Data Sheet

Agilent

Trusted Answers

Agilent 240/280 Series AA Spectrometers

Specifications

Productive. Precise. Reliable.

The Agilent 240/280 Series AA comprises:

- 240FS/280FS AA with Fast Sequential capability
- 240Z/280Z AA with Zeeman GFAA capability
- Duo AA with simultaneous flame/furnace capability

Agilent 240/280 Series AA spectrometers are manufactured according to a quality management system certified to ISO 9001.

Design overview

240FS/280FS AA

The 240FS/280FS AA are external computer-controlled atomic absorption spectrometers supporting multi-element flame AA determinations using Fast Sequential analysis for improved sample throughput with flame AA. The 240FS/280FS AA are both true double-beam spectrometers, ensuring a stable baseline. Supplied with SpectrAA Base and Pro software. The 240FS/280FS AA are suitable for manual flame analyses and vapor generation using the VGA 77 Vapor Generation Accessory. Automated flame analyses and graphite furnace analyses are supported with additional accessories.

240Z/280Z AA

The 240Z/280Z AA are external computer-controlled atomic absorption spectrometers dedicated to Zeeman graphite furnace AA determinations using the Agilent GTA 120 Graphite Tube Atomizer and Agilent PSD 120 Programmable Sample Dispenser. The 240Z AA is supplied with SpectrAA Base software. The 280Z AA is supplied with SpectrAA Base and Pro software. Automated vapor generation determinations are supported with additional accessories.

AA Duo

Agilent AA Duo systems are external computer-controlled atomic absorption spectrometers supporting multi-element flame AA determinations using Fast Sequential analysis for improved sample throughput with flame AA and dedicated Zeeman graphite furnace AA determinations using the GTA 120 Graphite Tube Atomizer and PSD 120 Programmable Sample Dispenser. Simultaneous flame and furnace operation is supported. The flame AA module is fitted with the integrated Agilent SIPS power supply. The Zeeman AA module is fitted with an integrated Agilent UltrAA Lamp Control Module supporting UltrAA lamp operation in two lamp positions, and an integrated furnace viewing camera facilitating real-time viewing inside the graphite tube. AA Duo systems are supplied with SpectrAA Base and Pro software. Automated flame AA and vapor generation determinations are supported with additional accessories.

Instrument hardware

Optics

Narrow beam optics match flame and furnace profiles. Optics are mounted on a reinforced flat plate with a fitted cover for protection from dust and vapor. Mirror surfaces are quartz overcoated for enhanced protection. The 240FS/280FS AA features a single beamsplitter plus a Rotating Beam Combiner, which alternately passes the sample or reference beam into the monochromator for maximum light transmission. Wavelength range is 185–900 nm.

Monochromator (240FS/240Z AA)

Automated self-calibrating 250 mm focal length Czerny-Turner monochromator with microstepping driver for enhanced resolution. Features a holographic diffraction grating with 1200 lines/mm blazed at 240 nm. Dispersion 3.1–2.3 nm/mm. Software-controlled wavelength selection and peaking. Wavelength slew rate 2000 nm/min (240FS AA only). Wavelength repeatability: ±0.04 nm. Selected wide range photomultiplier tube detector (type R446) for best signal-to-noise performance. Automated slit selection. Settings: 0.2, 0.5 and 1.0 nm plus reduced height slit of 0.5 nm for graphite furnace operation.

Monochromator (280FS/280Z AA)

Automated self-calibrating 330 mm focal length Czerny-Turner monochromator with microstepping driver for enhanced resolution. Features holographic diffraction grating with 1800 lines/mm blazed at 240 nm. Dispersion 1.6–0.8 nm/mm. Software-controlled wavelength selection and peaking. Wavelength slew rate 2025 nm/min (280FS AA only). Wavelength repeatability: ±0.035 nm. Selected high sensitivity wide range photomultiplier tube detector (type R955 covering 185–900 nm) for best signal-to-noise performance. Automated slit selection. Settings: 0.1, 0.2, 0.5 and 1.0 nm plus reduced height slit of 0.5 nm for graphite furnace operation.

Lamps

Support for four lamps (240FS/240Z AA) or eight lamps (280FS/280Z AA). Lamps mounted in fixed positions. Fast lamp selection using mirror with automated selection. Compatible with coded, uncoded or high intensity UltrAA lamps. 240FS AA requires optional looming for UltrAA lamps. 280FS AA features factory-installed looming supporting up to four UltrAA lamps. Both 240FS AA and 280FS AA require one external control module per pair of UltrAA lamps used.

