



2018/2019

Your Essential Resource for

# SPECTROSCOPY SUPPLIES





Agilent  
**CrossLab**

From Insight to Outcome

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

Real stories from the lab.

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## 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.



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## 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

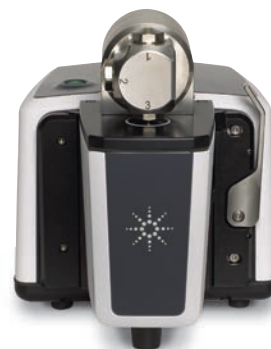
#### Superior fluorescence sensitivity and fast kinetics

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

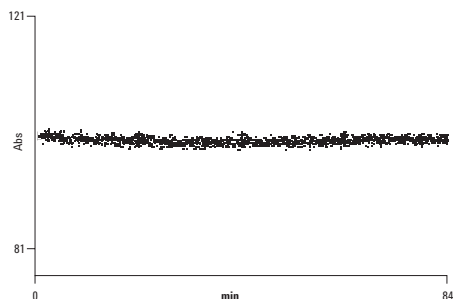
### Hollow Cathode Lamps

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.

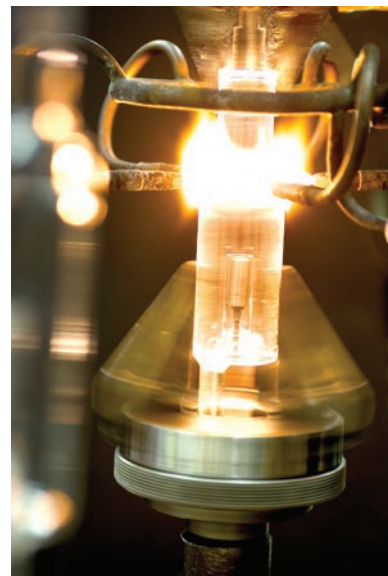
Economical operation is assured by the long lamp life, typically exceeding 5,000 mA hours, over and above our factory conditioning and testing service.

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 Lamps

Element	Part No.
Aluminum – Al	5610100100
Antimony – Sb	5610100200
Arsenic – As	5610100300
Barium – Ba	5610100400
Beryllium – Be	5610100500
Bismuth – Bi	5610100600
Boron – B	5610100700
Cadmium – Cd	5610100800
Calcium – Ca	5610101000
Chromium – Cr	5610101200
Cobalt – Co	5610101300
Copper – Cu	5610101400
Gold – Au	5610102100
Hafnium – Hf	5610102200
Iridium – Ir	5610102600
Iron – Fe	5610102700
Lead – Pb	5610102900
Lithium – Li	5610103000
Magnesium – Mg	5610103200
Manganese – Mn	5610103300
Mercury – Hg	5610103400
Molybdenum – Mo	5610103500
Neodymium – Nd	5610103600

### Coded Single Element Lamps

Element	Part No.
Nickel – Ni	5610103700
Niobium – Nb	5610103800
Palladium – Pd	5610104000
Phosphorus – P	5610107700
Platinum – Pt	5610104100
Potassium – K	5610104200
Rhenium – Re	5610104400
Rhodium – Rh	5610104500
Selenium – Se	5610105000
Silicon – Si	5610105100
Silver – Ag	5610105200
Sodium – Na	5610105300
Strontium – Sr	5610105400
Tantalum – Ta	5610105500
Tellurium – Te	5610105600
Thallium – Tl	5610105800
Tin – Sn	5610106100
Titanium – Ti	5610106200
Vanadium – V	5610106500
Zinc – Zn	5610106800
Zirconium – Zr	5610106900



