



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ELEMENT MATERIALS TECHNOLOGY CHICAGO

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MECHANICAL

Valid to: June 30, 2028

Certificate Number: 0104.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform failure analysis and the following tests on the following products: forgings; castings; powder metal; threaded fasteners; sheets; weldments of materials including aluminum and aluminum alloys, copper and copper alloys; carbon steel; low alloy steel; silicon electric steel; stainless steel; cemented carbides; ingot iron; wrought iron; cast iron; titanium; lead and tin solders; magnesium; tool steels; zinc base for the automotive, railroad, aerospace, nuclear, medical, agricultural, electronic, power generation, tool and die, consumer and construction industries.

**Test**

**Test Method(s)**

**Metals**

|                                                                                                      |                                                                                             |
|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Adhesion                                                                                             | ASTM A123/A123M, B571 (Methods 5, 11, 13), D3359                                            |
| Bend Test                                                                                            | ASME (Section IX); ASTM A370, E190, E290;<br>BS EN 910:2000; BS EN ISO 5173                 |
| Coating Thickness                                                                                    | ASTM B748                                                                                   |
| Corrosion Tests                                                                                      |                                                                                             |
| Salt Spray                                                                                           | ASTM B117, B537; NASM 1312-1                                                                |
| Humidity                                                                                             | ASTM D1735, D2247; NASM 1312-3                                                              |
| Intergranular Corrosion                                                                              | ASTM A262, A763, G28, G46, G48                                                              |
| Eddy Current Conductivity Measurement                                                                | ASTM E1004                                                                                  |
| Fastener Proof Load<br>(400,000 lbs Max Capacity) (Internal and<br>External Threads and Cone Method) | ASTM A370, F606/F606M; SAE J1216                                                            |
| Fastener Axial Tensile & Wedge Tensile                                                               | ASTM F606/F606M                                                                             |
| Fillet Fracture Test                                                                                 | AWS B2.1/B2.1M, D1.1/D1.1M, D1.3/D1.3M,<br>D14.1/14.1M; ASME (Section IX); MIL-STD1595:1998 |
| Gas Pycnometry                                                                                       | ASTM B923                                                                                   |

**Test****Test Method(s)****Metals (continued)**

|                                                                                                       |                                                       |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Hardenability                                                                                         | ASTM A255                                             |
| Hardness                                                                                              |                                                       |
| Rockwell (A, B, C, E, F, 15N, 30N, 45N, 15T, 30T, 45T)                                                | ASTM A370, A623, B294, E18, F606/606M; NASM 1312-6    |
| Brinell (500 and 3000) kgf                                                                            | ASTM A370, E10                                        |
| Microhardness – Knoop and Vickers (25 to 1000) gf                                                     | ASTM E384; NASM 1312-6                                |
| Macrohardness – Vickers (5 and 10) kgf                                                                | ASTM E92                                              |
| Heat Treat (Raw Material)                                                                             | AMS 2750 <sup>1</sup>                                 |
| Impact Testing (Charpy and Izod) (-320 to 450) °F                                                     | ASTM A370, E23; BS EN ISO 148-1; BS EN 10045-1 :2001  |
| Metallographic Evaluation                                                                             |                                                       |
| Alpha Case                                                                                            | ASTM F136; SOP 02-11-S007                             |
| Case Depth                                                                                            | ASTM F2328; SAE J423                                  |
| Delta Ferrite Determination                                                                           | AMS 2315                                              |
| Depth of Decarburization                                                                              | ASTM E1077, F2328; SAE J121:2013, J419                |
| Discontinuities (Surface)                                                                             | ASTM F788, F812; ISO 6157; SAE J122, J123:2012, J1061 |
| Grain Size                                                                                            | ASTM E112, E930, E1181                                |
| Inclusions in Steel                                                                                   | ASTM E45 (Methods A&D), E1245; SAE J422               |
| Macroetch                                                                                             | ASTM A561, A604/A604M, E381, E340; ASME (Section IX)  |
| Microetch                                                                                             | ASTM E407                                             |
| Microstructure Evaluation                                                                             | ASTM A247, A892, E1268; ASM Metals HBK, Vol. 9        |
| Plating Thickness                                                                                     | ASTM B487                                             |
| Preparation                                                                                           | ASTM E3                                               |
| Volume Fraction by Point Count                                                                        | ASTM E562, A800/A800M                                 |
| Passivation Testing                                                                                   | ASTM A380/A380M, A967/A967M, F1089                    |
| Peel                                                                                                  | ASME (Section IX)                                     |
| Powder Characterization                                                                               |                                                       |
| Apparent Density (Carney)                                                                             | ASTM B417                                             |
| Apparent Density (Hall)                                                                               | ASTM B212                                             |
| Apparent Density (Scott)                                                                              | ASTM B329                                             |
| Carney Flow Rate                                                                                      | ASTM B964                                             |
| Flow Rate (Hall)                                                                                      | ASTM B213                                             |
| Metal Powder Sampling                                                                                 | ASTM B215                                             |
| Particle Size Distribution of Metal Powders and Related Compounds by Light Scattering (0.4 to 2000µm) | ASTM B822                                             |
| Particle Size Distribution of Metal Powders and Related Compounds by Light Scattering (0.4 to 2000µm) | ASTM B822                                             |
| Particle Size Distribution by Sieve                                                                   | ASTM B214                                             |
| Tap Density                                                                                           | ASTM B527                                             |
| Volume of Apparent Density                                                                            | ASTM B873                                             |



