SCOPE OF ACCREDITATI
ON TO ISO/IEC 17025:2005

HOWMET RESEARCH CENTER
1500 S. Warner St.
Whitehall, MI 49461-1895
Thomas S. Jones Phone: 231 981 3851

CHEMICAL

Valid To: June 30, 2013 Certificate Number: 2208.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on carbon, clay, ceramics and related products, coatings, contaminants, Ti, Ni, Co, Al, LAS, Stainless, metals and alloys, ores and minerals, surface coatings, petroleum products, plastics and polymers, sand (foundry, glass, and agents), and trace element analysis in dyes and inks, lubricants, rubbers, plastics and related materials:

Test	Test Methods
Physical Testing – Particle Size	
Sieve Analysis of Metal Powders	ASTM B214
Physical Testing – Density	
Density of Metal Powders and Compounds (Scott Volumeter Density)	ASTM B329
Porosity, Liquid Absorption, Specific Gravity, and Bulk Density	ASTM C830
Physical Testing – Wax/Resin Properties	
Drop Melting Point	ASTM D127
Ash	ASTM D482
Softening Point (Ring and Ball)	ASTM E28
Chemical Analysis – Wet Chemistry	
Kinematic Viscosity	ASTM D445
Chemical Analysis – Spectrometric	
Spark-AES[1]	ASTM, E415, E1086, E1251; MCL III-016
X-Ray Fluorescence (XRF)[1]	ASTM E322, E539, E1085
Inductively Coupled Plasma (ICP)[1]	ASTM E1479, E2371; MCL III-027, 180, 185

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Test	Test Methods
Chemical Analysis – Spectrometric (cont)	
Graphite Furnace Atomic Absorption (GFAA)[1]	ASTM E1184
Flame Atomic Absorption[1]	MCL III-026
Carbon and Sulfur (Leco)[1]	ASTM E1019
Oxygen and Nitrogen (Leco)[1]	ASTM E1019, E1409
Hydrogen (Leco)[1]	ASTM E1447
Inductively Coupled Plasma Mass Spectrometer (ICP-MS)[1]	MCL III-182
Electron Micro-Probe (EMP)	MCL-III-504, 506

[1] This accreditation also includes an evaluation of the GE S-400 requirements for the test listed above using the GE AC1.1 checklist.

The American Association for Laboratory Accreditation

World Class Accreditation

Accredited Laboratory

A2LA has accredited

HOWMET RESEARCH CENTER

Whitehall, MI

for technical competence in the field of

Chemical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 12th day of April 2011.

President & CEO
For the Accreditation Council
Certificate Number 2208.02
Valid to June 30, 2013
Revised: March 29, 2013

For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Mechanical Scope of Accreditation.