SCOPE OF ACCREDITATION TO ISO GUIDE 34:2009

SCP SCIENCE
21800 Clark Graham
Baie d'Urfe, Quebec H9X 4B6 CANADA
David Smith Phone: 514 457 0701
dsmith@scpscience.com

REFERENCE MATERIAL PRODUCER

Valid To: January 31, 2018 Certificate Number: 2885.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this Reference Material Producer for the production of certified reference materials and reference materials of the following categories:

Category and Sub-Category of Reference Material	**Test, Analysis, Measurement**[1] (Including ranges and uncertainties)	**Method**	**Measurement Technique** (Where appropriate)
Certified Reference Materials:			
Category A2.6 Pure Chemicals Aqueous Trace Metals Standards Single element, stock and custom blends containing the following elements: (Al, Sb, As, B, Ba, Be, Bi, Cd, Ca, Ce, Cs, Cr, Co, Cu, Dy, Er, Eu, Gd, Ga, Ge, Au, Hf, Ho, In, Ir, Fe, La, Pb, La, Li, Lu, Mg, Mn, Hg, Mo, Nd, Ni, Nb, Os, Pd, P, Pt, K, Pr, Re, Rh, Rb, Ru, Sm, Sc, Se, Si, Ag, Na, Sr, S, Ta, Te, Tb, Tl, Th, Tm, Sn, Ti, W, U, V, Yb, Y, Zn, Zr)	Stock single elements at 1000 and 10 000 µg/ml Stock and custom blends from (0.1 to 50 000) µg/ml Typical uncertainty less than 1 %	EPA 200.7 Modified	ICP-AES / ICP - MS

Category and Sub-Category of Reference Material	**Test, Analysis, Measurement**[1] (Including ranges and uncertainties)	**Method**	**Measurement Technique** (Where appropriate)
Certified Reference Materials:			
Category A2.6 Pure Chemicals Aqueous Anions and Cations (Ammonia-Nitrogen, Bromate, Bromide, Chlorate, Chloride, Fluoride, Formate, Nitrate, Nitrate-Nitrogen, Nitrite, Nitrite-Nitrogen, Oxalate, Phosphate, Phosphate-Phosphorous, Sulfate, Sulfate-Sulfur, Ammonium, Barium, Calcium, Lithium, Magnesium, Potassium, Sodium, Strontium)	(0.1 to 50 000) µg/ml Typical uncertainty less than 1 %	Standard Method 4110 Modified	Ion Chromatography
Category A9.1 pH Standards	(1 to 12) pH units Typical uncertainty less than 1 %	EPA 150.1 Modified	Potentiometry
Category A9.3 Conductivity Standards	(5 to 100 000) µS Typical uncertainty less than 1 %	EPA 120.1 Modified	Electrochemical
Category A6.1 Metallo-organic compounds and A6.2 Wear metals in oil Single element, stock and custom blends containing the following elements: (Ag, Al, As, B, Ba, Be, Bi, Ca, Ce, Cd, Co, Cr, Cu, Fe, Hg, In, K, La, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Sc, Se, Si, Sn, Sr, Ti, V, W, Y, Zn)	Stock single elements at 100, 1000, 2000 and 5000 µg/g Stock and custom blends from (1 to 50 000) µg/g. Typical uncertainty less than 1 %	EPA 200.7 Modified	ICP-AES
Category A.6.1 Metallo-organic compounds: Sulfur in mineral oil, diesel, residual oil, isooctane, biodiesel	Stock and custom single element standards from (0 to 50 000) µg/g Typical uncertainty less than 1 %	ASTM D5453	UV-F
Category C6.2 Viscosity Standards	(3 to 30 000) mm^2/s (Centistokes) at 100 ºF (37.78 ºC) Typical uncertainty less than 1 %	ASTM D445/446	Master Viscometer

Category and Sub-Category of Reference Material	**Test, Analysis, Measurement**[1] (Including ranges and uncertainties)	**Method**	**Measurement Technique** (Where appropriate)
Certified Reference Materials:			
Total Acid Number Standards (TAN)	(0.05 to 10) mg KOH/g Typical uncertainty 2 %	ASTM D664	Potentiometric Titration
Total Alkalinity	(10 to 500) ppm as $CaCO_3$ Typical uncertainty less than 1 %	Standard Method 2320B Modified	Titration
Hardness	(100 to 10 000) ppm as $CaCO_3$ Typical uncertainty less than 1 %	Standard Method 2340B	Calculation
Total Base Number Standards (TBN)	(1 to 120) mg KOH/g Typical uncertainty 2 %	D2896	Potentiometric Titration
Chemical Oxygen Demand Standards (COD)	(100 to 15 000) ppm O2 Typical uncertainty 0.5 %	EPA 410.4-1 Modified	Colorimetry
Flash Point Standards	(53 to 260) °C. Typical uncertainty +/-4 °C	ASTM D93	Pensky-Martens Closed Cup
Acid and Base Reagents: Hydrochloric acid Sulfuric acid Nitric acid Acetic acid Boric acid Citric acid Phosphoric acid Propionate Glycolate Buryrate Chloroacetate Valerate Isovalerate Benzoate Glutarate Isobutyrate Lactate Sodium Hydroxide Potassium Hydroxide	 (0.0015 to 10) Normal (0.02 to 18) Normal (0.1 to 10) Normal (0.1 to 5) Normal (1 to 5) % (0.03 to 1) Molar (1 to 10) % 1000 and 10 000 ppm 1000 and 10 000 ppm 1000 and 10 000 ppm 1000 and 10 000 ppm 1000 and 10 000 ppm 1000 and 10 000 ppm 1000 and 10 000 ppm 1000 and 10 000 ppm 1000 and 10 000 ppm 1000 and 10 000 ppm 1000 and 10 000 ppm (0.0005 to 10) Normal (0.1 to 1) Normal Typical uncertainty less than 1 %	In-house Test Method QC-MET020-ALCN	Titration