240Z/280Z AA support up to four UltrAA lamps. Both the 240Z and 280Z AA are fitted with an integrated Agilent UltrAA Lamp Control Module supporting UltrAA lamp operation in two lamp positions. Optional external control modules are required to operate further pairs of UltrAA lamps up to the maximum four UltrAA lamps. Lamps secured by the base without restraining clips or power cables. Lamps automatically switched off at the end of analysis. Automated pre-warming of next lamp in sequence.

Background correction (240FS/280FS AA)

High intensity deuterium background corrector covering wavelength range 185–425 nm. Corrects up to 2.5 background absorbance. 2 ms response. Electronic modulation with automatic gain attenuation for improved beam balance. Deuterium lamp easily aligned and replaced by the user. Optimized electronic control ensures long lamp lifetime.

Background correction (240Z/280Z AA)

Zeeman background correction available across full wavelength range. Features electronically modulated (twice mains frequency) transverse AC electromagnet with peak field-on strength of 0.8 Tesla during Read period. Less than 5 ms response time between background and atomic measurements with three point polynomial interpolation of background signals for enhanced correction capability with rapidly changing background signals. Corrects up to 2.5 background absorbance. Magnetic field strength computer-controlled over range 0.1–0.8 Tesla, enabling optimization of background correction for enhanced sensitivity and reduced interferences. Magnet field strength locked during measurement minimizing effect of mains voltage variations. Coil sealed against moisture and corrosive vapors and fitted with a magnet temperature interlock for over-temperature protection. Complies with International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines for exposure to time-varying magnetic fields following the intended use guidelines.

Internal air purge

Barb fitting on rear of spectrometer enables connection to a clean, dry air supply for purging the instrument internally. This excludes dust and corrosive vapors, enhancing corrosion protection in rigorous conditions.

Gas control (240FS/280FS AA)

Hammer programmable gas control (240FS/280FS AA standard) features software-controlled gas flows with automatic setting of flows for each element. Ignition on air-acetylene with automatic oxidant change-over to nitrous oxide-acetylene. Interlocked safety system prevents selection of the nitrous oxide flame if the correct burner is not fitted. A Hammer solenoid valve selects gas flow within 30 ms for rapid regulation and stabilization of selected gas flow.

Flame safety system (240FS/280FS AA)

Separate ignite and flame-off buttons. Ignition occurs only when the ignite button is held. Eight safety interlocks monitor burner type, burner correctly fitted, liquid trap, pressure relief bung, flame shield, flame operation, mains power, oxidant pressure within safety reservoir and deuterium lamp cover. Gas connections to atomization system made directly — there are no loose gas hoses. Separate upper and lower flame shields and a chimney protect the operator against heat and UV radiation from the flame. External adjustment of all burner and spray chamber controls. Violation of any safety interlock either inhibits flame ignition or extinguishes existing flame.

Flame atomization (240FS/280FS AA)

Universal Mark 7 atomization system supplied as standard. Features a fluorinated high density polyethylene spray chamber compatible with acidic and organic solutions (requires optional organic o-ring kit). 'Twist and lock' assembly ensures simple maintenance. Features a pressure relief bung at the rear of the spray chamber. Removable twin-headed mixing paddles can be positioned in the spray chamber to improve mixing and extend operation with high dissolved solids solutions. An externally adjustable glass impact bead provides tuneable performance for optimum sensitivity and best precision. Optional Teflon bead for use with HF solutions. Integral nebulizer with adjustable flow, inert platinum/iridium capillary and PEEK venturi for corrosion resistance. Integral liquid trap with magnetic float liquid level interlock. Burner constructed from Incoloy alloy with Teflon base for corrosion resistance. Choice of air-acetylene or nitrous oxide-acetylene burner. Manual adjustment of burner height and burner rotation (240FS). 280FS AA features automated setting of burner height for each element.

Typical performance (240FS/280FS AA)

>0.9 Absorbance with precision of < 0.5% RSD from ten 5 second integrations for 5 mg/L Cu standard.

