well Microplates

| Surface Treatment | Sterile | Color | Unit  | Part No.   |
|-------------------|---------|-------|-------|------------|
| High binding      | No      | White | 10/pk | 6610022600 |
| High binding      | No      | Black | 10/pk | 6610022700 |
| High binding      | No      | White | 50/pk | 6610023000 |
| High binding      | No      | Black | 50/pk | 6610023100 |



96-well microplate, 6610022300

## Fiber Optic Probes and Couplers

### Fiber Optic Probes and Couplers

| Description                                           | Notes                                                                                                                                                                                                                                                                                         | Part No.   |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Fiber optic dip probe coupler accessory, fluorescence | Allows a fiber optic dip probe to be connected using SMA 906 connectors. Includes a remote read connection to enable read triggering from the probe mounting arm. Requires the fiber optic dip probe (p/n 7910043100)                                                                         | 10076800   |
| Fiber optic coupler accessory, fluorescence           | Allows a remote read fiber optic probe to be connected using SMA 906 connectors. Allows remote sample measurement. Requires the remote read fiber optic probe (p/n 7910043000)                                                                                                                | 10076700   |
| Fiber optic dip probe, fluorescence                   | Stainless steel fiber optic dip probe. For use with fiber optic dip probe coupler accessory. Probe tips must be ordered separately. Select from the fluorescence fiber optic liquid tips kit for quantitative work and the fluorescence fiber optic probe tip for solids.                     | 7910043100 |
| Fiber optic remote read 2 m probe, fluorescence       | Hand-held stainless steel fiber optic probe with remote read switch. For use with fiber optic coupler accessory. Probe tips must be ordered separately. Select from the fluorescence fiber optic liquid tips kit for quantitative work and the fluorescence fiber optic probe tip for solids. | 7910043000 |

### Tips for Fiber Optic Probes

| Description                              | Kit Contents                                                                                                                                  | Part No.   |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Fluorescence fiber optic liquid tips kit | Includes two stainless steel liquid probe tips with black quartz base, angled to minimize back-scattering. 10 and 20 mm pathlengths.          | 9910104500 |
| Fluorescence fiber optic solid tip kit   | Includes stainless steel probe tip for solids designed to bring the light into the sample at 30 degrees to minimize back-scattered excitation | 7910043200 |



Fiber optic dip probe coupler accessory, fluorescence, 10076800



Transmission probe and holder, 10076700



Fiber optic remote read 2 m probe, fluorescence, 7910043000



Fluorescence fiber optic liquid tips kit, 9910104500



Fluorescence fiber optic solid tip kit, 7910043200

## Standards and Reference Materials

### Standards and Reference Materials

| Description                                                            | Comments                                                                                                                                                                                                                                                                                                                                                          | Part No.   |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Water-filled fluorescence cuvette, sealed                              | Used for signal-to-noise measurements of Raman band of water                                                                                                                                                                                                                                                                                                      | 6610021800 |
| Silica diffuser, spare                                                 |                                                                                                                                                                                                                                                                                                                                                                   | 110674800  |
| Neutral density attenuator 1.5 Abs, spare                              |                                                                                                                                                                                                                                                                                                                                                                   | 110677500  |
| Rhodamine B in polymer block                                           |                                                                                                                                                                                                                                                                                                                                                                   | 6610021900 |
| Europium in polymer block                                              |                                                                                                                                                                                                                                                                                                                                                                   | 6610022200 |
| Rhodamine B, concentrated solution sealed in triangular cuvette        | Saturated Rhodamine B solution in triangle cell for collecting excitation correction factors                                                                                                                                                                                                                                                                      | 6610021700 |
| Holmium perchlorate 4 % in perchloric acid, sealed in a quartz cuvette | Sealed cell used to measure wavelength accuracy on the emission monochromator. Requires cell holder p/n 110678600. Includes certificate of traceability and performance                                                                                                                                                                                           | 6610022100 |
| Cell holder for holmium perchlorate cuvette                            | Special cell holder for mounting a cuvette before standard cell holder. Used for mounting the holmium perchlorate for the wavelength accuracy test. Allows diffuser to be positioned in standard cell holder and the perchlorate cell to be positioned in this cell holder. Required for Cary Eclipse wavelength accuracy test using holmium perchlorate solution | 110678600  |
| Fluorescence samples, set of six hydrocarbons in polymer blocks        | Four have broad fluorescence bands for 300-700 nm, and two have sharp emission bands for wavelength calibration and bandpass checking. Samples include anthracence/naphthalene, ovalene, p-terphenyl, tetraphenyl butadiene, compound 610, and rhodamine B in PMMA block.                                                                                         | 6610010300 |
| Fluorescence demonstration kit                                         | Includes europium in polymer block, ovalene in polymer block, a sealed water cuvette, and an empty 10 x 10 mm fluorescence cuvette                                                                                                                                                                                                                                | 9910101900 |



