



AA SPECTROSCOPY SUPPLIES

High performance Hollow Cathode Lamps, high density pyrolytically coated Graphite Furnace Tubes and a complete range of matrix modifiers and reference standards; all stocked for prompt delivery. Inquire about our popular special offer of a free AA standard with the purchase of each package of Graphite Furnace Tubes or Hollow Cathode Lamp

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Graphite Furnace Tubes



FREE

ASK ABOUT OUR
FREE AA STANDARD

High purity, high density graphite is used to manufacture **SCP SCIENCE** graphite tubes. The tubes exhibit an extremely low Coefficient of Thermal Expansion (CTE) which ensures less stress placed upon the pyrolytic coating, thereby increasing their usable lifetime.

Features

Thermal conductivity is uniform
- Allows consistent and even heating

Provide high sensitivity and low noise characteristics
- Tubes meet and exceed OEM specifications



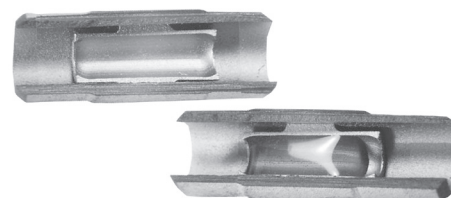
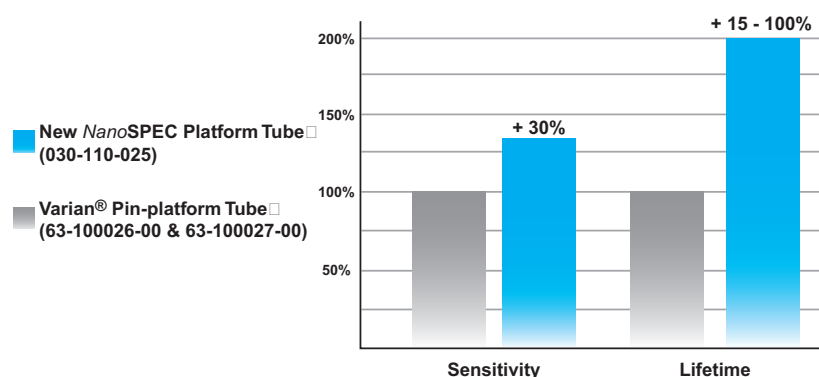
ORDERING INFORMATION

	Type	Description	Qty	Cross Reference	Catalog No.
GBC®	Standard Tube	Pyrolytically Coated	10	99000 5900	030-112-001
	Platform	Pyrolytically Coated	10	9900 6000	030-112-002
	Electrode Contacts	Pyrolytically Coated	2	9900 6100	030-112-003
	GBC Shroud	Pyrolytically Coated	1	45 0004 00	030-112-005
	Ultra Z Tube	Pyrolytically Coated	10	45 0012 00	030-112-007
Hitachi®	Standard Tube	Pyrolytically Coated	10	180-7444, 180-7403	030-113-001
	Standard Tube	Uncoated	10	180-7400	030-113-002
	Standard Platform	Pyrolytically Coated	10	180-7404	030-113-007
	Tube for Extended Injec. Vol.	Pyrolytically Coated	10	190-6003	030-113-010
	Forked Platform Set	Pre-inserted	10	190-0028	030-113-011
	Contacts	Pyrolytically Coated	1	180-7401	030-113-013
PerkinElmer®	L'vov Platform Set	Pre-inserted	10	B011-2660 (pk/10), B300-0343 (pk/20)	030-111-001
	Platform Tube	Pyrolytically Coated	10	B013-7111 (pk/5), B012-1092 (pk/10), B300-1254 (pk/20), B010-9322 (pk/50)	030-111-002
	L'vov Platform	Pyrolytically Coated	10	B013-7112 (pk/5), B012-1091 (pk/10), B300-1256 (pk/20), B010-9324 (pk/50)	030-111-003
	Standard Tube	Pyrolytically Coated	10	B013-5197 (pk/5), B013-5653 (pk/10), B300-0342 (pk/20), B009-1504 (pk/50)	030-111-004
	Standard Tube	Uncoated	10	B013-7113 (pk/5), B300-1253 (pk/20), B007-0699 (pk/50)	030-111-005
	HGA Contact Set	w/Sensor Hole	SET	B012-8490 (pk/1), B018-0363 (pk/5)	030-111-006
	Zeeman Contacts	Pyrolytically Coated	SET	B011-6823 (pk/1), B018-0361 (pk/5)	030-111-007

Graphite Furnace Tubes

NanoSPEC Platform Tubes are available for all Agilent® (Varian®) graphite furnace atomic absorption (GFAA) instruments. These platform tubes have a semi-circular trough to hold up to 50 µl of sample. Two small extensions on the platform were designed to hold the platform in

the center position of the graphite tube. The end result is improved tube lifetime, signal strength, and repeatability compared to the Agilent® (Varian®) Universal/Pin-platform Tube Part No. 63-100023-00 and 63-100027-00).