Graphite furnace (240Z/280Z AA)

GTA 120 Graphite Tube Atomizer features Constant Temperature Zone design for rapid atomization and reduced interferences. Features Dynamic Feedback Temperature Control with cooling water temperature compensation for enhanced temperature accuracy without external sensors. Up to 20 temperature steps per program with temperature programmable from 40–3000 °C. Heating rate is software-controlled with maximum ramp rate of 2000 °C/s. Choice of two inert gases with computer-controlled flows. Separate internal and external gas flows. Internal flow is software-controlled over range 0–0.3 L/min. Fixed external gas flow of 0.5 L/min. with computer-controlled boost flow of 3.0 L/min during atomization. Two stage external flows reduce gas consumption and improve tube lifetimes. Typical tube lifetimes exceed 5000 firings for Cu using an atomization temperature of 2300 °C. Graphite tube enclosed in an inert gas atmosphere by a one-piece graphite shroud. Solid titanium furnace workhead features quartz end windows for high light transmission. Rapid release mechanism for easy tube replacement. Tube and electrode firing counters provided.

Furnace autosampling (240Z/280Z AA)

PSD 120 Programmable Sample Dispenser provides capacity for up to 50 samples in 2 mL microvials, plus five central 10 mL vessels for blank, standard and modifiers. Automatically prepares up to a 10 point concentration or standard additions calibration from one bulk standard. Premix mode provided for use with manually prepared standards. Automatic addition of up to three chemical modifiers with pre/post or co-injection of the modifier. Automatic over-range volume reduction reduces sample volume by a user determined dilution factor enabling re-determination of over-range samples. Automatic Tube Condition option to remove contamination when over-range samples occur. Preconcentrate samples for enhanced sensitivity using multiple injection up to 99 times. 'Hot Injection' allows injection into a heated tube for faster programs and enhanced precision with organic solvents. Injection temperature programmable from 40–200 °C with programmable injection rate. Dispensing volume variable from 1–70 µL with < 1% repeatability (5–70 µL). Air segmented solution pick-up. 1 L pressurized rinse vessel. Flow-through capillary rinse after each injection. Ultra stable mounting mechanism with position lock. Optional high capacity carousel increases capacity up to 130 samples using smaller 1.1 mL microvials, plus up to five central 10 mL vessels for blank, standard and modifiers.

Furnace safety system (240Z/280Z AA)

Three instrument safety interlocks monitor mains power, magnet connected and magnet temperature. Five additional furnace safety interlocks monitor inert gas pressure, cooling water pressure and temperature, graphite tube presence and transformer temperature. Violation of any safety interlock either inhibits Zeeman furnace operation or terminates furnace firing.

Furnace viewing (240Z/280Z AA)

Tube-CAM (factory-fitted into the instrument) allows real-time viewing inside the graphite tube. This enables optimization of the dispensing height and allows you to confirm the optimum drying and ashing temperatures during method development, capture still images or record videos during analysis.

SpectrAA software

SpectrAA Base software

Based on the award winning worksheet concept, SpectrAA Base software completes an easy-to-use instrument software package. Features wizards that guide users through method and sequence development and method templates for rapid development of commonly used methods.

Methods

- All data, signals (when selected), method and sequence parameters are stored in one worksheet file.
- Default conditions for each element recalled automatically on entry of the element symbol.
- Measure in Absorption or flame emission using PROMT, Integration, Integrate Repeat, peak height or area, furnace PROMT height or area. Pre-read delay variable from 0–999 s. Up to 20 replicates with read time from 0.1–30 s.
- Minimum Signal Facility skips to the next sample if the first measurement is less than the specified minimum reading.
- Select a different number of replicates for samples and standards.
- Eight least squares calibration algorithms provided including New Rational, Linear, Quadratic and Cubic Fits (through zero or non zero) using up to 10 standards, Calibration Blank and multiple Reagent Blanks. Bracketing Standards and Standard Additions modes also provided.
- Calibrations are tested for excess curvature using inflection tests with defined error actions including Stop, Continue in Abs or Switch to Next Method.
- Verify calibration fit using goodness of fit data or overlay a Reference Calibration to compare shape and sensitivity.
- Programmable recalibration and reslope rates. Reslopes eliminate need for full recalibration.
- Signal expansion factor of 0.1–100 available in all calibration modes.
- Surface Response Methodology (SRM) wizard assists and automates method development, allowing for fast, easy auto-optimization of the GFAA ashing and atomization temperatures.
- Pre-emptive sampling allows the software to move the probe to the next sample while a reading is in progress to improve productivity by up to 15% using flame autosampling.
- Smart Rinse optimizes the rinse time between samples by monitoring washout, improving productivity with flame autosampling.