Silica diffuser, spare, 110674800



Rhodamine B, concentrated solution sealed in triangular cuvette, 6610021700



Fluorescence samples, set of six hydrocarbons in polymer blocks, 6610010300



Agilent Cary 670 FTIR shown with the Cary 620 FTIR imaging system



Replacement desiccant cartridge for spectrometer, 899-1794



Funnel for liquid nitrogen, 013-4422



KBr window assembly for sample compartment, 110834990



Window retaining ring, 810207300



NIR source lamp, 5610136500

## Agilent Cary Series FTIR Supplies

The Agilent world-renowned Cary product line encompasses handheld, portable and inlab routine and research grade FTIR, in addition to the traditional UV-Vis and UV-Vis-NIR and fluorescence techniques. Agilent Cary FTIR microscopes and chemical imaging systems represent the latest in cutting-edge performance, delivering unparalleled spatial resolution and sensitivity. Agilent FTIR products are engineered to help you discover, characterize, and test a variety of solid, liquid, organic and inorganic materials. Take advantage of powerful analysis routines for reliable results with built-in ease-of-use to ensure your productivity. Our range of consumables for these products includes desiccant, replacement windows and sources, filters, crystals, and high quality reference sources, such as polystyrene test films.

### Cary Series FTIR Instrument Supplies and Sources

| Description                                                                                                                                                               | Part No.   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Simple polystyrene test card (uncertified)                                                                                                                                | 2010128000 |
| Replacement desiccant cartridge for spectrometer<br>Used to prevent water vapor diffusing into the spectrometer enclosure. Replace when the indicator crystals turn pink. | 899-1794   |
| Funnel for liquid nitrogen<br>Used for pouring liquid nitrogen when cryogenically cooled detectors (MCT or InSb) are installed                                            | 013-4422   |
| Sample compartment filter kit<br>Includes 12.5 %, 25 %, and 50 % filters                                                                                                  | 9910141100 |
| KBr window assembly for sample compartment                                                                                                                                | 110834990  |
| KBr window assembly, pair - spare only                                                                                                                                    | 210228390  |
| Window retaining ring                                                                                                                                                     | 810207300  |
| KRS5 window assembly for sample compartment                                                                                                                               | 110835000  |
| KRS5 window assembly, pair, for 640 FTIR                                                                                                                                  | 210228490  |
| Source assembly, Mid-IR                                                                                                                                                   | 110805990  |
| Assembly source element, NIR, FTS 7000                                                                                                                                    | 013-3243   |
| Source element, FTIR, FTS 4060                                                                                                                                            | 013-3300   |
| NIR source lamp                                                                                                                                                           | 5610136500 |

**Agilent Cary 610/620 FTIR Imaging Supplies**

| Description                                             | Part No.   |
|---------------------------------------------------------|------------|
| Replacement Ge crystal, for slide-on ATR accessory      | 099-1925-1 |
| Replacement diamond crystal, for slide-on ATR accessory | 099-1925-3 |

**Agilent Cary 630 FTIR System Supplies**

| Description                                                       | Part No.    |
|-------------------------------------------------------------------|-------------|
| Replacement infrared source with purge fitting                    | G8043-67400 |
| Replacement dessicant cartridge with purge fitting                | G8043-67401 |
| KBr window with removal tool and purge fitting                    | G8043-67402 |
| ZnSe window with removal tool and purge fitting                   | G8043-67403 |
| Polystyrene film, for Diamond ATR/Transmission sampling accessory | G8043-67405 |
| Polystyrene film, for Tumbler/DialPath sampling accessory         | G8043-67406 |
| Replacement flat tip, for Diamond ATR                             | G8043-67483 |
| Replacement pellet tip, for Diamond ATR                           | G8043-67484 |



Agilent Cary 630 FTIR



Replacement infrared source with purge fitting, G8043-67400



KBr window with removal tool and purge fitting, G8043-67402

**Agilent 4200 FlexScan FTIR System Supplies**

| <b>Description</b>                                              | <b>Part No.</b> |
|-----------------------------------------------------------------|-----------------|
| Diffuse gold reflectance reference cap, for diffuse reflectance | 0023-300        |
| Polystyrene frequency reference cap, for diffuse reflectance    | 0023-301        |