Direct replacement for the Agilent® (Varian®) Universal/Pin-platform Tube. Part No. 63-100026-00 and 63-100027-00)

ORDERING INFORMATION



	Type	Description	Qty	Cross Reference	Catalog No.
PerkinElmer®	HGA Contact Set	w/o Sensor Hole	SET	B012-8495 (pk/1), B313-0086 (pk/5)	030-111-008
	Tube	Pyrolytic w/Fork Pit.	10	B050-5057 (pk/20)	030-111-010
Agilent® (Varian®)	Partition Tube	Pyrolytically Coated	10	63-100012-00	030-110-001
	Partition Tube, High Purity	Pyrolytically Coated	10	63-100012-HP	030-110-011
	Partition Tube, Extended Life	Pyrolytically Coated	10	63-100012-EL	030-110-021
	NanoSPEC Platform Tube	Pyrolytically Coated	10	63-100026-00, 63-100027-00	030-110-025
	Plateau Tube	Pyrolytically Coated	10	63-100011-00	030-110-002
	Plateau Tube	Uncoated	10	63-100014-00	030-110-014
	Bone for Platform Plateau Tube	Pyrolytically Coated	10	63-100013-00	030-110-003
	Forked Platform Tube	Pyrolytically Coated	10	63-100023-00	030-110-012
	Electrode Contact	Pyrolytically Coated	1	63-100016-00	030-110-006
	Shroud	Pyrolytically Coated	2	63-100018-00	030-110-007
	Zeeman Electrode Contact	Pyrolytically Coated	1	63-100017-00	030-110-008
	Zeeman Shroud	Pyrolytically Coated	---	63-100019-00	030-110-009
Shimadzu®	Standard Tube with 5 holes	Pyrolytically Coated	10	200-54525RI	030-117-001
	Standard Tube with 5 holes	Uncoated	10	200-54520RI	030-117-002
	Platform Set, 60°	Pre-inserted	10	206-82541RI	030-117-003
	Standard Tube	Uncoated	10	200-54520RI	030-117-005

Graphite Furnace Tubes



ORDERING INFORMATION

	Type	Description	Qty	Cross Reference	Catalog No.
Shimadzu®	Standard Tube	Pyrolytically Coated	10	200-54525RI	030-117-004
	Tube for Extended Injection Volume	Uncoated	10	206-50587	030-117-007
	Tube for Extended Injection Volume	Pyrolytically Coated	10	206-50588	030-117-006
	Tube for Extended Injection Volume, 90°	Pyrolytically Coated	10	209-69984-02	030-117-009
	Platform Set, 90°	Pre-inserted	10	205-50887	030-117-008
Thermo Scientific	Standard Tube	Uncoated	10	9423 393 90031	030-116-001
	Standard Tube	Pyrolytically Coated	10	9423 393 90091	030-116-002
	Barrel Tube	Uncoated	10	9423 390 95031	030-116-003
	Smooth Tube	Pyrolytically Coated	10	9423 393 95091	030-116-004
	Partridge Tube, Extended Life (ELC)	Pyrolytically Coated	10	9423 393 95041	030-116-005
	Partridge Tube	Uncoated	10	9423 393 95031	030-116-006
	Partridge Tube	Pyrolytically Coated	10	9423 393 90191	030-116-007
	Forked Tube Set	Pre-inserted	10	---	030-116-008
	Tube with Slit.	Pyrolytically Coated	10	9423 393 95081	030-116-009
	Partridge Tube (Smooth)	Pyrolytically Coated	10	9423 393 95071	030-116-010
	Zeeman Electrode Contact	Pyrolytically Coated	2	9423 393 95161	030-116-115
	Electrode Contact	Pyrolytically Coated	2	9423 393 95011	030-116-116
	Probe	Pyrolytically Coated	10	9423 393 90081	030-116-119

Helpful Hints for GRAPHITE TUBE USERS

The lifetime of graphite components can vary for many reasons. Certain elements and solutions can be particularly damaging to them and will cause reduced lifetimes. Nothing can be done to avoid this; however, by following these hints, you will extend the lifetimes as much as possible. Always follow the manufacturer's instructions for instrument use. The following hints are offered only as general information for most of the common brands of instruments, and as such, cannot be as specific as the manufacturer's directions.

