



SCOPE OF ACCREDITATION TO ISO/IEC 17034:2016

ERA
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REFERENCE MATERIAL PRODUCER

Valid To: December 31, 2022

Certificate Number: 1539.03

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 of the following categories:

Certified Reference Material	Class or Type of Reference Materials/Artifact or Matrix	Concentration Range ² (after dilution, if applicable)	Relative Uncertainty ¹ (Expanded)	Measurement Technique(s)
Environmental Reference Materials Waters Potable Water Routine Analytes Fresh Water Routine Analytes Industrial Waste Water Routine Analytes	Single and Multi-component microorganisms in lyophilized pellets and in solution. Microbiology: Total Coliforms Fecal Coliforms E.Coli Enterococci Fecal Streptococci Heterotrophic Plate Count	 Presence/Absence, (20 – 2400) CFU/100 mL (20 – 2400) MPN/100 mL Presence/Absence, (20 – 1000) CFU/100 mL (20 – 1000) MPN/100 mL (5 – 500) CFU/mL (5 – 500) MPN/mL	 (2 to 150) %	MPN Membrane Filtration Pour Plate Presence/ Absence

Certified Reference Material	Class or Type of Reference Materials/Artifact or Matrix	Concentration Range ² (after dilution, if applicable)	Relative Uncertainty ¹ (Expanded)	Measurement Technique(s)
<p>Environmental Reference Materials</p> <p>Waters</p> <p>Potable Water</p> <p>Routine Analytes</p> <p>Trace Elements</p> <p>Organic Pollutants</p> <p>Other Analytes</p> <p>Industrial Waste Water</p> <p>Routine Analytes</p> <p>Trace Elements</p> <p>Organic Pollutants</p> <p>Other Analytes</p>	<p>Single and Multi-component organic and inorganic material in solution:</p> <p>Inorganic Chemistry</p> <p>Minerals</p> <p>Hardness</p> <p>Solids</p> <p>Anions/Cations</p> <p>Nutrients</p> <p>Oil & Grease (HEM/SGT-HEM)</p> <p>Demand</p> <p>Trace Metals</p> <p>Physical Properties / pH</p> <p>Color</p> <p>Turbidity</p> <p>Corrosivity</p> <p>UV254</p> <p>Conductivity</p> <p>pH</p> <p>Settleable Solids</p>	<p>0.01 µg/L – 10 000 mg/L</p> <p>(10 – 500) PC, (0.5 – 4000) NTU (-4 – +4) SI (0.05 – 0.7) cm⁻¹ (10 – 10,000) umhos/cm (2 – 12) S.U. (2 – 100) ml/L</p>	<p>(0.1 – 16) %</p> <p>(0.2 – 10) %</p>	<p>Titration</p> <p>IC</p> <p>ICP/OES</p> <p>ICP/MS</p> <p>CVAA</p> <p>Spectrophotometry</p> <p>Conductivity</p> <p>Nephelometry</p> <p>Gravimetric</p> <p>Volumetric</p> <p>Ion Selective Electrode</p>
<p>Environmental Reference Materials</p> <p>Waters</p> <p>Potable Water</p> <p>Routine Analytes</p> <p>Trace Elements</p> <p>Reference Materials for Radioactivity</p>	<p>Single and Multi-component radionuclide material in solution:</p> <p>Radiochemistry</p> <p>Gross Alpha/Beta</p> <p>Alpha Emitters</p> <p>Beta Emitters</p> <p>Gamma Emitters</p>	<p>(1 – 50,000) pCi/L</p>	<p>(0.5 – 5) %</p>	<p>Alpha/Beta</p> <p>Liquid-Scintillation</p> <p>Gamma-Spectrometry</p> <p>Alpha-Spectrometry</p> <p>ICP/OES</p> <p>ICP/MS</p>



Certified Reference Material	Class or Type of Reference Materials/Artifact or Matrix	Concentration Range² (after dilution, if applicable)	Relative Uncertainty¹ (Expanded)	Measurement Technique(s)
Environmental Reference Materials	Single and Multi-component organic and inorganic material on soil/sludge/oil and in solution.			Titration IC ICP/OES ICP/MS CVAA Spectrophotometry Colorimetric Conductivity Gravimetric Ion Selective
Soils and Sludges	Inorganic Chemistry Metals Anions Nutrients Cyanide	(0.1 – 500,000) mg/kg	(0.5 – 20) %	Spectrophotometry Colorimetric Conductivity Gravimetric Ion Selective
Trace Elements Mineral Content Trace Organics TCLP Leachate	Physical Properties / pH Corrosivity (pH) Ignitability	(2 – 12) S.U. (100 – 200) °F	(0.2 – 30) %	Electrode Closed-Cup LC/UV LC/FLUOR
Organic Reference Materials	Organic Chemistry Volatile Organic Compounds (VOCs) Nitroaromatics/Nitramines	1.0 µg/kg – 10,000 mg/kg	(0.4 – 30) %	LC/MS LC/MS/MS GC/FID GC/MS GC/ECD GC/NPD
Petroleum Products	Polynuclear Aromatic Hydrocarbons (PAHs) Semi-Volatile Organic Compounds (SVOC) Per-and Polyfluoroalkyl Substances (PFAS) Glycols Organochlorine Pesticides (OCPs) Carbamate Pesticides Organophosphorus Pesticides (OPPs) Chlorinated Acid Herbicides Polychlorinated Biphenyls (PCBs) - Aroclors			
Transformer Oils PCBs	Petroleum Hydrocarbons (TPH/DRO/GRO/VPH/EPH/ORO) Oil & Grease	(0.1 – 10,000) mg/kg	(0.5 – 30) %	
	TCLP Metals Volatiles Organic Compounds (VOCs) Semi-Volatile Organic Compounds (SVOC) Organochlorine Pesticides (OCPs)	(0.01 – 1000) mg/L	(0.5 – 25) %	