**Agilent 4100 ExoScan FTIR System Supplies**

| <b>Description</b>                     | <b>Comments</b>                                 | <b>Part No.</b> |
|----------------------------------------|-------------------------------------------------|-----------------|
| Interface cable, for 4100 ExoScan FTIR | Includes Y-Interface cable for AC power and USB | 0023-200        |

**Agilent 4500 FTIR for Oil Analysis**

| <b>Description</b>                  | <b>Comments</b>                                                                                                                                                        | <b>Part No.</b> |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Surfactant kit, water in oil        | Includes surfactant blend 1/2 gallon, pipette and tips, sample syringes, vials, and instructions                                                                       | 0020-900        |
| Surfactant refill kit, water in oil | Includes surfactant blend 1/2 gallon                                                                                                                                   | 0020-901        |
| Detection kit, oil in water         | Hardware required to perform the oil in water method<br>Includes filtration apparatus, forceps, filters, pipette tips, and oil stabilizer                              | 0020-903        |
| Refill kit, oil in water            | Includes filters and oil stabilizer                                                                                                                                    | 0020-904        |
| Biodiesel reference standards kit   | Test standards for 4500/5500 series biodiesel in diesel method<br>Includes 12 sets of a 3 standard kit: blank, 0.05 %, and 0.5 % biodiesel in diesel 2 year shelf life | 0020-905        |

**Agilent 4300 Handheld FTIR System Supplies**

| Description                                                                   | Part No.    |
|-------------------------------------------------------------------------------|-------------|
| Reference cap, gold, coarse, for 4300 Handheld FTIR                           | G8180-67560 |
| Reference cap, mirror, stainless steel, for 4300 Handheld FTIR                | G8180-67562 |
| Reference cap, diffuse, coarse, for 4300 Handheld FTIR                        | G8180-67563 |
| Reference cap, mirror, gold, for 4300 Handheld FTIR                           | G8180-67564 |
| Reference sample, polystyrene, for 4300 Handheld FTIR                         | G8180-67300 |
| Retro-reflector, mercury cadmium telluride (MCT), for 4300 Handheld FTIR      | G8180-67610 |
| Retro-reflector, deuterated triglycine sulfate (DTGS), for 4300 Handheld FTIR | G8181-67611 |



4300 Handheld FTIR

### Replacement Batteries and Power Supplies for Handheld FTIR Systems

| Description                                                                                                 | Part No.    |
|-------------------------------------------------------------------------------------------------------------|-------------|
| Handheld PC battery<br>Used with Agilent 4100 ExoScan, 4200 FlexScan, and 4500 Series Portable FTIR systems | 800-2004    |
| Lithium-ion battery<br>Used with Agilent 4100 ExoScan and 4200 FlexScan FTIR systems                        | 800-2005    |
| Replacement battery, for 4300 Handheld FTIR                                                                 | G8180-67147 |
| Battery charger, for 4300 Handheld FTIR                                                                     | G8180-67000 |
| Power supply, 15 V DC, for 4300 Handheld FTIR                                                               | G8180-67135 |



Polystyrene test film, NIST traceable, 925-0128

### FTIR Standards

| Description                            | Comments                                                                                                                                                                         | Part No.        |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Polystyrene test film, NIST traceable  | Polystyrene test films, 2/pk, mounted to 2 x 4 inch cardstock holder that fits in the universal slide mount. Includes certificate of traceability to five NIST 1921b frequencies | 925-0128        |
| KBr powder, spectroscopic grade, 100 g |                                                                                                                                                                                  | HARRICK-KBR-100 |