1. Before installing a new tube, always check the condition of the contacts (electrodes). Contacts will wear out through the course of normal operation. Such wear causes the tube to become loose during operation, resulting in reduced electrical contact area with subsequent erratic operation and results. If a contact is chipped, pitted, burned, or worn, it should be replaced immediately. Operating the instrument with a damaged contact may give erroneous readings and greatly decreased tube lifetimes.
2. Use a clean, plastic forcep (PTFE is best) to remove the tube from its container, and to position the tube during installation. Never touch a graphite tube with your hands! Touching the tube, for only a moment, will contaminate it and likely cause elevated readings for many elements including Ca, Na, and K.
3. Use the proper type of gas and flow rate. Using too little in an effort to reduce costs can decrease tube lifetime and can increase the chance of contamination of the contacts and shroud.
4. Once the tube is properly installed, you must condition it before use according to instructions provided by the instrument manufacturer.
5. Avoid overheating the tube. Overheating will dramatically decrease lifetimes. Generally speaking, the "tube clean" function programmed into most instruments will overheat the tube, and should not be used.
6. If you have been running the instrument for a while at lower temperatures, and need to run at a higher temperature for elements such as Ni, Cr, V, or Ti, you may experience a "memory effect" from temporary contamination of the cooler parts of the furnace. In such a case, it is recommended to run a few blank cycles at the new temperature, with maximum gas flow, to purge contaminants from the system.
7. When nearing the end of the tube's lifetime, offer it retirement at the proper time. Pushing the tube until it finally fails will greatly increase the likelihood of damaging the contacts.
8. Use of Sulphuric Acid will greatly reduce the lifetime of your graphite tube.



Autosampler Tubes



ORDERING INFORMATION



1.5 - 2.0, conical
080-070-102

Description	Composition	Qty	Cross Reference	Catalog No.
1.5 - 2.0, conical	Polystyrene	1000	B0119079	080-070-102
3.0 - 4.0, conical	Polystyrene	1000	B0129303	080-070-103
6.0 (13 x 100 mm)	Polypropylene	1000	B0193235	130-012-001

FOR MORE INFORMATION ON AUTOSAMPLER TUBES - PLEASE SEE PAGE 120

Hollow Cathode Lamp Adapters

Adapter	Description	Qty	Cross Reference	Catalog No.
Size Adapter 1.5" to 2.0"	Allows 1.5" lamps to fit into 2.0" sockets.	1	B305-1050	030-021-001
Cable Adapter	Electrical adapter for 1.5" lamps to operate in PerkinElmer® instruments.	1	---	030-021-002
Non-Coded 5100/3000 Adapter	Allows 9 pin non-coded lamps to be used with PerkinElmer® Models 5100 and 3300.	1	N0660122	030-021-011
Non-Coded AAnalyst Adapter	Allows 9 pin non-coded lamps to be used with AAnalyst instruments. Instrument must be manually set as there is no coding.	1	N3050197	030-021-013
Coded AAnalyst Adapter	Allows 12 pin coded Intensitron lamps to be used with AAnalyst. Coding will not be recognized automatically and must be set manually.	1	N3050196	030-022-013

Hollow Cathode Lamps

Lamps are visually, optically, and electrically inspected to ensure the highest quality possible. Single-element and multi-element hollow lamps are available as direct replacements for popular AA spectrometer instruments. The 1.5" (37 mm) diameter lamp is designed for Varian® (Agilent®), Buck®, Shimadzu®, and other OEMs instruments. The 2.0" (50 mm) diameter lamp is designed for PerkinElmer® instruments.

Every hollow cathode lamp (HCL) is tested for two major parameters which affect analytical results. These parameters are the HCL's current – which affects the intensity of the source - and spectral band width – which affects the isolation of the spectral line. **SCP SCIENCE** supplies information on these recommended operating conditions for each lamp to optimize your AAS.