Certified Reference Material	Class or Type of Reference Materials/Artifact or Matrix	Concentration Range ² (after dilution, if applicable)	Relative Uncertainty ¹ (Expanded)	Measurement Technique(s)
Environmental Reference Materials Health and Industrial Hygiene Materials on Filter Media Trace Elements in Blank Filters Reference Gases Gas Mixtures Trace Volatile Organic Compounds	Single and Multi-component organic and inorganic material on filter paper, on sorbent substance and in solution: Inorganic Chemistry Metals (Filter) Particulate Matter (Filter) Metals (Impinger) Particulate Matter (Impinger) Hydrogen Halides/Halogens Anions/Cations Ammonia Organic Chemistry Volatile Organic Compounds (Sorbent) Semi-Volatile Organic Compounds (SVOC) Organochlorine Pesticides (OCPs) Polychlorinated Biphenyls (PCBs) - Aroclors Polynuclear Aromatic Hydrocarbons (PAHs) Aldehydes/Ketone	1 µg/Filter – 2000 mg/Filter (10 – 2000) mg/Filter (0.0005 – 2000) µg/ml (50 – 1000) mg/L (0.1 – 2500) mg/L (0.2 – 4000) mg/dscm (0.1 – 500) mg/L 0.01 µg/sample – 5000 µg/sample	(0.2 – 15) % (0.5 – 20) %	Titration IC ICP/OES ICP/MS CVAA Spectrophotometry Colorimetric Conductivity Gravimetric Ion Selective Electrode LC/UV LC/FLUOR LC/MS GC/FID GC/MS GC/ECD
Inorganic Reference Materials Pure Chemicals Primary Standards Working Standards Secondary Standards Chromatography Standards Pharmaceutical Materials Organic Reference Materials Pure Organic Compounds Pharmaceutical Materials Ion Activity pH Standards Ion Selective Electrode Calibrants Conductivity Standards Buffer Systems	Single and Multi-component organic and inorganic material in solution: Metals/Inorganic Chemistry Trace Metals Anions/Cations/Cyanide Ions Nutrients Demand Solids Total Organic Carbon (TOC) Total Inorganic Carbon Total Organic Halides (TOX) Surfactants Phenols Physical Properties / pH Conductivity Turbidity pH Buffers Ultra-Pure Water Analytes Conductivity Total Organic Carbon Total Inorganic Carbon	(0.001 – 20,000) mg/L (5 – 500,000) uS/cm (0.5 – 4000) NTU (2 – 12) S.U. (5 – 500,000) uS/cm (0.05 – 10,000) mg/L (0.05 – 10,000) mg/L	(0.1 – 8) % (0.2 – 5) % (0.1 – 5) %	Titration IC ICP/OES ICP/MS CVAA Spectrophotometry Colorimetric Infrared Conductivity Gravimetric Ion Selective Electrode Nephelometry

Certified Reference Material	Class or Type of Reference Materials/Artifact or Matrix	Concentration Range ² (after dilution, if applicable)	Relative Uncertainty ¹ (Expanded)	Measurement Technique(s)
Environmental Reference Materials	Single and Multi-component organic and inorganic material in solution:			Titration IC ICP/OES ICP/MS CVAA Spectrophotometry Conductivity Nephelometry Gravimetric Ion Selective Electrode LC/UV LC/FLUOR LC/MS LC/MS/MS GC/FID GC/MS GC/ECD GC/NPD
Waters	Miscellaneous Chemistry Cyanide Silica Surfactants Total Organic Halides Acidity Organic Carbon Chlorine Alkalinity Dissolved Oxygen	1.0 µg/L – 10,000 mg/L	(0.4 – 20) %	
Potable Water Routine Analytes Trace Elements Organic Pollutants Other Analytes	Organic Chemistry Volatiles Organic Compounds (VOCs) Semi-Volatiles Organic Compounds (SVOCs) Per-and Polyfluoroalkyl Substances (PFAS) Polynuclear Aromatic Hydrocarbons (PAHs) Phenolics Organochlorine Pesticides (OCPs) Organonitrogen Pesticides (ONPs) Organophosphorus Pesticides (OPPs) Triazine Pesticides Carbamate/Carbamoxyl oxime Pesticides Polychlorinated Biphenyls (PCBs) - Aroclors Chlorinated Acid Herbicides Herbicides Haloacetic Acids Glycols Nitroaromatics/Nitramines Petroleum Hydrocarbons (TPH/DRO/GRO/PVOC/VPH/EPH) Disinfection By-Products Dioxin	10 pg/L – 10,000 mg/L	(0.3 – 35) %	
Industrial Waste Water Routine Analytes Trace Elements Organic Pollutants Other Analytes				

¹ Uncertainties for the certified values are available on the reference material producer's issued certificates for reference materials and certified reference materials. The uncertainty ranges stated above represent typical relative expanded uncertainties, where k approximates a 95% confidence interval for given analytes within their respective product/category or sub-category. As some categories encompass many different products, concentration ranges, matrices, technologies and analyte/properties, please contact ERA/Waters for product/lot specific Certificates of Analysis to obtain actual estimates of uncertainty.

² This scope includes concentration ranges where applicable. Contact the reference material producer for certified values and other lot specific values.



Accredited Reference Material Producer

A2LA has accredited

ERA

Golden, CO

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 3rd day of December 2020.

A blue ink signature of a person, written in a cursive style, positioned above a horizontal line.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1539.03
Valid to December 31, 2022
Revised September 22, 2022

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