Coded Single Element Lamp, Cu, 5610101400

### 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 Lamps – for automatic lamp recognition, preventing errors



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

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

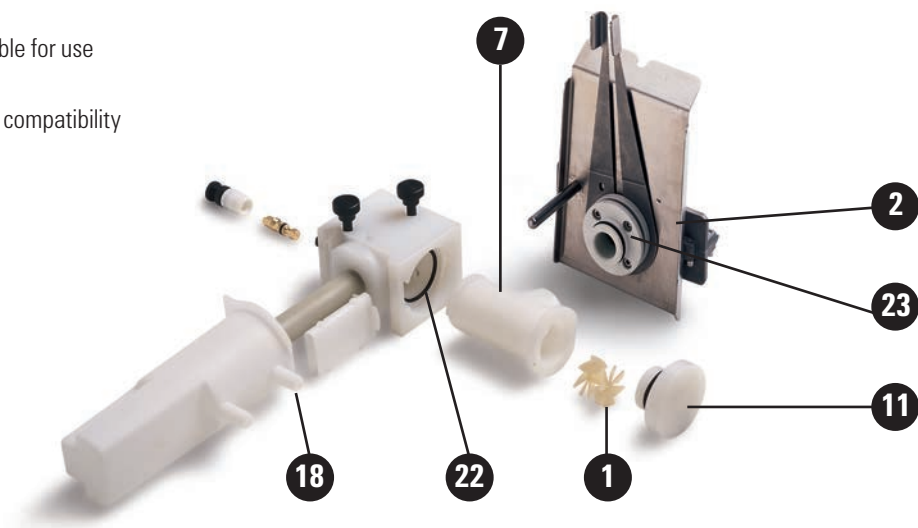
Description	Unit	Part No.
ACT-80 atom concentrator tube, for Mark 7 air-acetylene burner		110656800
Spare quartz atomization cells, for ACT-80	10/pk	9910054400

#### TIPS AND TOOLS

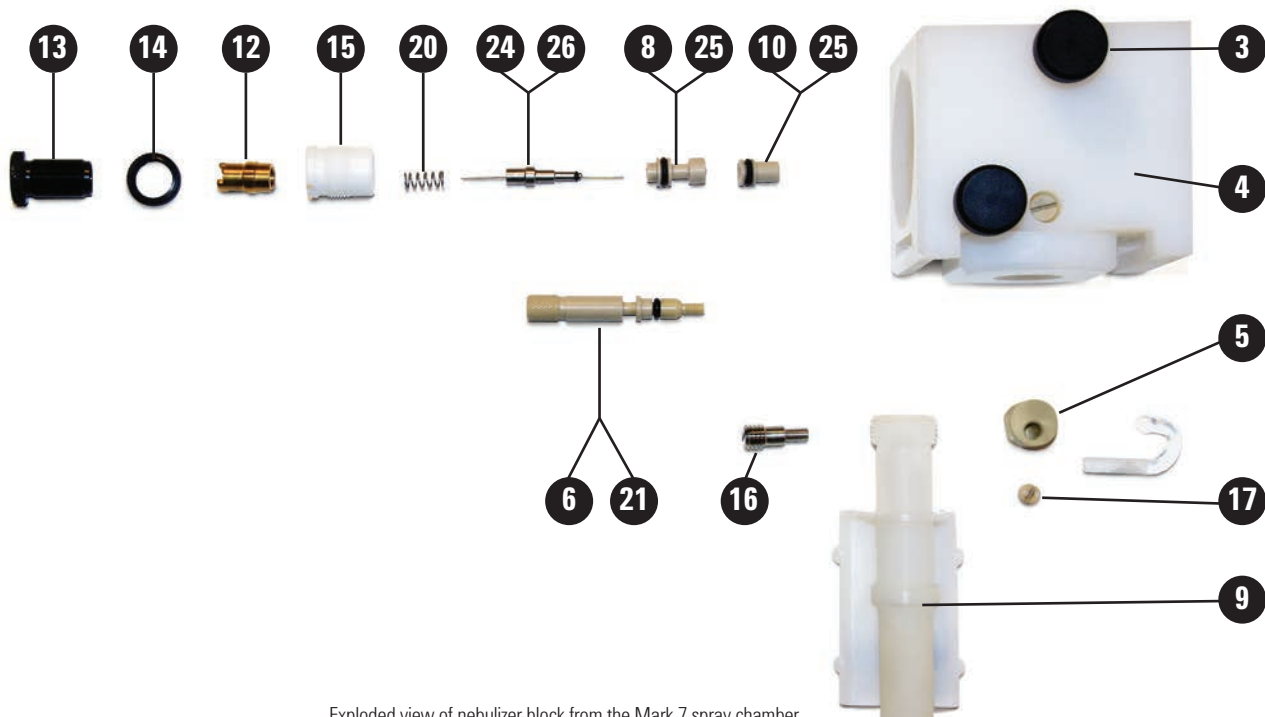
Deuterium background correction is only usable over the range from 185 to around 430 nm. There is no usable output from the lamp at higher wavelengths.