- Ten QC tests provided including QC Blank, QC Standard, QC Spike, Matrix Spike, Lab Control Sample, Duplicate, Precision (replicate %RSD), Correlation Coefficient and Detection Limit tests. Selectable error actions include Stop, Flag and Continue; Retry, Flag and Continue; Recalibrate and Repeat or Switch to Next Method. All data is date and time-stamped.
- Programmable measurement rate for QC tests (counted using solution or replicates).
- Optional Pro software provides extended capabilities designed to meet US EPA and other international compliance standards plus a simple equation editor enabling custom test definition.

Sequences

- Weight/volume and dilution correction provided. Correction factors can be applied before or during analysis.
- Fully editable sample label list allowing random selection of samples by element with option to manually schedule QC tests.
- Programmable delay before start of any method for system stabilization.
- Optional tube condition or tube clean facility at start of each furnace method.
- Initiate a sequence with measurement of a full calibration, Calibration blank, Reslope or sample.
- Sequence options include graphics storage and end of run actions for lamps, flame and alarm.
- Measure up to 999 randomly selected samples for up to 30 methods.
- Pause autorun at any time and restart from any method/sample.
- Run priority samples immediately by interrupting the current sequence for measurement of any element/sample combination — the sequence automatically resumes.

Analysis and reporting

- Live data display during analysis selectable from Worksheet, Signal graphics (real-time display), Calibration graph or Data log with options to display toolbar, status block and live readout displays for concentration, mean absorbance, mean background and precision (%RSD).
- Datalog maintains a time-based history of all events including instrument parameters, results and any status messages.
- Graphic displays support overlay and zoom functions plus cursor readout for absorbance/intensity with time/concentration and temperature.
- Wavelength scanning capability using scan rate variable from 5–250 nm/min.
- Post-run processing of GFAA data provided, enabling switching between peak height and area measurements.
- Post-run retrospective data editing by masking replicate or solution results for both samples and standards, with option to switch calibration algorithms.
- Unit conversion facilities provided enabling calibration using one set of units and sample reporting with user-defined units.
- LIMS support includes data export to a serial port/file in real-time or after run using ASCII and PRN formats. Option to upload sample labels and correction factors prior to analysis.
- Wide variety of reporting options with user-defined selections including sequential or multi-element formats, calibration data, method parameters, concentration, absorbance, precision, replicate data, background, date/time, correction factors and signal graphics.

Administration

- Usage counters monitor lamp operating hours, sample measurements, furnace firings and SIPS tubing usage to assist with GLP compliance.
- Custom Rack Wizard allows definition of custom racks for use with the Agilent SPS 4 Sample Preparation System.
- Optional security system to secure adding/deleting methods, editing methods and sequence parameters, data editing, result deletion, rack definition and software configuration settings using administrator-defined password.
- Context sensitive help with extensive indexing and multimedia content including video demonstrations for ease of use.

SpectrAA Pro software

Provides additional capabilities for AA Duo operation simultaneous flame and furnace operation), Fast Sequential AA operation for fast multi-element flame AA determinations, on-line internal standard correction capability and additional QC capabilities including the capability to customize QC tests.

Optional software

CFR version software assists users to achieve compliance with the requirements of the US FDA 21 CFR Part 11 ruling covering audit trails, electronic records and electronic signatures.

Accessories

Flame autosampling

SPS 4 high-performance autosampler with fast, random access, X, Z, theta arm movement. Capacity for one dedicated standards rack and up to four sample rack capacity supports up to 360 samples. Racks may be exchanged during analysis for unlimited sample capacity. Central standards rack is configurable to support either a 34 position (twelve 29 mm OD tubes plus twenty-two 17 mm OD tubes) or 5 position (five 61 mm OD bottles) rack. Supplied with 4 x 60 position sample racks for 16 mm od tubes. A range of low-cost, autoclavable, polypropylene sample racks are available for tubes of other dimensions. Custom Rack Wizard allow customization of rack configurations enabling you to use your own rack types. Integral three channel peristaltic pump with speed control provides on-demand rinsing of the probe, eliminating carryover. Optional dual-port wash reservoir for ultra-trace applications or applications requiring two different rinse chemistries. Autosampler setup includes a visual display showing location of all standards, samples and QC solutions. Fully integrated environmental enclosure available (optional) to prevent contamination or to remove fumes or vapors. When the environmental enclosure is fitted, sample visibility remains unrestricted, as well as sample access from the front when the door is in the raised position. Environmental Enclosure Kit includes a 50 mm (2 in) extraction air duct fitting that can be fitted to either side of the autosampler as needed.