Category of Reference Material	**Test, Analysis, Measurement**[1] (Including ranges and uncertainties)	**Method**	**Measurement Technique** (Where appropriate)
Matrix Reference Materials[2*]**:**			
EnviroMAT - Contaminated soil (Ag, Al, As, B, Ba, Be, Ca, Cd, Ce, Co, Cr, Cu, Fe, Hg, K, Li, Mg, Mo, Na, Ni, P, Pb, S, Sb, Se, Sn, Sr, Tl, U, V, Y, Zn)	(0 to 200 000) ppm	Interlaboratory Study	N/A
EnviroMAT - Sewage Sludge (Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Li, Mg, Mo, Na, Ni, P, Pb, S, Sb, Se, Sn, Sr, Tl, U, V, Y, Zn)	(0 to 50 000) ppm	Interlaboratory Study	N/A
EnviroMAT – Compost (Total metals: Al, As, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, P, Pb, S, Se, Zn) Total Nitrogen, NO3-N, Organic Matter, pH	pH (6 to 7.5) Organic matter 20 to 80 % Total N 1 % maximum Metals (0 to 60 000) ppm	Interlaboratory Study	N/A
EnviroMAT - Drinking Water (Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Li, Mg, Mo, Na, Ni, P, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn)	(0 to 2000) ppm	Interlaboratory Study	N/A
EnviroMAT - Ground Water (Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mo, Na, Ni, P, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn)	(0 to 2000) ppm	Interlaboratory Study	N/A
EnviroMAT - Waste Water (Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Li, Mg, Mo, Na, Ni, P, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn)	(0 to 5000) ppm	Interlaboratory Study	N/A
EnviroMAT - Used oil (Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Li, P, Pb, Si, Sn, Ti, V, Zn)	(10 to 10 000) ppm	Interlaboratory Study	N/A
AgroMAT - Clay Soil (Metals: P, K, Ca, Mg, Na, Zn, Mn, Cu, Fe, B, S, Al) (pH, Organic matter, N-NO3, Soluble Salts)	Metals: (0 to 3000) ppm pH (6 to 8) Organic matter (1 to 6) % N-NO3 (5 to 20) ppm Soluble salts (100 to 700) µS/cm	Interlaboratory Study	N/A

Category of Reference Material	**Test, Analysis, Measurement**[1] (Including ranges and uncertainties)	**Method**	**Measurement Technique** (Where appropriate)
Matrix Reference Materials[2*]**:**			
AgroMAT - Sandy Soil (Metals: P, K, Ca, Mg, Na, Zn, Mn, Cu, Fe, B, S, Al) (pH, Organic matter, N-NO3, Soluble Salts)	Metals: (0 to 3000) ppm pH (6 to 8) Organic matter (1 to 6) % N-NO3 (5 to 40) ppm Soluble salts (100 to 700) µS/cm	Interlaboratory Study	N/A
Lead in paint	(200 to 400) ppm	Interlaboratory Study	N/A
Cadmium and Lead in paint	(200 to 400) ppm	Interlaboratory Study	N/A
Performance Evaluation Standards[2*]**:**			
pE Check – Nutrients (NH3 as N, NO3 as N, o-PO4, Total N, Total P	(0.1 to 100) ppm	Interlaboratory Study	N/A
pE Check – Minerals (Conductivity, Total Hardness, TDS, Ca, K, Mg, Na, Cl-, F-, SO4(2-)	Minerals: (0.01 to 1000) ppm TDS: (10 to 10000) µS/cm	Interlaboratory Study	N/A
pE Check – Solids (Suspended Solids, Dissolved Solids, Total Solids)	(1 to 4000) ppm	Interlaboratory Study	N/A
pE Check – COD (Chemical Oxygen Demand)	(10 to 10 000) ppm	Interlaboratory Study	N/A

[1] The listed uncertainty represents expanded uncertainties expressed at approximately the 95 % level of confidence, using a coverage factor of $k = 2$.

[2*] These reference materials are intended for use as quality control materials, or other purposes that do not require metrological traceability of property values (such as calibration or value transfer).

Accredited Reference Material Producer

A2LA has accredited

SCP SCIENCE

Baie d'Urfe, Quebec, Canada

This accreditation covers the specific materials listed on the agreed upon Scope of Accreditation. This producer meets the requirements of ISO Guide 34:2009 *General Requirements for the Competence of Reference Material Producers.* This accreditation demonstrates technical competence for a defined scope and the operation of a quality management system.

Presented this 17th day of December 2015.

President & CEO
For the Accreditation Council
Certificate Number 2885.02
Valid to January 31, 2018
Revised November 15, 2017

For reference materials to which this accreditation applies, please refer to the reference material producer's Scope of Accreditation.