## 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 Ertalyle	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 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 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 Requires nebulizer	110351990
Complete Mark VI spray chamber assembly Requires nebulizer	110351790



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 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

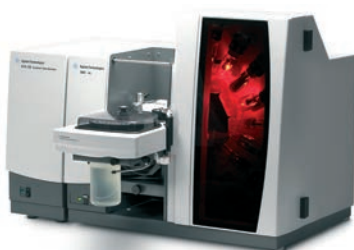
**Gas-liquid Separators**

Description	Use With	Part No.
Gas-liquid separator	VGA 77 for AA	9910071100
	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 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

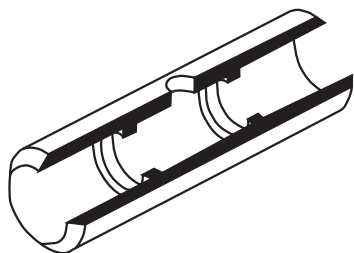
Description	Part No.		
GTA 120 Zeeman furnace operating supplies kit	190068000		
Kit Contents	Kit Quantity	Unit	Part No.
Graphite electrodes for GTA 120 Zeeman	2	1 pair	6310003500
Graphite shroud for GTA 120 Zeeman	1		6310003600
Omega platform tubes, pyrolytically coated	5	10/pk	6310003700
Syringe, 100 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



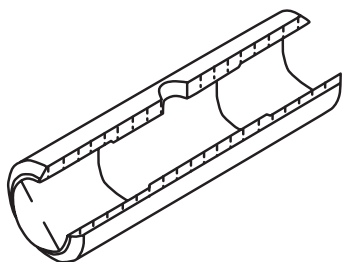
Partitioned tubes, 6310001200



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 Only for use with plateau tubes, p/n 6310001100	10/pk	6310001300
Plateau tubes, pyrolytically coated 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 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 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 electrodes for GTA 120, 6310003400



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



Graphite shroud for GTA 120, 6310003100



Graphite shroud for GTA 120 Zeeman, 6310003600

## Graphite Furnace Tools



Electrode extractor tool, 9910031200

### 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 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 Includes carousel disk (130 samples), 1.1 mL vials (2,000/pkg), 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

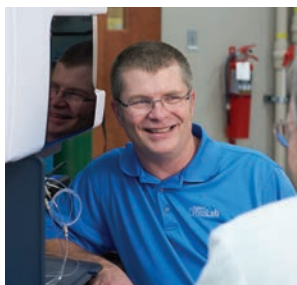
Description	Kit Contents	Part No.
Operating supplies kit, for 5100/5110 SVDV/VDV ICP-OES	Includes EasyFit demountable torch, outer tube sets (2), peristaltic pump tubes for sample (4 packs) and waste (4 packs), tubing and connectors for internal standard, U-series SeaSpray nebulizer, UniFit sample inlet 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.



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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) 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 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 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 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 <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?q=5991-7290EN) at [www.agilent.com/search](http://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 semivolatle organic solvents	Features a 1.4 mm id injector with replaceable extended outer tube with slot for radial viewing	Recommended for semivolatle 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.



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## 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 <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 <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

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



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

### 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

### 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



Fully demountable axial torch assembly kit, 9910106300



Fully demountable radial torch assembly kit, 9910106400



Spare semidemountable quartz torch body, 2010072900



Injector holder kit, 9910057300



Alumina injector tube, 2410067590



Quartz injector tube, 0.8 mm id, 2010077500

### Spare parts 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 <i>not</i> 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 <i>not</i> 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 2 (left) and SVS 1 (right)

### 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 Adjustable from 15–90 mm and preset to 50 mm	G8485-81003





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 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 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](tel:5991-6863EN) at [www.agilent.com/search](http://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 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 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) 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