**Agilent Oil Analyzer Supplies**

| Description                                                                              | Comments                                                                                                                                                                                                                                                                               | Part No.    |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 24-bottle autosampler rack                                                               | Holds bottles of up to 2 inch diameter in a 3 row x 8 column configuration                                                                                                                                                                                                             | 697-5392-1  |
| 40-bottle autosampler rack                                                               | Holds bottles of up to 1 5/8 inch diameter in a 4 row x 10 column configuration                                                                                                                                                                                                        | 697-5392-2  |
| 55-bottle autosampler rack                                                               | Holds bottles of up to 1 1/16 inch diameter in a 5 row x 11 column configuration                                                                                                                                                                                                       | 697-5392-3  |
| Replacement ZnSe sample cell assembly                                                    |                                                                                                                                                                                                                                                                                        | 013-5353    |
| Polystyrene card                                                                         |                                                                                                                                                                                                                                                                                        | 884-2829    |
| Replacement pump head, easy load                                                         |                                                                                                                                                                                                                                                                                        | 899-1599    |
| Pump tubing, FPM fluoroelastomer polymer                                                 |                                                                                                                                                                                                                                                                                        | 815-0631    |
| Tygon fuel tubing                                                                        |                                                                                                                                                                                                                                                                                        | 815-0639    |
| PTFE tubing                                                                              |                                                                                                                                                                                                                                                                                        | 815-0616    |
| Tool/parts kit for oil analyzer                                                          | Includes 400 mesh stainless steel filters, 2/pk; 2 feet of 3/32 inch x 5/32 inch PTFE tubing; 2 feet of FPM pump tubing; 4 feet of Tygon fuel tubing; wash bottle; 1 gallon capacity plastic bottle, 3/pk; 2 x 3/8 inch id FPM O-rings; wrenches for filter holder; and probe fittings | 013-4825-1  |
| Bypass valve assembly, for the oil sample cell used with the FTIR Oil Sampling Accessory |                                                                                                                                                                                                                                                                                        | K8045-60000 |



Replacement ZnSe sample cell assembly,  
013-5353



FPM fluoroelastomer polymer pump tubing,  
815-0631

# PUT MORE THAN 40 YEARS OF RELENTLESS INNOVATION BEHIND YOUR EVERY RESULT

By continually raising the standards for technologies that support your routine analyses, Agilent's R&D efforts have led to breakthroughs, such as:

- **New GC columns** that help you achieve higher levels of inertness and column-to-column reproducibility
- **LC column choices** that deliver the sensitivity and reliability you need for demanding applications
- **Cutting-edge sample preparation products** that promote reliable extraction and concentration
- **Fresh atomic and molecular spectroscopy ideas** for identifying and confirming targets and unknowns

Customers who have been with Agilent for a long time have experienced our commitment firsthand. Now, we look forward to demonstrating how Agilent's approach to relentless innovation can work to your advantage, too.

## CHEMICAL ANALYSIS SOLUTIONS

### Food



From high-volume pesticide screening in food products to rapid identification of pathogens, Agilent understands the analytical needs of food producers, shippers, and regulators. Utilizing our easy-to-use analyzers and up-to-date screening libraries, customers can quickly develop robust and reliable methods. Agilent's leading gas chromatography and mass spectrometry systems are widely regarded as valuable food testing techniques for an array of different analyses.

### Environmental



Agilent offers more than 40 years of environmental testing and regulatory expertise. We help government and private labs with the full range of assays, from routine testing of soils for heavy metals to detection of pharmaceuticals in groundwater, in concentrations down to parts per trillion.

### Energy and Chemicals



Agilent collaborates closely with process industry customers to offer analytical systems that meet their needs for separation, detection, throughput, and support. We'll even preconfigure custom or standard analyzers so they arrive at the lab ready-to-go. From crude oil, natural gas, and refining, to specialty chemicals and alternative fuels, Agilent provides the latest technologies and solutions to increase quality, safety, and profitability for energy and chemical labs, while meeting the industry's stringent quality requirements. Agilent leads the way in ASTM collaborations that have evolved—and will continue to evolve—into industry standards.

### Forensics



Whether testing for poisons in a forensics investigation, screening athletes for performance enhancing drugs, analyzing samples for recreational drugs, or checking a crime scene for explosive residue—lives and professions may be dependent on the accuracy of your equipment. Agilent leads the industry with a comprehensive portfolio of workflow solutions that provide the ability to identify, confirm, and quantify thousands of substances.

### Lab Informatics



The way a lab captures, analyzes, and shares data profoundly affects its efficiency. Agilent offers a rich, integrated suite of software products built on customer-driven architectural values with the Agilent OpenLAB software suite. OpenLAB delivers superior performance and connection across multiple systems, providing open systems integration and investment protection. Our commitment is to deliver value across each step in the life cycle of scientific data—from data collection and analysis to interpretation and management.

### Materials Science



Agilent offers a newly expanded portfolio of instruments used for the research, manufacturing, and testing of advanced materials, from precision optics to pulp and paper. Tools for atomic spectroscopy, molecular spectroscopy, chromatography, and X-ray crystallography all support continuous progress in materials science.

