SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

METALLURGICAL SOLUTIONS, INC.
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MECHANICAL

Valid To: February 28, 2025 Certificate Number 2037.01

In recognition of the successful completion of the A2LA evaluation process (including compliance to R223 – Specific Requirements – GE Aviation S-400 Accreditation Program), accreditation is granted to this laboratory to perform the following types of tests on automotive components, metals, alloys, and coatings:

Test	**Test Method(s)**
Hardness:	
Rockwell (HRB, HRC, HR15T, HR30T, & HR30N)	ASTM E18, F606/F606M
Brinell Hardness (10/500 Kgf and 10/3000 Kgf)	ASTM E10
Microindentation Hardness Vickers (50, 300, 500, and 1000 gf) Knoop (50, 300, 500, and 1000 gf)	ASTM E384, E92
Charpy Impact (Up to 240 ft·lbs/325 J/ (-50 to 95) °F)	ASTM E23
Tensile	ASTM A370, E8/8M, B557
r-Value	ASTM E517
n-Value	ASTM E646
Fastener Tensile (Axial – Load to 60,000 lbs)	ASTM F606/F606M
Bond Strength of Thermal Spray Coatings	ASTM C633
Bend Test	ASTM E190, E290
Coating Mass	ASTM A90
Salt Fog	ASTM B117
Case Depth	SAE J423
Microstructure	ASM Metals Handbook Vol. 9

Test	Test Method(s)
Metallographic Evaluation:	
Alpha Case	MSI PWI #38
Carbide Content	ASTM A892
Preparation	ASTM E3
Plating Thickness	ASTM B487
Inclusion Content	ASTM E45 (Method A)
Susceptibility to IGA of Austenitic Stainless Steel	ASTM A262 (Method A)
Intergranular Attack/Oxidation	MSI PWI #35
Depth of Decarburization	ASTM E1077
Grain Size	ASTM E112
Microetch / Macroetch	ASTM E340, E407
Replication[1]	ASTM E1351
SEM Performance	ASTM E986
Chemical Analysis	
Glow Discharge Optical Emission Spectroscopy Low Alloy Steel (Al, C, Cr, Cu, Mn, Mo, Nb, Ni, P, S, Si, Ti, V) Cast Iron (C, Cr, Cu, Mn, Mo, Ni, P, S, Si, Ti, V) High Alloy Steel (C, Co, Cr, Cu, Mn, Mo, Nb, Ni, P, S, Ti, W, V) Aluminum (Cr, Cu, Fe, Mn, Ni, Si, Ti, V, Zn, Mg) Titanium (Al, Cr, Fe, Mo, V)	ASTM A751, E415, E1086, E1999, E1251, E2994
Wavelength Dispersive X-ray Fluorescence Spectroscopy Low Alloy Steel (Al, Cr, Cu, Mn, Mo, Nb, Ni, P, S, Si, Ti, V) High Alloy Steel (Al, Cr, Cu, Mn, Mo, Nb, Ni, P, S, Si, Ti, V, W) Nickel (Al, Co, Cr, Cu, Fe, Mn, Mo, Nb, Ti, P) Titanium (Al, Cr, Fe, Mn, Mo, Nb, Sn, V, Zr)	ASTM E1085, E572, E2465, E539
Combustion Analysis (C, H, N, O, S)	ASTM E1019, E1941, E1409, E1447
Weld Examination (Operator & Procedure Qualification)	ASME IX; AWS D1.1/D1.1M; AWS D1.2/D1.2M, AWS D1.6/D1.6M, AWS D1.9/D1.9M, AWS D17.1/D17.1M
Failure Analysis	ASME IX; AWS D1.1/D1.1M, AWS D1.2/D1.2M, AWS D1.6/D1.6M, AWS D1.9/D1.9M, AWS D17.1/D17.1M; ASM Metals Handbook Vol. 11; ASTM E620, E678, E860, E2332

[1]This laboratory performs field testing activities for these tests.

Accredited Laboratory

A2LA has accredited

METALLURGICAL SOLUTIONS INC.

Dayton, OH

for technical competence in the field of

Mechanical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets R223 – Specific Requirements – GE Aviation S-400 Accreditation Program. 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 April 2017*).

Presented this 3rd day of January 2023.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2037.01
Valid to February 28, 2025

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