FREE ASK ABOUT OUR FREE AA STANDARD



Features
Provide stable light output - Warranty of 2 years or 5.0 ampere hours (prorated for usage)
Provide minimum noise and interference
After sales support with trained customer service

ORDERING INFORMATION

Element	Symbol	1.5" NON-CODED LAMPS		2.0" NON-CODED LAMPS	
		Agilent® (Varian®) Cross Reference	Catalog Number	PerkinElmer® Cross Reference	Catalog Number
Aluminum	Al	5610122000	030-150-134	0303-6009	030-200-134
Antimony	Sb	5610122100	030-150-512	0303-6010	030-200-512
Arsenic	As	5610122200	030-150-332	0303-6011	030-200-332
Barium	Ba	5610122300	030-150-564	0303-6012	030-200-564
Beryllium	Be	5610122400	030-150-042	0303-6013	030-200-042
Bismuth	Bi	5610122500	030-150-832	0303-6014	030-200-832

Hollow Cathode Lamps



ORDERING INFORMATION

Element	Symbol	1.5" NON-CODED LAMPS		2.0" NON-CODED LAMPS	
		Agilent® (Varian®) Cross Reference	Catalog Number	PerkinElmer® Cross Reference	Catalog Number
Boron	B	5610122600	030-150-052	0303-6015	030-200-052
Cadmium	Cd	5610122700	030-150-482	0303-6016	030-200-482
Calcium	Ca	5610122900	030-150-204	0303-6017	030-200-204
Cerium	Ce	5610122000	030-150-582	0303-6019	030-200-582
Cesium	Cs	5610123800	030-150-554	0303-6020	030-200-554
Chromium	Cr	5610123100	030-150-244	0303-6021	030-200-244
Cobalt	Co	5610123200	030-150-272	0303-6022	030-200-272
Copper	Cu	5610123300	030-150-294	0303-6024	030-200-294
Dysprosium	Dy	5610123400	030-150-664	0303-6025	030-200-664
Erbium	Er	5610123500	030-150-684	0303-6026	030-200-684
Europium	Eu	5610123600	030-150-634	0303-6027	030-200-634
Gandolinium	Gd	5610123700	030-150-644	0303-6028	030-200-644
Gallium	Ga	5610123800	030-150-312	0303-6029	030-200-312
Germanium	Ge	5610123900	030-150-322	0303-6030	030-200-322
Gold	Au	5610124000	030-150-792	0303-6031	030-200-792
Hafnium	Hf	5610124100	030-150-722	0303-6032	030-200-722
Holmium	Ho	5610124200	030-150-674	0303-6033	030-200-674
Indium	In	5610124400	030-150-494	0303-6034	030-200-494
Iridium	Ir	5610124500	030-150-772	0303-6036	030-200-772
Iron	Fe	5610124600	030-150-262	0303-6037	030-200-262
Lanthanum	La	5610124700	030-150-574	0303-6038	030-200-574
Lead	Pb	5610124800	030-150-822	0303-6039	030-200-822
Lithium	Li	5610124900	030-150-034	0303-6040	030-200-034
Lutetium	Lu	5610125000	030-150-714	0303-6041	030-200-714
Magnesium	Mg	5610125100	030-150-122	0303-6042	030-200-124
Manganese	Mn	5610125200	030-150-252	0303-6043	030-200-252
Mercury	Hg	5610125300	030-150-802	0303-6044	030-200-802
Molybdenum	Mo	5610125400	030-150-424	0303-6045	030-200-422