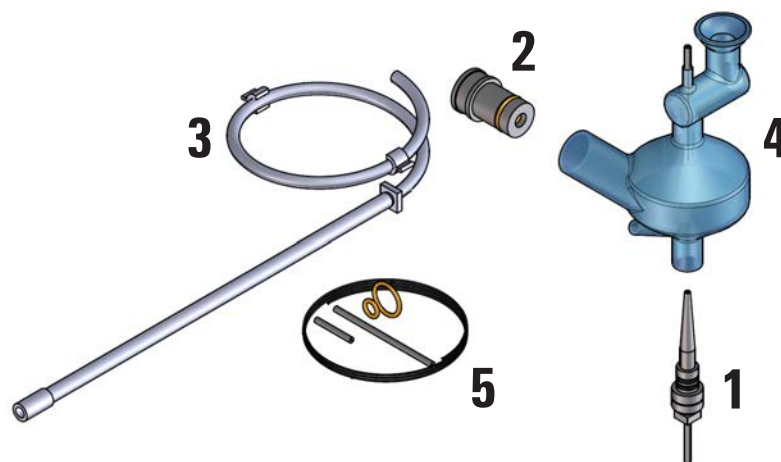
Description	Part No.
<b>Filters for 700 and Vista Series ICP-OES</b>	
Small argon filter, charcoal, for detector gas purge line	6810008600
Drierite filter, for detector gas purge line	6810008700
Large argon filter, charcoal, externally mounted, for polychromator gas purge line	6810010000
<b>Filters for 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 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 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
<b>MSIS Supplies to Support Routine Operation</b>		
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

1. p/n G8479-20020
2. p/n G8479-67000
3. p/n G8479-60100
4. p/n G8479-60300
5. p/n 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 (check before starting work and over the course of daily analysis)
Drain vessel	Check, empty if required	
Peristaltic pump tubing	Check for damage/deterioration Typically replace sample uptake tubing weekly	Weekly
Sampling cone, skimmer cone	Check orifice for matrix build-up, deformation, and enlargement Clean or replace if required	
Foreline pump	Check oil level and color 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	6 months
Foreline pump	Change oil	
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 Part No.	7500 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	

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Sample tubing, PFA, G1820-65105

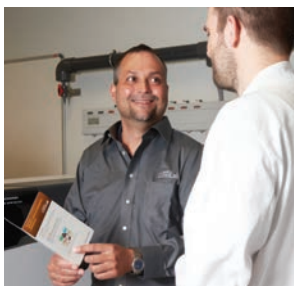


Plastic tubing cutter, 8710-1930

## Sample Line Supplies

Description	Specifications	Use	Unit	77/78/79/88/8900 Part No.	7500 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.

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## Nebulizers and Supplies

Description	Specifications	Use	Unit	77/78/79/88/8900 Part No.	7500 Part No.
MicroMist nebulizer, U-series	Borosilicate glass, with UniFit sample connector	Standard on 78/79/8800 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 Suitable for most sample types except those containing HF or suspended particulates 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 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 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

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MicroMist nebulizer, G3266-65003



Sample tubing, G3266-80010



Nebulizer gas\* connector, G3266-80015

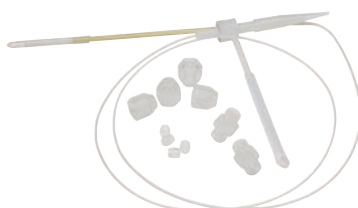
## Nebulizers and Supplies

Description	Specifications	Use	Unit	77/78/79/88/8900 Part No.	7500 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 Part No.	7500 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> 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 fluoropolymer O-ring kit, for nebulizer gas\* line connector, G1820-65533



## Nebulizers and Supplies

Description	Specifications	Use	Unit	77/78/79/88/8900 Part No.	7500 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 Part No.</b>	<b>7500 Part No.</b>
Spray chamber, double-pass design, quartz	Standard for 77/78/8800 and 7500 Series 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 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 Part No.	7500 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. 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. 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 replaces 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 Part No.</b>	<b>7500 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

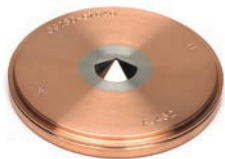
### Torches and Components

Description	Use	77/78/79/88/8900 Part No.	7500 Part No.
Torch, quartz, 2.5 mm id	Standard torch for most applications Not suitable for samples containing hydrofluoric acid	G3280-80053	G3270-80043
Torch, quartz, 1.5 mm id, taper type	For use with organic solvents. Not suitable for samples containing hydrofluoric acid	G3280-80080	G1833-65424
Torch, quartz, 1.0 mm id, taper type	For use with organic solvents 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