# LIFE SCIENCE SOLUTIONS



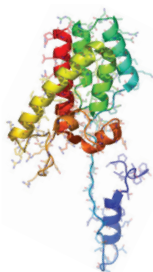
## Biopharmaceutical

Biotherapeutics have enormous potential to improve human health, with growing numbers of protein and antibody therapeutics to address unmet medical needs. At every development stage, from disease research to QA/QC and manufacturing, Agilent can help you make the right choices for moving therapeutics to market. We understand the biopharmaceutical workflow so our product families work together seamlessly, as engines of research, discovery, and development. Agilent columns deliver complete characterization of biomolecules using reversed-phase, size exclusion, ion exchange, and affinity chromatography. Our bio-inert supplies ensure that every part of your workflow delivers the performance you need to optimize your bioseparation.



## Pharmaceutical

You need the most efficient processes to evaluate drug candidates, determine efficacy, and ensure safety and compliance during development and manufacture. Agilent has worked with pharma companies for many years to ensure reliability and reproducibility for regulatory compliance, from lab-to-lab and around the world. Our pharma solutions provide high-throughput capability at every stage of the product life cycle, with automated sample preparation, industry-leading U/HPLC systems, the largest family of Fast LC columns, open access LC/MS, spectroscopy, and automated dissolution. A complete family of LC supplies and lamps help optimize every analysis and take day-to-day lab efficiency one step further.

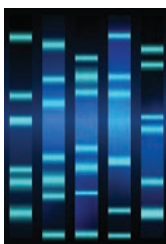


## Proteomics

Research into how large sets of proteins affect the health of an organism requires special sets of analytical tools. Agilent has built a formidable arsenal of liquid chromatograph/mass spectrometers, bio-informatics systems, multiple affinity protein removal columns, and OFFGEL electrophoresis for protein identification and protein biomarker discovery. Accurate-Mass mass spectrometry and microfluidic HPLC-Chip/MS are two Agilent innovations speeding the work of proteomics researchers around the globe.

## Metabolomics

Collections of small molecules are increasingly being viewed as rich sources of biomarkers, but studying metabolites presents many challenges. The need for speed, accuracy, and powerful interpretation capabilities in looking at chemical profile snapshots is underscored because molecules are constantly entering, leaving, or changing within the metabolome. Agilent's GC, LC, and MS portfolios, along with our excellent bio-informatics offerings, user-customizable METLIN metabolite database for LC/MS, and the industry's first commercial GC/MS retention time locked metabolite library align well with the needs of metabolomics researchers.



## Genomics

Agilent is a global leader in microarrays, scanners, and NGS reagents used in a wide variety of genomic-based disease research experiments. Our SureSelect and HaloPlex Target Enrichment Systems dominate the category, streamlining next-generation sequencing studies. Agilent offers a wide range of catalog CGH and gene expression microarrays and a highly developed capability to produce custom arrays using our free online design tool, SureDesign. All Agilent microarrays feature highly sensitive, selective 60-mer probes, and, with as many as eight arrays printed on a slide, the cost-per-sample is cost efficient.



## Life Science Informatics

Mirroring its extensive instrument portfolio, Agilent offers the industry's most extensive suite of bio-informatics software, helping users derive knowledge from complex genomic, proteomic, metabolomic, and other biological data. SureCall and CytoGenomics software analyzes NGS and aCGH data, and the GeneSpring suite provides multi-omic analysis and visualization capabilities to help compare complex datasets to explore biological questions from multiple perspectives. The GeneSpring suite includes the GX module for microarray-based gene expression and genotyping data, the PA module for Pathway Analysis and multi-omic analysis and the MPP software, which analyzes mass spectrometry data from proteomics and metabolomics experiments.



## Lab Automation

To meet the skyrocketing demand for more throughput and automation, Agilent has substantially expanded its lab automation offerings. The Agilent line of liquid handlers and microplate processors is designed to streamline high-volume life science workflows. Agilent is also continually upgrading its advanced autosamplers for LC, GC, LC/MS, and GC/MS, adding functionality and speed to reflect the performance of its advanced instruments.



## Vacuum Technology

Agilent works with customers to solve vacuum challenges from experiments in high-energy physics to developing systems for nanotechnology. Agilent manufactures vacuum systems used in its own mass spectrometry instruments, as well as those of other manufacturers. Agilent's vacuum technology has been proven by the most powerful physics experiment ever built, CERN's Big Bang machine, which was used in the discovery of the Higgs boson.

