

SCOPE OF ACCREDITATION TO ISO/IEC 17034:2016

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REFERENCE MATERIAL PRODUCER

Valid To: November 30, 2024

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

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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, Trace Elements, Organic Pollutants, Other Analytes, Industrial Wastewater, Routine Analytes, Trace Elements, Organic Pollutants, Other Analytes	Single and Multi- component organic and inorganic material in solution: Inorganic Chemistry Minerals Hardness Solids Anions/Cations Nutrients Oil & Grease (HEM/SGT- HEM) Demand Trace Metals	0.01 μg/L – 10 000 mg/L	(0.1 – 16) %	Titration IC ICP/OES ICP/MS CVAA Spectrophotometry Conductivity Nephelometry Gravimetric Volumetric Ion Selective Electrode
	Physical Properties / pH Color Turbidity Corrosivity UV254 Conductivity pH Settleable Solids	(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	(0.2 – 10) %	
Environmental Reference Materials Waters Potable Water Routine Analytes Trace Elements Reference Materials for Radioactivity	Single and Multi- component radionuclide material in solution: Radiochemistry Gross Alpha/Beta Alpha Emitters Beta Emitters Gamma Emitters	(1 – 50,000) pCi/L	(0.5 – 5) %	Alpha/Beta Liquid- Scintillation Gamma- Spectrometry Alpha- Spectrometry ICP/OES ICP/MS

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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 Soils and Sludges Trace Elements, Mineral Content, Trace Organics, TCLP Leachate, Organic Reference Materials Petroleum Products Transformer Oils, PCBs	Single and Multi-component organic and inorganic material on soil/sludge/oil and in solution. Inorganic Chemistry Metals Anions Nutrients Cyanide Physical Properties / pH Corrosivity (pH) Ignitability Organic Chemistry Volatile Organic Compounds (VOCs) Nitroaromatics/Nitramines 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	(0.1 – 500,000) mg/kg (2 – 12) S.U. (100 – 200) °F 1.0 μg/kg – 10,000 mg/kg	(0.5 - 20) % (0.2 - 30) % (0.4 - 30) %	Titration IC ICP/OES ICP/MS CVAA Spectrophotometry Colorimetric Conductivity Gravimetric Ion Selective Electrode Closed-Cup LC/UV LC/FLUOR LC/MS LC/MS GC/FID GC/MS GC/FID GC/NPD
	Petroleum Hydrocarbons (TPH/DRO/GRO/VPH/EPH/ORO) Oil & Grease TCLP Metals Volatiles Organic Compounds (VOCs) Semi-Volatile Organic Compounds (SVOC) Organochlorine Pesticides (OCPs)	(0.1 – 10,000) mg/kg (0.01 – 1000) mg/L	(0.5 – 30) % (0.5 – 25) %	

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Certified Reference Material	Class or Type of Reference Materials/Artifact or	Concentration Range ²	Relative Uncertainty ¹	Measurement Technique(s)
	Matrix	(after dilution, if applicable)	(Expanded)	
Environmental Reference Materials Health and Industrial Hygiene	Single and Multi-component organic and inorganic material on filter paper, on sorbent substance and in solution:			Titration IC ICP/OES ICP/MS CVAA Spectrophotometry
Materials on Filter Media Trace Elements in Blank Filters Reference Gases Gas Mixtures Trace Volatile Organic Compounds	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) %	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	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	(0.001 – 20,000) mg/L (5 – 500.000) uS/cm	(0.1 - 8)% (0.2 - 5)%	Titration IC ICP/OES ICP/MS CVAA Spectrophotometry Colorimetric Infrared Conductivity Gravimetric Ion Selective Electrode Nephelometry
Pharmaceutical Materials	Conductivity Turbidity pH Buffers	(0.5 – 4000) NTU (2 – 12) S.U.	(0.2 5) /0	

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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)
Ion Activity pH Standards Ion Selective Electrode Calibrants Conductivity Standards Buffer Systems	Single and Multi-component organic and inorganic material in solution: Ultra-Pure Water Analytes Conductivity Total Organic Carbon Total Inorganic Carbon	(5 – 500,000) uS/cm (0.05 – 10,000) mg/L (0.05 – 10,000) mg/L	(0.1 – 5) %	Titration IC ICP/OES ICP/MS CVAA Spectrophotometry Colorimetric Infrared Conductivity Gravimetric Ion Selective Electrode Nephelometry
Environmental Reference Materials Waters Potable Water Routine Analytes Trace Elements Organic Pollutants Other Analytes Industrial Waste Water Routine Analytes Trace Elements Organic Pollutants Other Analytes	Single and Multi-component organic and inorganic material in solution: 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) %	Titration IC ICP/OES ICP/MS CVAA Spectrophotometry Conductivity Nephelometry Gravimetric Ion Selective Electrode LC/UV LC/FLUOR LC/MS LC/MS LC/MS GC/FID GC/MS GC/ECD GC/NPD

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Certified Reference	Class or Type of Reference	Concentration	Relative	Measurement
Material	Materials/Artifact or Matrix	Range ²	Uncertainty ¹	Technique(s)
		(after dilution, if applicable)	(Expanded)	
Environmental	Single and Multi-component organic			Titration
Reference Materials	and inorganic material in solution:			IC
				ICP/OES
Waters	Organic Chemistry	10 pg/L –	(0.3 - 35)%	ICP/MS
	Volatiles Organic Compounds	10,000 mg/L		CVAA
Potable Water	(VOCs)			Spectrophotometry
Routine Analytes	Semi-Volatiles Organic Compounds			Conductivity
Trace Elements	(SVOCs)			Nephelometry
Organic Pollutants	Per-and Polyfluoroalkyl Substances			Gravimetric
Other Analytes	(PFAS)			Ion Selective
T 1 . 1 1 TT .	Polynuclear Aromatic Hydrocarbons			Electrode
Industrial Waste	(PAHs)			LC/UV
Water	Phenolics			LC/FLUOR
Koutine Analytes	Organochlorine Pesticides (OCPs)			
I race Elements	Organonitrogen Pesticides (ONPS)			
Organic Pollutants	Organophosphorus Pesticides			GC/FID CC/MS
Other Analytes	(OFFS) Triazina Dostiaidas			CC/ECD
	Carbamate/Carbamayulayima			GC/NPD
	Pesticides			UC/INFD
	Polychlorinated Binhenyls (PCBs) -			
	Aroclors			
	Chlorinated Acid Herbicides			
	Herbicides			
	Haloacetic Acids			
	Glycols			
	Nitroaromatics/Nitramines			
	Petroleum Hydrocarbons			
	(TPH/DRO/GRO/PVOC/VPH/EPH)			
	Disinfection By-Products			
	Dioxin			

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.

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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 30th day of January 2023.

Mr. Trace McInturff, Vice President, Accreditation Services For the Accreditation Council Certificate Number 1539.03 Valid to November 30, 2024 Revised September 20, 2024

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