Description	Part No.
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 Part No.	7500 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

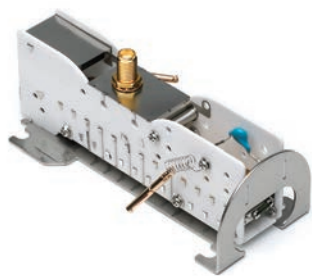


**Ion lens System Components for 7500 Series**

Description	Part No.
<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**

Description	8900 Part No.	8800 Part No.	78/7900 Part No.	7700 Part No.	7500 Part No.
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 Part No.	7700/8800 Part No.	7500 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 Part No.	7500 Part No.
Comprehensive spares for the Integrated Sample Introduction System 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 Part No.</b>	<b>7500 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 Peristaltic pump tubes for waste, Ismaprene, 3-stop, yellow/blue, 2 x 12/pk Peristaltic pump tubes for internal standard, Tygon, 2-stop, blue/orange, 12/pk PFA sample tubing, 0.5 mm id, 1.6 mm od, 5 m EzyFit sample inlet, 0.5 mm id, 10/pk Online internal standard addition kit Drain tubing assembly Spray chamber Tubing for drainage, 4.0 mm id, 2.5 m Quartz connector tube with dilution port Gas connector for dilution gas port Nebulizer EzyLok gas connector Plug for dilution port, 4 mm Clamps for spray chamber, 2/pk Nebulizer/make-up/dilution gas tubing Torch, quartz, 2.5 mm id Long-life Pt shield plate Bonnet for shield torch Plasma/auxiliary gas tubing with inner sleeve Connectors for plasma/auxiliary gas RF coil Graphite gaskets for sampling cone, 3/pk Screw and spacer kit for x-lens Screw/spacer/O-ring for cell PTFE tubing for reaction cell gas Octopole assembly 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 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.	G1131A

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**

Description	Kit Contents	Part No.
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**Option Two - Select your sampling cone**

Part No.	Description
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)

**Option Three - Select your skimmer cone**

Part No.	Description
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

**Option Four - Select the oil for your vacuum pump**

G1131A#402	Adds 2 x AVF Platinum* oil, 1 L (p/n X3760-64004) for the Agilent MS40+ vacuum pump
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\* "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 UniFit sample connector, 0.5 mm id, 10/pk 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 tubing, 0.5 mm id, 1.6 mm od, 5 m, Online internal standard addition kit Drain tubing assembly Spray chamber Tubing for drainage, 4.0 mm id, 2.5 m Quartz connector tube with dilution port Gas connector for dilution gas port Plug for dilution port, 1/8 inch 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 and spacer kit for x-lens 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 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) 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	G1091A

**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. 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 Part No.	7500 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) 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				G8400-67000	
Tubing kit for Argon Humidifier used with 78/79/8900 Series				G8400-67010	
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	RMSA-2

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

## 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)



Replacement Agilent Gas Clean nebulizer gas filter, P17973

**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 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 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 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 Recommended for routine analysis of most sample types where high sensitivity is required	G8000-70004
Conikal glass concentric nebulizer Replaces the nebulizer supplied with the Conikal sample introduction kit, p/n G8007AA #012 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 Includes capillary connector with captive sample capillary tubing 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 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 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. 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 Standard spray chamber supplied with 4200/4210 MP-AES Recommended for use with organic solvents, high matrix, or high TDS samples	G8000-70007
Single-pass glass cyclonic spray chamber For use with aqueous and low matrix samples where best sensitivity is required	G8000-70006
Inert double-pass cyclonic spray chamber For use with HF digests and high TDS samples	G8010-80034
Inert single-pass cyclonic spray chamber 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 Drain connector, for inert spray chambers used with 4200/4210 MP-AES. Fitted with 480 mm length capillary tubing Connects the peristaltic pump tubing for the waste line to the spray chamber outlet	G8010-80036
Nebulizer locking nut, for glass cyclonic spray chambers Features two O-rings inside to centre and seal the nebulizer	G8003-60019
Replacement Helix seal, for inert spray chamber, 4/pk 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 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 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 Disposable 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.



Multimode Sample Introduction System (MSIS)

### 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

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 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 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.

