



SCOPE OF ACCREDITATION TO ISO 17034:2016

LECO TECHNICAL SERVICES LABORATORY
1500 Hilltop Rd
St. Joseph, MI 49085
Mason Marsh Phone: 269 982 2277

REFERENCE MATERIAL PRODUCER

Valid To: May 31, 2028

Certificate Number: 3285.02

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 types:

Certified Reference Material/Artifact or Matrix^{1,2}	Property Value(s)/Property Identity/Range	Approach Used to Assign Property Values
Ferrous Metals – (Solids, Chips, Powders) Steels – Carbon Steels Low Alloy Steels High Alloy Steels Cast Steels Specialty Steels Irons – White Irons Cast Irons Ductile Irons Gray Iron Nodular Iron	Elemental Composition for: Carbon Range: (0.0002 to 7.00) % Uncertainty: (0.0001 to 0.1) % Sulfur Range: (0.0001 to 0.5) % Uncertainty: (0.0001 to 0.1) % Oxygen Range: (0.0002 to 30) % Uncertainty: (0.0001 to 0.6) % Nitrogen Range: (0.0002 to 1.2) % Uncertainty: (0.0001 to 0.1) % Hydrogen Range: (0.000 03 to 0.0020) % Uncertainty: (0.000 005 to 0.001) %	Combustion or inert gas fusion using various peer reviewed accepted methods

Certified Reference Material/Artifact or Matrix^{1,2}	Property Value(s)/Property Identity/Range	Approach Used to Assign Property Values
<p>Nonferrous Metals</p> <p>Solids, Chips, Powders – Aluminum Alloys Copper Base Alloys Cobalt Base Alloys Nickel Base Alloys Titanium Base Alloys Zirconium Base Alloys Carbide Alloys Gold</p>	<p>Elemental Composition for:</p> <p>Carbon Range: (0.0002 to 7.00) % Uncertainty: (0.0001 to 0.1) %</p> <p>Sulfur Range: (0.0002 to 0.002) % Uncertainty: (0.00005 to 0.001) %</p> <p>Oxygen Range: (0.0002 to 54) % Uncertainty: (0.0001 to 1) %</p> <p>Nitrogen Range: (0.0002 to 0.05) % Uncertainty: (0.0001 to 0.01) %</p> <p>Hydrogen Range: (0.0002 to 0.04) % Uncertainty: (0.0001 to 0.01) %</p> <p>Melting Point: Range: (1000 to 1500) °C Uncertainty: (3 to 10) °C</p>	<p>Combustion, inert gas fusion or ash fusion using various peer reviewed accepted methods</p>
<p>Inorganic Reference Materials – Ores and Minerals</p>	<p>Elemental Composition for:</p> <p>Carbon Range: (0.1 to 50) % Uncertainty: (0.01 to 1) %</p> <p>Sulfur Range: (0.1 to 50) % Uncertainty: (0.01 to 1) %</p>	<p>Combustion or inert gas fusion using various peer reviewed accepted methods</p>
<p>Solid Fuels – Coal and Coke</p>	<p>Elemental Composition for:</p> <p>Carbon Range: (60 to 100) % Uncertainty: (0.001 to 3) %</p> <p>Sulfur Range: (0.1 to 7) % Uncertainty: (0.01 to 0.2) %</p> <p>Nitrogen Range: (0.5 to 3) % Uncertainty: (0.01 to 0.3) %</p>	<p>Combustion, isoperibol bomb calorimetry and thermogravimetric analysis using various peer reviewed accepted methods</p>