Hollow Cathode Lamps

ORDERING INFORMATION



Element	Symbol	1.5" NON-CODED LAMPS		2.0" NON-CODED LAMPS	
		Agilent® (Varian®) Cross Reference	Catalog Number	PerkinElmer® Cross Reference	Catalog Number
Neodymium	Nd	5610125500	030-150-604	0303-6046	030-200-604
Nickel	Ni	5610125600	030-150-282	0303-6047	030-200-282
Niobium	Nb	5610125700	030-150-414	0303-6023	030-200-414
Osmium	Os	5610125800	030-150-762	0303-6048	030-200-762
Palladium	Pd	5610125900	030-150-462	0303-6049	030-200-462
Phosphorus	P	5610126000	030-150-152	0303-6080	030-200-152
Platinum	Pt	5610126100	030-150-782	0303-6051	030-200-782
Potassium	K	5610126200	030-150-194	0303-6052	030-200-194
Praseodymium	Pr	5610126300	030-150-594	0303-6053	030-200-594
Rhenium	Re	5610126400	030-150-754	0303-6056	030-200-754
Rhodium	Rh	5610126500	030-150-452	0303-6057	030-200-454
Rubidium	Rb	5610126600	030-150-374	0303-6058	030-200-374
Ruthenium	Ru	5610126700	030-150-444	0303-6059	030-200-444
Samarium	Sm	5610126800	030-150-624	0303-6060	030-200-624
Scandium	Sc	5610126900	030-150-214	0303-6061	030-200-214
Selenium	Se	5610127000	030-150-342	0303-6062	030-200-342
Silicon	Si	5610127100	030-150-142	0303-6063	030-200-142
Silver	Ag	5610127200	030-150-474	0303-6064	030-200-474
Sodium	Na	5610127300	030-150-114	0303-6065	030-200-114
Strontium	Sr	5610127400	030-150-384	0303-6066	030-200-384
Sulfur	S	---	030-150-162	0303-6067	030-200-162
Tantalum	Ta	5610127500	030-150-732	0303-6068	030-200-732
Tellurium	Te	5610127600	030-150-522	0303-6069	030-200-522
Terbium	Tb	5610127700	030-150-654	0303-6070	030-200-654
Thallium	Tl	5610127800	030-150-812	0303-6071	030-200-812
Thulium	Tm	5610128000	030-150-694	0303-6073	030-200-694
Tin	Sn	5610128100	030-150-502	0303-6074	030-200-502
Titanium	Ti	5610128200	030-150-224	0303-6075	030-200-224

Hollow Cathode Lamps



ORDERING INFORMATION

Element	Symbol	1.5" NON-CODED LAMPS		2.0" NON-CODED LAMPS	
		Agilent® (Varian®) Cross Reference	Catalog Number	PerkinElmer® Cross Reference	Catalog Number
Tungsten	W	5610128300	030-150-742	0303-6076	030-200-742
Vanadium	V	5610128500	030-150-234	0303-6078	030-200-232
Ytterbium	Yb	5610128600	030-150-704	0303-6079	030-200-704
Yttrium	Y	5610128700	030-150-394	0303-6080	030-200-394
Zinc	Zn	5610128800	030-150-302	0303-6081	030-200-302
Zirconium	Zr	5610128900	030-150-404	0303-6082	030-200-404



NOTE

SCP SCIENCE 2.0" Hollow Cathode Lamps require an adapter when used in PerkinElmer® AAnalyst systems with a 4 pin Lumina plug-in. AAnalyst systems will not recognize coding found with SCP SCIENCE 12 pin lamps. Coding will only be recognized by older generation PerkinElmer® instruments such as SIMAA 6000, 5100, 3300, 2100, 1100 (B), 4110 L and 4100 (L) with 12 pin Intensitron plug-ins.

Hollow Cathode Lamps

MULTI ELEMENT

ORDERING INFORMATION



1.5" NON-CODED MULTI ELEMENT

Element	Symbol	Agilent® (Varian®) Cross Reference	Catalog Number
Aluminum, Copper, Chromium, Iron, Silver, Magnesium	Al, Cu, Cr, Fe, Ag, Mg	---	030-151-005
Calcium, Magnesium	Ca, Mg	5610129100	030-151-008
Calcium, Magnesium, Zinc	Ca, Mg, Zn	---	030-151-009
Copper, Iron, Manganese, Zinc	Cu, Fe, Mn, Zn	---	030-151-012
Sodium, Potassium	Na, K	5610129000	030-151-014
Lead, Copper	Pb, Cu	---	030-151-015

2.0" NON-CODED MULTI ELEMENT

Element	Symbol	PerkinElmer® Cross Reference	Catalog Number
Aluminum, Calcium, Magnesium	Al, Ca, Mg	0303-6099	030-201-001
Aluminum, Calcium, Zinc, Silicon, Iron, Copper, Magnesium	Al, Ca, Zn, Si, Fe, Cu, Mg	---	030-201-004
Aluminum, Copper, Chromium, Iron, Silver, Magnesium	Al, Cu, Cr, Fe, Ag, Mg	---	030-201-005
Barium, Calcium, Strontium, Magnesium	Ba, Ca, Sr, Mg	---	030-201-006
Calcium, Magnesium	Ca, Mg	0303-6092	030-201-008
Calcium, Magnesium, Zinc	Ca, Mg, Zn	---	030-201-009
Copper, Cadmium, Zinc, Lead	Cu, Cd, Zn, Pb	---	030-201-010
Copper, Chromium, Cobalt, Iron, Manganese, Nickel	Cu, Cr, Co, Fe, Mn, Ni	0303-6103	030-201-011
Copper, Iron, Manganese, Zinc	Cu, Fe, Mn, Zn	0303-6105	030-201-012
Copper, Chromium, Iron, Silver, Nickel	Cu, Cr, Fe, Ag, Ni	---	030-201-013
Sodium, Potassium	Na, K	0303-6095	030-201-014