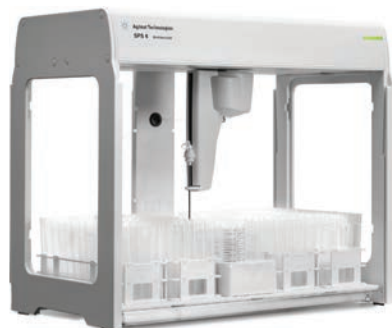
The programmed temperature is controlled using a peltier device providing the ability to either heat or cool the sample introduction system and maintain a stable temperature.



### 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) 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)**

<b>Description</b>	<b>Comments</b>	<b>Part No.</b>
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)**

<b>Description</b>	<b>Comments</b>	<b>Part No.</b>
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 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

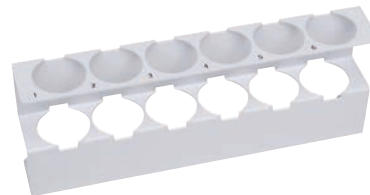


0.8 mm id inert probe, PTFE-sleeved,  
9910111900

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 Straighter than a PTFE probe with good rigidity, meaning less chance of damage if it hits a tube Replacement probe only 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. 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



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



Peristaltic pump tubing set with connectors,  
G3160-65326

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

## 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) 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
<b>Rack Overlays for Sample Racks</b>	
Rack overlay for 60-position sample rack Allows 13 mm od tubes to be used in 60-position rack (2 recommended per rack)	6610026100
Rack overlay for 40-position sample rack 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. 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> 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> 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> Suitable for use as a calibration blank or for dilution of the wavelength calibration concentrate 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

Product Specifications				
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.

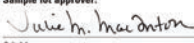
**Uncertified Values:** Agilent ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

Trace Concentrations (µg/L)															
Ag	<0.5	Ce	<0.2	Gd	<0.2	Lu	<0.2	Pb	<1	Se	<2	Tl	<0.5		
Al	<2	Co	<1	Ge	0.969	Mg	<5	Pd	<0.5	Si	<100	Tm	<0.2		
As	<2	Cs	<0.5	Hf	<0.2	Mn	<1	Pr	<0.2	Sm	<0.2	U	<0.5		
Au	<0.5	Cr	<0.5	Hg	<0.5	Mo	<0.5	Pt	<0.5	Sr	<0.5	V	<1		
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 transferrare, (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 approver:  
  
 DA 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 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, Tl, 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 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 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. 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 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. 100 mL	Part No. 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. 100 mL</b>	<b>Part No. 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. 100 mL	Part No. 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 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 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 Contains Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Si, Ag, Sr, Na, Tl, 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 Contains 1 % Cs (from carbonate) in 5 % nitric acid	500 mL bottle	5190-8343
Yttrium solution – 1 % 10,000 mg/L in 5 % nitric acid Also used for instrument optimization	500 mL bottle	5190-8233
ICP internal standard 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) 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 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> 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 Li, Y, Ce, Tl and Co; 100 mL, 10 mg/L; matrix 2 % HNO <sub>3</sub>	5188-6564
PA tuning solution kit Li, Mg, Y, Ce, Tl and Co; 100 mL, 10 mg/L; matrix 2 % HNO <sub>3</sub>	5190-0465
Tuning solution Li, Y, Ce, Tl and Co; 2 x 500 mL, 10 µg/L; matrix 2 % HNO <sub>3</sub>	5184-3566
Tuning solution 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, Tl, U, V, Zn; matrix 5 % HNO <sub>3</sub> 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 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 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 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 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 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 Contains 5,000 µg/mL Al, Ca, and Mg; 2,000 µg/mL Fe	20 % HCl	500		5190-8599
CLP instrument calibration solution 1 Contains 5,000 µg/mL Ca, Mg, K, and Na	5 % HNO <sub>3</sub>	125	N9300218	5190-9409
CLP instrument calibration mix 4 Contains 100 µg/mL As and Tl; 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 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 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 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 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 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 ( $\mu\text{g/g}$ )	Matrix	Part No.
A21 Wear metal standards, 100 g 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 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 Used for blending and preparation of calibration standards for spectrometric analysis of metals in hydrocarbon/petrochemical samples.	75 cSt mineral oil	500 mL 1/2 gal	5190-8715 5190-8716
V-Solv solvent 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 Excellent matrix match for almost all biodiesel fuels. Use as calibration blanks for analysis of metals or sulfur in biodiesel.	B100 biodiesel	100 mL 500 mL	5190-8718 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 Contains 5,000 µg/g Co	Hydrocarbon oil	5190-8714