**Test****Test Method(s)****Metals (continued)**

|                                                                                    |                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SEM/EDS                                                                            | ASTM B748, E1508                                                                                                                                                                                                                                                              |
| Shear - Single                                                                     | ASTM F606/F606M                                                                                                                                                                                                                                                               |
| Shear – Double                                                                     | ASTM B769; NASM 1312-13                                                                                                                                                                                                                                                       |
| Stress Rupture                                                                     | ASTM E139, E292                                                                                                                                                                                                                                                               |
| Surface Roughness                                                                  | ASME B46.1                                                                                                                                                                                                                                                                    |
| Tension                                                                            | ASTM A48/A48M, A370, B557, E8, F606/606M;<br>BS EN 10002-1:2000; BS EN ISO 6892-1;<br>NASM 1312-8                                                                                                                                                                             |
| n-Value (Strain Hardening Exponent)                                                | ASTM E646                                                                                                                                                                                                                                                                     |
| R-Value (Plastic Strain Ratio)                                                     | ASTM E517                                                                                                                                                                                                                                                                     |
| Tension – Elevated Temperature                                                     | ASTM E21; BS EN 10002-5 :2000;<br>BS EN ISO 6892-2; NASM 1312-18                                                                                                                                                                                                              |
| Fracture Toughness (K, J and CTOD)                                                 | ASTM E399, E1290; BS 7448-1:1999,<br>7448-2 (2010), 7448-4                                                                                                                                                                                                                    |
| Torque                                                                             | ASME B18.16.6; IFI 100/107, 125; SAE J174                                                                                                                                                                                                                                     |
| Weld Procedure and Welder Qualification<br>(Visual, Mechanical and Metallographic) | ASME (Section IX); AWS B2.1, D1.1/D1.1M,<br>D1.2/D1.2M, D1.3/D1.3M, D1.5/D1.5M, D14.1/D14.1M,<br>D15.1/D15.1M, D17.1/D17.1M, D17.2/D17.2M;<br>AMS W6858, 1595(2002);<br>API 1104, 5L; BS EN 1321(2013), 288-3(2004);<br>BS EN ISO 5817, 15614-1, 15620;<br>MIL-STD-1595(1998) |
| Failure Analysis                                                                   | Using ASM Handbook Vol 11 and the methods listed on<br>scopes.                                                                                                                                                                                                                |

<sup>1</sup> Please note that this is not a test method but rather a heat treatment specification covering the pyrometric requirements for sample and specimen preparation.



## Accredited Laboratory

A2LA has accredited

**ELEMENT MATERIALS TECHNOLOGY CHICAGO**

*Glendale Heights, IL*

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 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 9<sup>th</sup> 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 0104.02  
Valid to June 30, 2028

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