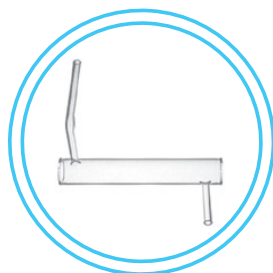
Quartz Cells



ORDERING INFORMATION



PerkinElmer® MHS-10
030-050-150



TJA® Quartz Cell, 120 mm
030-050-153

Description	Vendor Number	Catalog Number
PerkinElmer® 4000 Axial Purge Window	N077-1116	030-050-158
PerkinElmer® Quartz Window	B006-6549	030-050-160
PerkinElmer® MHS-10	B009-4415	030-050-150
PerkinElmer® MHS-10 w/Windows	---	030-050-161
PerkinElmer® MHS-20	B009-7694	030-050-151
PerkinElmer® MHS-20 w/Windows	B009-7693	030-050-152
Spectro UV Windows Fused	---	030-050-155
TJA® Quartz Cell, 120 mm	85476	030-050-153
TJA® Quartz Cell, 150 mm	122910	030-050-154
TJA® T-Shaped Cell	131395	030-050-164
Agilent® (Varian®) ACT-80 Atom Concentrator Tube	9910054400	030-150-175
Agilent® (Varian®) M-65 Absorption Cell	110257690	030-150-170
Agilent® (Varian®) M-65 Mercury Flow Through Cell	110255100	030-150-171
Agilent® (Varian®) MCA-90 Flow Through Cell	9910058300	030-150-174
Agilent® (Varian®) VGA-76/77 Mercury Flow Through Cell	9910040700	030-050-156
Agilent® (Varian®) VGA-76/77 Hydride Absorption Cell	2010056000	030-050-157
Agilent® (Varian®) VGA-76 Gas Liquid Separator	9910040200	030-150-172
Agilent® (Varian®) VGA-77 Gas Liquid Separator	9910071100	030-150-173

Matrix Modifiers for GRAPHITE FURNACE (AA)

Matrix Modifiers allow the optimization of analytical conditions to provide better GFAA instrument response and better detection limits. All commonly used products are available in addition to custom formulations. **SCP SCIENCE** Matrix Modifiers are manufactured in compliance with ISO Guide 34 and ISO 17025.



Features

- Prepared from 99.999% pure starting materials
- Extremely low level of metallic impurities in the final solution
- Custom formulations available - Designed for your specific application
- Complete Certificate of Analysis listing the actual concentration and the level of metallic impurities - Complete documentation for audit purposes

ORDERING INFORMATION



	Element	Formulation	Catalog Number 100 ml	Catalog Number 250 ml	Catalog Number 500 ml
Matrix Modifier	Magnesium Nitrate	2% Mg in 5% HNO ₃	140-003-031	140-003-032	140-003-035
	Manganese Nitrate	0.3% Mg in 10% HNO ₃	---	---	140-003-501
	Palladium Nitrate	0.2% Pd in 5% HNO ₃	140-003-061	140-003-062	140-003-065
	Palladium Nitrate	2% Pd in 5% HNO ₃	140-003-091	140-003-092	140-003-095
	Calcium Nitrate	2% Ca in 5% HNO ₃	140-003-121	140-003-122	140-003-125
	Ammonium Phosphate	40% $\frac{w}{v}$ in 2% HNO ₃	140-003-151	140-003-152	140-003-155
	Ammonium Nitrate	5% $\frac{w}{v}$ in 2% HNO ₃	140-003-181	140-003-182	140-003-185
	Palladium/Magnesium Nitrate	0.3% Pd + 0.5% Mg in 1% HNO ₃	140-003-191	140-003-192	140-003-195
	Nickel Nitrate	5% Ni in 5% HNO ₃	140-003-211	140-003-212	140-003-215
Ionization Buffers	Cesium Chloride	1% Cs in 2% HCl	140-003-241	140-003-242	140-003-245
	Cesium Nitrate	1% Cs in 2% HNO ₃	140-003-271	140-003-272	140-003-275
	Lithium Chloride	2% Li in 2% HCl	140-003-301	140-003-302	140-003-305
	Lithium Nitrate	2% Li in 2% HNO ₃	140-003-331	140-003-332	140-003-335
	Potassium Chloride	1% K in 2% HCl	140-003-361	140-003-362	140-003-365
	Potassium Nitrate	1% K in 2% HNO ₃	140-003-391	140-003-392	140-003-395
Releasing Agents	Lanthanum Chloride	5% La in 5% HCl	140-003-421	140-003-422	140-003-425
	Lanthanum Nitrate	5% La in 5% HNO ₃	140-003-451	140-003-452	140-003-455