SIPS on-line dilution

The SIPS 10 and SIPS 20 Sample Introduction Pump System (SIPS) are optional accessories for Agilent's SpectrAA FAAS instruments. They offer a range of powerful features that automate many tedious and error prone sample preparation tasks. These greatly simplify and speed up the sample preparation process, improving productivity and reducing costs. Single pump Agilent SIPS 10 and dual pump Agilent SIPS 20 provide on-line multipoint calibration (up to 10 calibration standards) for flame AA by dilution of a single bulk standard. Immediate and intelligent dilution of over-range samples with 'Smart Rinse' to eliminate memory effects. SIPS 20 totally automates flame standard addition analyses, adds chemical modifiers (e.g. ionization suppressants), spikes samples on-line and introduces internal standard for online correction in Fast Sequential mode.

Enhanced flame sensitivity

Agilent ACT 80 Atom Concentrator Tube increases sensitivity of flame AA by 2–3 times for air/acetylene elements.

Lower detection limits

High intensity UltrAA lamps are used instead of conventional lamps where improved detection limits are required. The boost discharge increases emission intensity up to five times and increases sensitivity by up to 40%. UltrAA lamps are powered by a separate external control module, which can support operation of two lamps simultaneously. Fixed boost current eliminates any optimization. 240FS and 280FS instruments require optional external control module. 240Z and 280Z each have one factory installed internal control module with the capacity to operate two UltrAA lamps simultaneously, with the option to add one external module to control up to four UltrAA Lamps.

Hydride generation

Modular continuous flow VGA 77 Vapor Generation Accessory allows fast determination of Hg, As, Se, Sb, Te, Bi and Sn at µg/L concentrations. Typical precision 1–2% RSD with sample throughput of 60–70 samples/hour. Compatible with the SPS 4 Sample Preparation System for automated sampling and unattended analyses with the ETC 60. 'Plug-in' modules can be dedicated to specific hydride chemistries. By changing modules when switching between elements, you can eliminate cross-contamination.

Unattended hydride analyses

Couple the Agilent ETC 60 Electrothermal Temperature Controller with the VGA 77 and the SPS 4 Sample Preparation System to enable unattended hydride determinations and increase sensitivity by up to 30% compared with flame hydride determinations. Consists of a control unit with built-in touch panel keyboard and workhead with user-replaceable cell. Control unit provides element-specific temperature programs, which can be edited and saved. Thermocouple temperature control from ambient to 999 °C.

Graphite furnace, furnace autosampling and furnace viewing

Available as accessories for the 240FS/280FS AA.
Refer to specifications on page 4 for details.

Fume extraction

Furnace viewing and exhaust option mounts on the rear of the sample compartment and removes fumes produced during furnace operation when connected to an exhaust. Features two LEDs and mirror to assist tube and sampler alignment and improve viewing. Safety interlock inhibits furnace operation if mirror is exposed.

Recommended environmental conditions

Instrument storage

5–45 °C at 20–80 % relative humidity, non condensing.

Instrument operation

<853 m, 10–35 °C, 8–80 % relative humidity, non condensing.

853–2133 m, 10–25 °C, 8–80 % relative humidity, non condensing.

Electrical requirements (240FS,280FS AA)

Single phase AC supply with three-wire system terminated at an appropriate receptacle. 100/120/220/240 VAC ±10%, 230 VAC +14% -6%, 230 VAC +6% -14% 50/60 Hz.

Electrical requirements (240Z,280Z AA)

Single phase AC supply with three-wire system terminated at an appropriate receptacle. 208, 220 or 240 VAC ±10% 50/60 Hz. Rated current 15 A. Surge current in excess of the nominal rating (up to 28 A) for up to 10 s, perhaps repeating every 1–2 min. The power supply should be on a separate mains circuit protected by delayed action fuses and/or circuit breakers.

