SCOPE OF ACCREDITATION TO ISO 17034:2016

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REFERENCE MATERIAL PRODUCER

Valid To: February 28, 2022 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 Certified Reference Material[2]	**Test, Analysis, Measurement[1]** (Including Ranges and Uncertainties)	**Method**	**Measurement Technique**
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, 10 000 and 50 000) µg/ml Stock and custom blends from (0.001 to 50 000) µg/ml Typical uncertainty less than 1 %.	EPA 200.7 Modified EPA 200.8 Modified	ICP-AES / ICP - MS

Category and Sub-Category of Certified Reference Material[2]	**Test, Analysis, Measurement[1]** (Including Ranges and Uncertainties)	**Method**	**Measurement Technique**
Category A2.6 Pure Chemicals Aqueous Anions and Cations –			
(Acetate, Ammonia as N, Ammonium, Bromate, Bromide, Chlorate, Chloride, Fluoride, Formate, Nitrate, Nitrate as N, Nitrite, Nitrite as N, Oxalate, Phosphate, Phosphate as P, Sulfate, Sulfate as S)	Stock single elements at (1000, 10 000 and 50 000) µg/ml Stock and custom blends from (10 to 1000) µg/ml Typical uncertainty less than 1 %	Standard Method 4110	Ion Chromatography
(Chromate, Molybdate, Perchorate, Barium, Calcium, Copper, Iron, Lithium, Magnesium, Manganese, Nickel, Potassium, Sodium, Strontium, Zinc)		Modified EPA 200.7	ICP-AES
(Benzoate, Butyrate, Caproate, Chloroacetate, Citrate, Glycolate, Glyoxylate, Isobutyrate, Isocaproate, Isovalerate, Lactate, Propionate, Valerate)		Modified In-house Test Method QC-MET021-ABT	Titration
Category A9.1 pH Standards	(1 to 13) pH units Typical uncertainty less than 1 %	EPA 150.1 Modified	Potentiometry
Category A9.3 Conductivity Standards	(5 to 300 000) µS Typical uncertainty less than 1 %	EPA 120.1 Modified	Electrochemical

Category and Sub-Category of Certified Reference Material[2]	**Test, Analysis, Measurement[1]** (Including Ranges and Uncertainties)	**Method**	**Measurement Technique**
Category A6.1 Metallo-organic Compounds and A6.2 Wear Metals in Oil; Single Element, Stock and Custom Blends Containing the Following Elements[3]: (Ag, Al, As, B, Ba, Be, Bi, Ca, Ce, Cd, Cl, Co, Cr, Cu, Fe, Hg, In, K, La, Li, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Se, Si, Sn, Sr, Ti, V, W, Y, Zn, Zr)	Stock single elements at 100, 1000, 2000 and 5000 µg/g Stock and custom blends from (0.5 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, Xylene, Ethanol, Crude Oil and Premisolv[3]	Stock and custom single element standards from (0 to 60 000) µg/g Typical uncertainty less than 1 %	ASTM D5453	UV-F
Category C6.2 Viscosity Standards[3]	(2 to 30 000) mm^2/s (Centistokes) at 100 ºF (37.78 ºC) - Kinematic Typical uncertainty less than 1 %	ASTM D445/446	Master Viscometer
Total Acid Number Standards (TAN) [3]	(0.05 to 50 mg) KOH/g Typical uncertainty 2 %	ASTM D664	Potentiometric Titration
Total Alkalinity	(25 to 10 000) ppm as $CaCO_3$ Typical uncertainty less than 1 %	Standard Method 2320B Modified	Titration
Hardness	(5 to 10 000) ppm as $CaCO_3$ Typical uncertainty less than 1 %	Standard Method 2340B	Calculation
Total Base Number Standards (TBN) [3]	(1 to 150) mg KOH/g Typical uncertainty 2 %	D2896	Potentiometric Titration
Chemical Oxygen Demand Standards (COD)	(50 to 15000) ppm O_2 Typical uncertainty 0.5 %	EPA 410.4-1 Modified	Spectrophotometry

Category and Sub-Category of Certified Reference Material[2]	Test, Analysis, Measurement[1] (Including Ranges and Uncertainties)	Method	Measurement Technique
Flash Point Standards[3]	(20 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 Citric acid Oxalic Acid Phosphoric acid Potassium Hydroxide Sodium Hydroxide Acidity Standard	 (0.0015 to 10) Normal (0.02 to 18) Normal (0.1 to 10) Normal (0.1 to 5) Normal (0.03 to 1) Molar (0.1 to 1) Normal (1 to 10) % (0.1 to 1) Normal (0.0005 to 5) Normal 100 to 10 000 ppm as CaCO3 Typical uncertainty less than 1 %	In-house Test Method QC-MET021-ABT	Titration
Boric acid	(1 to 5) % Typical uncertainty less than 1 %	EPA 200.7 Modified	ICP-AES

Category of Reference Material	Test, Analysis, Measurement[1] (Including ranges and uncertainties)	Method
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
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 50000) ppm	Interlaboratory Study
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 60000) ppm	Interlaboratory Study

Category of Reference Material	Test, Analysis, Measurement[1] (Including ranges and uncertainties)	Method
Matrix Reference Materials[2*]:		
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
EnviroMAT - Ground 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
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
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)	(0 to 10000) ppm	Interlaboratory Study
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
AgroMAT - Sandy Soil (Metals: P, K, Ca, Mg, Na, Zn, Mn, Cu, Fe, B, S, Al) (pH, Organic matter, N-NO3, Soluble Salts)	Metals: 0-3000 ppm pH (6 to 8) Organic matter (1 to 6) % N-NO3 (5 to 100) ppm Soluble salts (100 to 700) µS/cm	Interlaboratory Study
Lead inPpaint	(50 to 400) ppm	Interlaboratory Study
Cadmium and Lead in Paint	(50 to 400) ppm	Interlaboratory Study

Category of Reference Material	Test, Analysis, Measurement[1] (Including ranges and uncertainties)	Method
Performance Evaluation Standards[2*]:		
pE Check – Nutrients (NH3 as N, NO3 as N, o-PO4, Total N, Total P	(0.1 to 200) ppm	Interlaboratory Study
pE Check – Minerals (Conductivity, Total Hardness, TDS, Ca, K, Mg, Na, Cl-, F-, SO4(2-), Alkalinity	Minerals: (0.01 to 1000) ppm TDS: (10 to 5000) µS/cm Total Hardness: (10 to 600) ppm as $CaCO_3$ Alkalinity: (50 to 5000) ppm as $CaCO_3$ Conductivity: (100 to 10 000) µS/cm	Interlaboratory Study
pE Check – Solids (Suspended Solids, Dissolved Solids, Total Solids)	(1 to 4000) ppm	Interlaboratory Study
pE Check – COD (Chemical Oxygen Demand)	(10 to 10 000) ppm	Interlaboratory Study

[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).

[3] These reference materials are sold under the brand name Conostan which is owned by SCP Science.

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 17034:2016 *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 16th day of March 2020.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2885.02
Valid to February 28, 2022
Revised November 23, 2021

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