SCP SCIENCE

Providing Innovative Solutions to Analytical Chemists



Certificate of Analysis

1.0 DESCRIPTION: Matrix Modifier – Magnesium Nitrate (2.0% Mg)
 Catalogue Number: 140-003-03x
 Starting Material: Mg Nitrate Hydrate 99.999%
 Matrix: 5% HNO₃
 Lot Number: S140707003
 Expiration Date: July 2016

2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:
 Certified Concentration: **20170 µg/ml +/- 60 µg/ml**
 Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)
 Traceability: NIST Standard Reference Material 3131a Lot: **050302**

Note: The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u_i) including uncertainty established during characterization of the material (u_{char}), the between bottle variation (u_{bb}), short-term stability (u_{stb}) and long-term stability (u_{lts}) according to the model $u_c = \sqrt{(u_{char})^2 + u_{bb}^2 + u_{stb}^2 + u_{lts}^2}$. This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

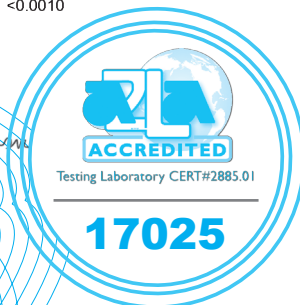
3.0 REFERENCE VALUES:
 Density: **1.114 g/ml @ 21.6°C**

Trace Metal Impurities as tested by ICP-MS:

Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)	Element	Conc. (ppm)
Ag	<0.0010	Fe	<0.0018	Nd	<0.0010	Sn	<0.0010
Al	<0.0010	Ga	<0.0010	Ni	<0.0010	Sr	<0.0025
As	<0.0010	Gd	<0.0010	Os	*	Ta	<0.0010
Au	<0.0010	Ge	<0.0010	P	<0.0026	Tb	<0.0010
B	<0.0015	Hf	<0.0010	Pb	<0.0010	Te	<0.0010
Ba	<0.0010	Hg	*	Pd	<0.0010	Th	<0.0010
Be	<0.0010	Ho	<0.0010	Pr	<0.0010	Ti	<0.0012
Bi	<0.0010	In	<0.0010	Pt	<0.0010	Tl	<0.0011
Ca	0.7200	Ir	<0.0010	Rb	<0.0010	Tm	<0.0010
Cd	<0.0010	K	<0.0024	Re	<0.0010	U	<0.0010
Ce	<0.0010	La	*	Rh	<0.0010	V	<0.0010
Co	<0.0010	Li	<0.0010	Ru	<0.0010	W	<0.0020
Cr	<0.0010	Lu	<0.0010	S	*	Y	<0.0010
Cs	<0.0010	Mg	N/A	Sb	<0.0010	Yb	<0.0010
Cu	<0.0010	Mn	<0.0010	Sc	<0.0010	Zn	<0.0010
Dy	<0.0010	Mo	<0.0010	Se	*	Zr	<0.0010
Er	<0.0010	Na	0.1500	Si	*		
Eu	<0.0010	Nb	<0.0010	Sm	<0.0010		

4.0 APPROVAL AND DATE OF CERTIFICATION:
 Certification Approval: Daniel Boisvert, Chemist
 Certification Date: July 14, 2014

Daniel Boisvert



Single Element CALIBRATION STANDARDS

Calibration standards are available for Flame and Graphite Furnace Atomic Absorption Spectroscopy and are manufactured in compliance with ISO Guide 34. Each standard includes a detailed, ISO 17025 compliant Certificate of Analysis and direct traceability to NIST.