### Focus on what you do best

For over 40 years, Agilent has been building and maintaining the instruments you count on to stay competitive and successful. Trust us to protect your investment with a broad portfolio of services, backed by a global network of experienced service professionals dedicated to the productivity of your lab.

### Agilent CrossLab Service Plans

#### The best service available for your Agilent instruments

Agilent offers a flexible range of service plans so that you can choose the level of coverage that is best for your lab.

- Agilent CrossLab Gold—Priority-one coverage for ultimate uptime and productivity
- Agilent CrossLab Silver—Comprehensive coverage for dependable laboratory operations
- Agilent CrossLab Bronze—Total repair coverage at a fixed annual price

Agilent service plans include Agilent Remote Advisor for real-time remote monitoring and diagnostics. Through secure Internet connections, you can interact with Agilent service professionals, receive detailed asset reports, and configure text or email alerts to notify you before problems occur—helping you to maximize instrument uptime and optimize laboratory workflows.

### Agilent Compliance Services

#### Equipment qualification that meets the most stringent requirements

Enterprise Edition Compliance was developed to streamline qualification delivery compliance across your entire lab. Used worldwide in regulated labs, including standards organizations and regulatory agencies, Enterprise Edition enables you to:

- Improve qualification efficiency by harmonizing protocols across platforms to ensure greater efficiency and minimize regulatory risk
- Standardize your entire compliance operation with robust test designs that work with all of your instruments
- Add, remove, or reconfigure tests based on your unique user requirements
- Reduce staff review time significantly with consistently formatted, computer generated, tamper-proof reports



#### Get the Agilent Service Guarantee

Should your instrument require service while covered by an Agilent Advantage service agreement, we guarantee repair or we will replace your instrument for free. No other company offers this level of commitment to keep your lab up and running at peak efficiency. Get the Agilent Service Guarantee

## Agilent Education and Consulting Services

### Our best minds, working for you

Make the most of your instrument with training and consultations from the same experts who designed the instruments, software, and processes you use every day.

- Classroom, online, and onsite training in instrument operation, troubleshooting, and maintenance
- Customized consulting services to meet your lab's unique needs

## The Agilent Value Promise—10 Years of Guaranteed Value

In addition to continually evolving products, we offer something else unique to the industry—our 10-year value promise guarantee. The Agilent Value Promise guarantees you at least 10 years of instrument use from the date bought, or we will credit you with the residual value of the system toward an upgraded model. Not only does Agilent ensure a reliable product now, but we also ensure that your investment is just as valuable in the future.

For more detailed information, please go to [www.agilent.com/chem/services](http://www.agilent.com/chem/services) or contact your local Agilent Services and Support representative.



## Technical Support at work for you

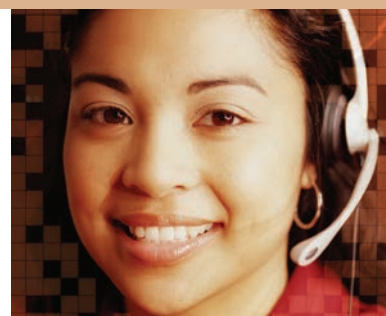
Have a hardware, software, application, instrument repair, or troubleshooting question? Agilent's technical experts are available to answer your questions. With years of laboratory experience, our technical support specialists can provide in-depth knowledge and experience.

For questions about supplies found in this catalog, contact your local Agilent office or Authorized Agilent Distributor, or visit [www.agilent.com/chem/techsupport](http://www.agilent.com/chem/techsupport)

## Need more information?

Visit [www.agilent.com/chem/contactus](http://www.agilent.com/chem/contactus) to:

- Locate your nearest Agilent office or distributor for expert technical support.
- Get fast sales and product assistance by phone. Simply use the scroll-down menu to select your country.
- Receive email assistance using our convenient online forms.





Agilent  
**CrossLab**

From Insight to Outcome

**ACROSS THE LAB, AROUND THE WORLD,  
WITH YOU EVERY STEP OF THE WAY.**

Real stories from the lab.

Contact us:

[www.agilent.com/chem/contactus](http://www.agilent.com/chem/contactus)

Buy online:

[www.agilent.com/chem/store](http://www.agilent.com/chem/store)

Get social with Agilent:

[www.agilent.com/chem/social](http://www.agilent.com/chem/social)

Explore our full range of catalogs:

[www.agilent.com/chem/catalog](http://www.agilent.com/chem/catalog)

This information is subject to change without notice.

© Agilent Technologies, Inc. 2018

Published in the USA, June 2018

5991-5455EN



**Agilent Technologies**