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

<b>Description</b>	<b>Matrix</b>	<b>Conc. (µg/g)</b>	<b>Part No.</b>
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. ( $\mu\text{g/g}$ )	Part No.
Metals additives standard, MA5 Contains Ba, Ca, Mg, P, and Zn	75 cSt hydrocarbon oil	900	5190-8720
		5	5190-8721
Metals in biodiesel standard Contains Ca, K, Mg, Na, and P	B100 biodiesel	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. ( $\mu\text{g/g}$ )	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

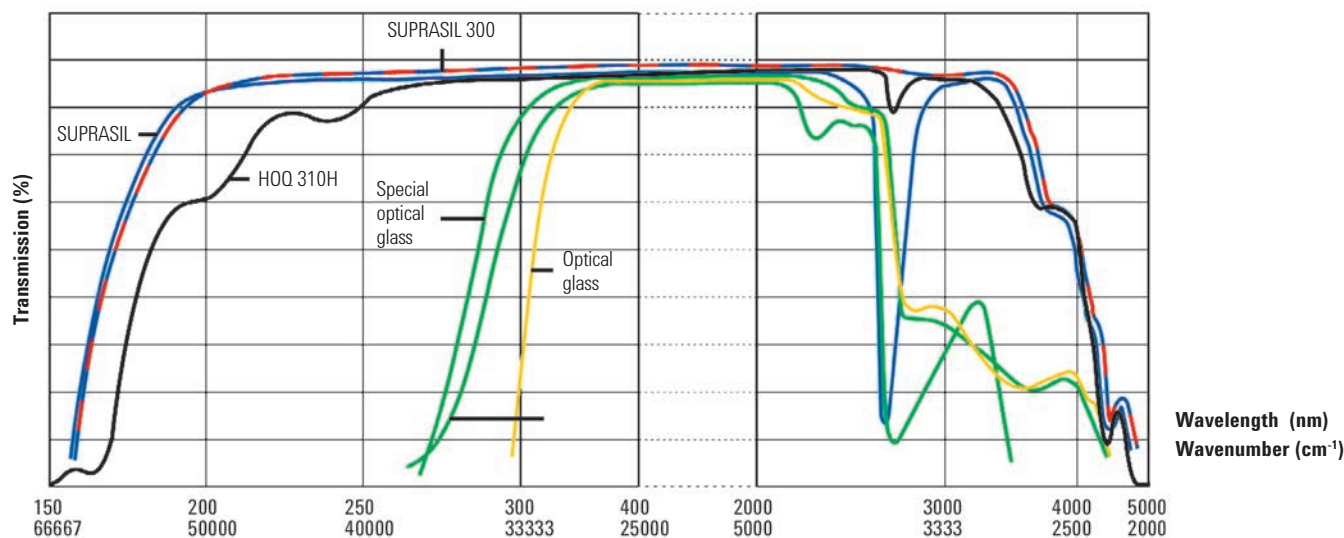
### Rectangular Cells

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 (mm)	Ext. Dimensions (H x W x T (mm))	Int. Dimensions (H x W (mm))	Volume (µL)	Part No. Glass	Part No. 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* 6618000100 (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 (mm)	Ext. Dimensions (H x W x T (mm))	Int. Dimensions (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 (mm)	Ext. Dimensions (H x W x T (mm))	Int. Dimensions (H x W (mm))	Volume (µL)	Part No. Glass	Part No. 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 (mm)	Ext. Dimensions (H x W x T (mm))	Int. Dimensions (H x W (mm))	Volume (µL)	Part No. Glass	Part No. 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
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\*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 (H x W x T (mm))	Int. Dimensions (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 (mm)	Ext. Dimensions (H x W x T (mm))	Aperture	Center Height (mm)	Volume (µL)	Filling Volume (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**