Certified Reference Material/Artifact or Matrix^{1,2}	Property Value(s)/Property Identity/Range	Approach Used to Assign Property Values
Solid Fuels – Coal and Coke (cont)	Elemental Composition for: Hydrogen Range: (0.1 to 6) % Uncertainty: (0.05 to 0.5) % Ash Range: (0.1 to 15) % Uncertainty: (0.05 to 0.3) % Volatile Matter Range: (0.5 to 50) % Uncertainty: (0.01 to 5) %	Combustion, isoperibol bomb calorimetry and thermogravimetric analysis using various peer reviewed accepted methods
Organic Reference Materials – Pure Organic Compounds Compounds for Elemental Analysis	Elemental Composition for: Carbon Range: (0.01 to 100) % Uncertainty: (0.005 to 0.5) % Sulfur Range: (0.01 to 35) % Uncertainty: (0.01 to 0.5) % Oxygen Range: (5 to 50) % Uncertainty: (0.01 to 0.5) % Nitrogen Range: (4 to 30) % Uncertainty: (0.02 to 0.3) % Hydrogen Range: (2 to 13) % Uncertainty: (0.01 to 0.2) % Gross Calorific Value Range: (11 000 to 12 000) BTU/lb Uncertainty: (6 to 20) BTU/lb LOI Range: (10 to 32) % Uncertainty: (0.01 to 0.2) %	Combustion, isoperibol bomb calorimetry and thermogravimetric analysis using various peer reviewed accepted methods
Petroleum Products – Fuels and Lubricants	Elemental Composition for: Carbon Range: (80 to 90) % Uncertainty: (0.1 to 1) %	Combustion and isoperibol bomb calorimetry using various peer reviewed accepted methods

Certified Reference Material/Artifact or Matrix^{1,2}	Property Value(s)/Property Identity/Range	Approach Used to Assign Property Values
Petroleum Products – Fuels and Lubricants (cont)	Elemental Composition for: Sulfur Range: (0.01 to 6) % Uncertainty: (0.001 to 0.5) % Nitrogen Range: (0.01 to 0.5) % Uncertainty: (0.005 to 0.1) % Hydrogen Range: (11 to 14) % Uncertainty: (0.05 to 0.3) % Gross Calorific Value Range: (18 000 to 20 000) BTU/lb Uncertainty: (5 to 200) BTU/lb	Combustion and isoperibol bomb calorimetry using various peer reviewed accepted methods
Environmental Reference Materials – Soils	Elemental Composition for: Carbon Range: (0.5 to 40) % Uncertainty: (0.02 to 0.5) % Sulfur Range: (0.01 to 0.5) % Uncertainty: (0.001 to 0.5) % Nitrogen Range: (0.1 to 5) % Uncertainty: (0.01 to 0.1) %	Combustion using various peer reviewed accepted methods
Environmental Reference Materials – Ashes Fly Ash from Coal and Coke, Incinerator Ash	Elemental Composition for: Carbon Range: (0.5 to 45) % Uncertainty: (0.05 to 0.6) % Sulfur Range: (0.1 to 2) % Uncertainty: (0.005 to 0.03) % LOI Range: (1 to 32) % Uncertainty: (0.01 to 0.2) %	Combustion, thermogravimetric analysis and ash fusion using various peer reviewed accepted methods

Certified Reference Material/Artifact or Matrix^{1,2}	Property Value(s)/Property Identity/Range	Approach Used to Assign Property Values
Environmental Reference Materials – (cont) Ashes Fly Ash from Coal and Coke, Incinerator Ash	Fusibility Temperature Range: (900 to 1500) °C Uncertainty: (30 to 90) °C	Combustion, thermogravimetric analysis and ash fusion using various peer reviewed accepted methods
Environmental Reference Materials – Plant Material	Elemental Composition for: Carbon Range: (40 to 60) % Uncertainty: (0.02 to 0.5) % Sulfur Range: (0.05 to 2.0) % Uncertainty: (0.005 to 0.05) % Nitrogen Range: (1 to 10) % Uncertainty: (0.02 to 0.07) % Hydrogen Range: (3 to 7) % Uncertainty: (0.05 to 0.2) %	Combustion using various peer reviewed accepted methods

¹ Uncertainties for the certified values are available on the reference material producer's issued certificates for certified reference materials.

² This reference material producer is approved to produce Certified Reference Materials (CRM) and Reference Materials (RM) for all items listed on the scope of accreditation. Availability of either a CRM or RM may vary due to production and a customer should ensure they order the product that they require.



Accredited Reference Material Producer

A2LA has accredited

LECO TECHNICAL SERVICES LABORATORY

St. Joseph, MI

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 June 2026.

A blue ink signature of Mr. Trace McInturff, written over a horizontal line.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3285.02
Valid to May 31, 2028

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