Features

Certificate of Analysis with actual matrix, actual concentration, and traceability to NIST 3100 Series Standards - Complete documentation for audit purposes

2 expiry dates (up to 24 months unopened and 15 months opened) - Longer shelf life for unopened bottles

Immediate availability for most elements

With the purchase of a hollow cathode lamp or a package of graphite furnace tubes receive a free AA standard



1000 PPM Calibration Standards

Element/ Symbol	Matrix	Catalog No.		
		2 x 25 ml	125 ml	500 ml
Aluminum (Al)	HCl	140-002-130	140-002-131	140-002-135
Antimony (Sb)	HNO ₃ / tr. Tartaric Acid	140-001-510	140-001-511	140-001-515
Arsenic (As)	HNO ₃	140-001-330	140-001-331	140-001-335
Barium (Ba)	HNO ₃	140-001-560	140-001-561	140-001-565
Beryllium (Be)	HNO ₃	140-001-040	140-001-041	140-001-045
Bismuth (Bi)	HNO ₃	140-001-830	140-001-831	140-001-835
Boron (B)	H ₂ O	140-000-050	140-000-051	140-000-055
Cadmium (Cd)	HNO ₃	140-001-480	140-001-481	140-001-485
Calcium (Ca)	HNO ₃	140-001-200	140-001-201	140-001-205
Chromium (Cr)	HCl	140-002-240	140-002-241	140-002-245
Cobalt (Co)	HNO ₃	140-001-270	140-001-271	140-001-275
Copper (Cu)	HNO ₃	140-001-290	140-001-291	140-001-295
Gold (Au)	HCl	140-002-790	140-002-791	140-002-795*
Iron (Fe)	HNO ₃	140-001-260	140-001-261	140-001-265
Lead (Pb)	HNO ₃	140-001-820	140-001-821	140-001-825
Lithium (Li)	HNO ₃	140-001-030	140-001-031	140-001-035

Element/ Symbol	Matrix	Catalog No.		
		2 x 25 ml	125 ml	500 ml
Magnesium (Mg)	HNO ₃	140-001-120	140-001-121	140-001-125
Manganese (Mn)	HNO ₃	140-001-250	140-001-251	140-001-255
Mercury (Hg)	HNO ₃	140-001-800	140-001-801	140-001-805
Molybdenum (Mo)	H ₂ O	140-000-420	140-000-421	140-000-425
Nickel (Ni)	HNO ₃	140-001-280	140-001-281	140-001-285
Potassium (K)	HNO ₃	140-001-190	140-001-191	140-001-195
Selenium (Se)	HNO ₃	140-001-340	140-001-341	140-001-345
Silicon (Si)	H ₂ O / tr. HF	140-000-140	140-000-141	140-000-145
Silver (Ag)	HNO ₃	140-001-470	140-001-471	140-001-475
Sodium (Na)	HNO ₃	140-001-110	140-001-111	140-001-115
Strontium (Sr)	HNO ₃	140-001-380	140-001-381	140-001-385
Tin (Sn)	HCl	140-002-500	140-002-501	140-002-505
Titanium (Ti)	H ₂ O / tr. HF	140-000-220	140-000-221	140-000-225
Vanadium (V)	HNO ₃	140-001-230	140-001-231	140-001-235
Zinc (Zn)	HNO ₃	140-001-300	140-001-301	140-001-305



Providing Innovative Solutions to Analytical Chemists



Certificate of Analysis

1.0 DESCRIPTION: Aluminum – AA Standard (1000 µg/ml)
 Catalogue Number: 140-002-13x
 Starting Material: Aluminum Metal
 Lot Number: **S140916009**
 Matrix: 4% HCl
 Expiration Date: **October 2016** (or 15 months after bottle is opened, whichever comes first)

Al

2.0 CERTIFIED VALUES AND ASSOCIATED UNCERTAINTY:

Certified Concentration: **1000 µg/ml +/- 3 µg/ml**
 Method of analysis: Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)
 Traceability: NIST Standard Reference Material 3101a Lot: **060502**

Note: The uncertainty of the certified value has been calculated from applicable uncertainty contributors (u_i) including uncertainty established during characterization of the material (u_{char}), the between bottle variation (u_{bb}), short-term stability (u_{sta}) and long-term stability (u_{lts}) according to the model $u_c = \sqrt{(u_{char}^2 + u_{bb}^2 + u_{sta}^2 + u_{lts}^2)}$. This combined uncertainty has been further multiplied by a coverage factor (k) of 2 to provide a 95% confidence interval.

3.0 REFERENCE VALUES:

Density: **1.009 g/ml @ 22.0°C**

4.0 APPROVAL AND DATE OF CERTIFICATION:

Certification Approval: Daniel Boisvert, Chemist
 Certification Date: September 26, 2014

Daniel Boisvert