<b>Path Length (mm)</b>	<b>Ext. Dimensions (H x W x T (mm))</b>	<b>Aperture</b>	<b>Center Height (mm)</b>	<b>Filling Volume (L)</b>	<b>Unit</b>	<b>Part No.</b>
<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 $\mu$ L	G6871A
Add 0.2 mm pathlength lid for volumes 4 $\mu$ 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 $\mu$ 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 (mm)	Ext. Dimensions (L x od (mm))	Int. Dimensions (id mm)	Volume (mL)	Part No. Glass	Part No. 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 (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>					
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 (mm)	Ext. Dimensions (H x W x T (mm))	Aperture (H x W (mm))	Center Height (mm)	Volume (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



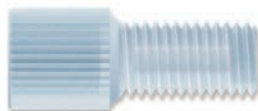
Union, 5022-2155



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) Replacement fittings used to connect the tubing to the flow cell used with the Sipper system for the 8453/8454 Includes headless PPS M6 nuts, 4/pk and short PEEK M6 nuts, 4/pk	8/pk	5022-2156
Conical adapter kit Replacement fittings for the flow cell-pump tubing used with the Sipper system for the 8453/8454 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

### 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



Stirring module kit, G1120-60006



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 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 Probe is 7.9 mm in diameter by 144 mm (excluding tip). Not recommended for use with solutions that attack epoxy, requires Torlon tip, see the section on Replaceable Tips for compatible tips	7910032600
Cary 50/60 Wavelength range 200-1100 nm	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. 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

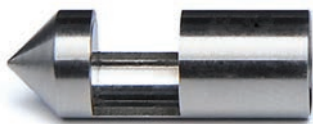


Hand-held fiber optic probe with replaceable tip,

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
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 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

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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 selvage 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

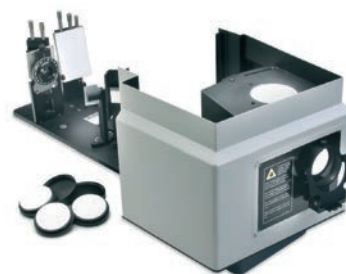
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**Accessory Supplies**

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 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. Filters mount in filter holders supplied. Filter holders mount onto liquid sample holder base. 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 prepared 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/pkg, 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/pkg, including perchloric acid (blank) and holmium oxide in perchloric acid	5063-6521
OO/PV hardware kit	Contains flow cells, 2/pkg; 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

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.



Fura-2 filters for Ca<sup>++</sup> measurements, 7910043800



Indo-1 filters for Ca<sup>++</sup> measurements, 7910043900

#### Kits and Supplies for Fluorescence Accessories

Description	Part No.
Fura-2 filters for Ca <sup>++</sup> measurements (340 and 380 nm bandpass filters, 20 nm SBW); requires fast filter accessory.	7910043800
Indo-1 filters for Ca <sup>++</sup> 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
	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
Rectangular	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
Triangular	Microcell, stoppered, square base	Far UV quartz	1.7 mL	10	6610021200
	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 anthracene/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 Used to prevent water vapor diffusing into the spectrometer enclosure. Replace when the indicator crystals turn pink.	899-1794
Funnel for liquid nitrogen Used for pouring liquid nitrogen when cryogenically cooled detectors (MCT or InSb) are installed	013-4422
Sample compartment filter kit 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

**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



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 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 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**

<b>Description</b>	<b>Part No.</b>
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 Used with Agilent 4100 ExoScan, 4200 FlexScan, and 4500 Series Portable FTIR systems	800-2004
Lithium-ion battery 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

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# LIFE SCIENCE SOLUTIONS



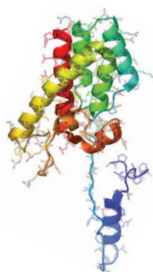
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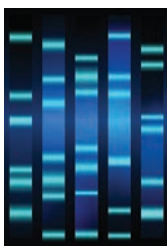


## Proteomics

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.



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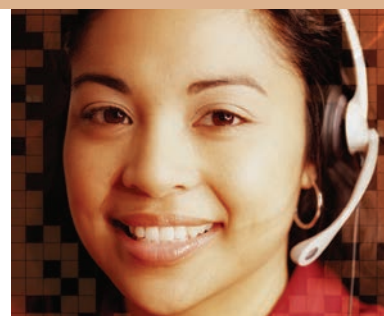
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