Gas requirements for flame operation

Air supply: Clean, dry, oil-free at pressure of 350 kPa (50 psi). Typical consumption 11–20 L/min.

Acetylene supply: Instrument grade (99.0% pure) packaged in acetone at pressure of 75 kPa (11 psi). Typical consumption 1.5–10 L/min.

Nitrous oxide: Instrument grade (99.5% pure) at pressure of 350 kPa (50 psi). Typical consumption 11–20 L/min.

Fume extraction

Spectrometer must be located under an extraction system ducted to an external vent. Minimum flow required is 6 cubic metres/min (200 cfm).

For correct fume extraction, the flow rate through the GTA viewing/fume extraction accessory must be 0.27 m^3/min (9.5 cfm)

Gas requirements for VGA 77

Argon or nitrogen (dry 99.99% argon preferred) at pressure of 300 kPa (42 psi). Required consumption 0.1 L/min.

Gas requirements for GTA 120

Argon or nitrogen (dry 99.99% argon preferred) at pressure of 140 kPa (20 psi). Required consumption 0.5–3.8 L/min.

Power requirements for GTA 120

Single phase AC supply with three-wire system terminated at an appropriate receptacle. 208, 220 or 240 VAC ±10% 50/60 Hz. Rated current 15 A. Surge current in excess of the nominal rating (up to 35 A) for approximately 1 s, reducing to about 20 A for up to 10 s, perhaps repeating every 1–2 min. The power supply should be on a separate mains circuit protected by delayed action fuses and/or circuit breakers.

Cooling water for GTA 120

Mains supply or recirculated with flow of 1.5 L/min at 180 kPa (27 psi) and temperature of 25 °C (70 °F). A refrigerated water cooler may be used.

Weights, dimensions and power requirements

Instrument	Weight Unpacked, kg (lb)	Dimensions W x D x H, cm (in.)	Power consumption (VA)
240FS AA	56 (123)	79 x 58 x 59 (31 x 23 x 23)	170
280FS AA	75 (165)	79 x 58 x 74 (31 x 23 x 30)	225
240Z AA	56 (123)	79 x 58 x 59 (31 x 23 x 23)	3500*
280Z AA	61 (134)	79 x 58 x 74 (31 x 23 x 30)	3500*
GTA 120	41 (90)	24 x 60 x 59 (10 x 24 x 23)	3500*
GTA 120 for 240Z/ 280Z AA	52 (115)	24 x 60 x 59 (10 x 24 x 23)	3500*
SPS 4	15 (33)	60 x 36 x 51 (24 x 14 x 20)	60
PSD 120	6 (13.2)	30 x 38 x 31 (12 x 15 x 12.4)	Incl. with GTA
VGA 77	5.5 (12)	32 x 21 x 27 (13 x 8 x 11)	20
ETC 60	5 (11)	26 x 26 x 8 (10 x 10 x 3)	550 max.
SIPS 10/20	9 (20)	28 x 29 x 22 (11 x 11 x 8.5)	80
SIPS electronic control module **		22.5 x 38.5 x 10 (9 x 15.5 x 4)	
UltrAA lamp control module	7.5 (16.5)	24 x 14.5 x 35.5 (9.5 x 5.7 x 14)	150

** The GTA will draw surge currents in excess of the nominal rating (refer to the site preparation guide, publication number 8510119300 for further details).*
*** Installed on rear of spectrometer (not required when instrument has an integrated SIPS power supply).*

Installation requirements

System installation

For full details of AA installation requirements, refer to the site preparation guide.

Support and training

Agilent is renowned for providing expert applications and service support. Agilent has a global network of factory-trained specialists ready to provide support for hardware, software, or applications wherever you are located. Services include:

- Full 12-month warranty support
- Seven (7) year hardware support period from date of last unit manufacture. After this time, parts and supplies will be provided if available.
- Preventive maintenance to deliver consistent operation and minimize downtime
- Troubleshooting, maintenance and repair
- Software support services
- Comprehensive warranty extension and service contracts, including peripherals
- Classroom training and onsite training delivered by experts

Further details

For further information please consult your Agilent office or supplier, or our website at www.agilent.com

www.agilent.com/chem/aa-systems

Printed in the USA, January 6, 2021
5990-6707EN

Agilent
Trusted Answers