Accredited Laboratory

A2LA has accredited

ELEMENT HUNTINGTON BEACH

Huntington Beach, CA

for technical competence in the field of

Chemical 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 26th day of June 2026.

Mr. Trace McInturff, Vice President Accreditation Services
For the Accreditation Council
Certificate Number 93.01
Valid to May 31, 2028

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

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SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ELEMENT HUNTINGTON BEACH
15062 Bolsa Chica Street
Huntington Beach, CA 92649
Jennifer Kent Phone: 714 892 1961

CHEMICAL

Valid To: May 31, 2028 Certificate Number: 0093.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following metals tests:

Test(s):	**Test Method(s):**
Combustion (LECO) Analysis for Carbon & Sulfur	ASTM E1019, ASTM E1941; SOP 7.00[1]
Fusion Analysis (LECO) for Oxygen, Nitrogen, and Hydrogen	ASTM E1019, ASTM E1409, ASTM E1447, ASTM E2575, ASTM E2792; SOP 14.00[1]
Optical Emission Spectrochemical (OES) Analysis (Al, B, Be, Bi, C, Cd, Co, Cr, Cu, Mn, Mo, N, Nb, Nd, Ni, P, Pb, S, Se, Si, Sr, Ta, Ti, V, W, Zn, Zr)	ASTM E415, ASTM E1086, ASTM E1251, ASTM E2994, ASTM E3047; SOP 2.02[1]
Portable X-ray Dispersive Analysis (PMI) Semi-Quantitative Analysis	SOP 6.01[1]
Atomic Absorption (AA) for Trace Elements (Ag, As, Bi, Cd, In, Pb, Sb, Se, Sn, Te, Tl in Ni base alloys)	ASTM E1184, ASTM E1834, ASTM E1852; SOP 10.10[1]
Inductive Coupled Plasma (ICP) (Ag, Al, As, Au, B, Ba, Be, Bi, Ca, Cd, Cp, Ce, Co, Cr, Cu, Dy, Er, Eu, Fe, Ga, Gd, Ge, Hf, Hg, In, Ir, K, La, Li, Mg, Mn, Mo, Na, Nb, Nd, Ni, Os, P, Pb, Pd, Pr, Pt, Re, Rh, Ru, Sb, Sc, Se, Si, Sm, Sn, Sr, Ta, Tb, Te, Th, Ti, Tl, U, V, W, Y, Yb, Zn, Zr)	ASTM E1479, ASTM E2371, ASTM E2594, ASTM E3061; SOP 17.00[1]
Coefficient of Thermal Expansion / Dilatometry (DIL)	ASTM E228; SOP 19.01[1]
Thermal Diffusivity – Flash Method (LFA)	ASTM E1461; SOP 19.02[1]
Specific Heat Capacity by DSC	ASTM E1269; SOP 19.04[1]

[1] Laboratory developed method.

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5202 Presidents Court, Suite 220 | Frederick, MD 21703-8515 | Phone: 301 644 3248 | Fax: 240 454 9449 | www.A2LA.org

Accredited Laboratory

A2LA has accredited

ELEMENT HUNTINGTON BEACH

Huntington Beach, CA

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*).

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Presented this 26th day of June 2026.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 93.02
Valid to May 31, 2028

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

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ELEMENT HUNTINGTON BEACH
15062 Bolsa Chica Street
Huntington Beach, CA 92649
Jennifer Kent Phone: 714 892 1961

MECHANICAL

Valid To: May 31, 2028 Certificate Number: 0093.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory at the location listed above, as well as the satellite location listed below, to perform the following metals tests:

Test(s):	**Test Method(s):**
Additive Manufacturing Testing	
Apparent Density	ASTM B212, ASTM B329
Flow Rate	ASTM B213
Gas Pycnometry	ASTM B923
Particle Size Distribution – Sieve Analysis	ASTM B214
Particle Size Distribution – Light Scattering	ASTM B822; ISO 13320
Tap Density	ASTM B527
Mechanical Testing (Static)[1]	
Bend Test	ASTM E290
Charpy V-Notch Impact	ASTM A370, ASTM E23; EN 10045-1; ISO 148-1
Compression Strength	ASTM E9
Electrical Conductivity	ASTM E1004; MIL-STD-1537
Elevated Temperature Tensile	ASTM E21; EN 2002-2
Izod Pendulum Impact Resistance	ASTM A370, ASTM E23
Magnetic Permeability Using a Low-Permeability Indicator	ASTM A342/A342M; MIL-I-17214
Modulus (Young's, Tangent, Chord)	ASTM E111
Poisson's Ratio	ASTM E132
Pin-Type Bearing	ASTM E238
Shear Testing of Metals	ASTM B769, ASTM B831
Stress Rupture of Metals and Creep Rupture	ASTM E139, ASTM E292; EN 2002-005

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Test(s):	Test Method(s):
Tension	ASTM A370, ASTM B557, ASTM B557M, ASTM E8; EN 2002-1; ISO 6892-1
Cryogenic Tensile	SOP 94.00[2]; ISO 6892-3
Mechanical Testing (Dynamic)[1]	
Crack Propagation / Crack Growth	ASTM E647; SOP 92.00[2]
Conducting Force-Controlled Constant- Amplitude Axial Fatigue Tests of Metallic Materials	ASTM E466; EN 6072; SOP 93.00[2]
Linear-Elastic Plane-Strain Fracture Toughness K1C of Metallic Materials	ASTM B909, ASTM E399; SOP 90.00[2]
Residual Life Testing	GE C50TF57, GE C50TF12
Strain-Controlled Fatigue Testing	ASTM E606/E606M; SOP 90.02[2]
Metallurgical Testing[1]	
Alloy Depletion	SOP 60.160[2]
Alpha Case	GE P3TF19, GE P3TF32; SOP 60.150[2]
Casting Mold Reaction Layers	SOP 60.60[2]
Decarburization and Case Depth	ARP 1820; ASTM B487, ASTM E1077, ASTM F835, ASTM F2328, ASTM G79; ISO 898-1, ISO 898-5, ISO 4507; SAE J78, SAE J121, SAE J419, SAE J423
Delta Ferrite	AMS 2315
Density of Powder Metallurgy	ASTM B311
Grain Size	ASTM E112, ASTM E930, ASTM E1181; ISO 643; GE E50TF133
Inclusion Content of Steel	ASTM E45, Parts A & D
Intergranular Attack/Oxidation (IGA/IGO)	SOP 60.80[2]
Macroscopic Examination by Etching	AMS 2380, ASTM A604, ASTM E340, ASTM E381; SAE J123, SAE J1061
Microscopic Examination by Etching	AMS 2643; ASTM E407
Microstructure	ISO 20160; SOP 60.00[2]
Nitriding	SOP 60.70[2]
Oxidation / Corrosion	SOP 60.50[2]
Porosity	ASTM E1245
Scanning Electron Microscope (SEM)	SOP 68.00[2], SOP 68.10[2]
Hardness Testing[1]	
Brinell Hardness (500 Kg & 3000 Kg)	ASTM A370, ASTM E10; ISO 6506-1
Jominy	ASTM A255
Microhardness (10-1000gm HV, 10-1000gm Knoop)	ASTM E384

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Test(s):	**Test Method(s):**
Rockwell (A, B, C, E, F, 15N, 30N, 45N, 15T, 30T, 45T)	ASTM A370, ASTM E18, ASTM E140, ASTM F606/F606M; ISO 898-1, ISO 3738-1, ISO 6508-1; MIL-STD-1312-6; NASM 1312-6; SAE J1199
Vickers (1 to 10) kg	ASTM E92; ISO 6507-1
Corrosion Testing	
Alternate Immersion Stress Corrosion	ASTM G38, ASTM G44, ASTM G47, ASTM G49
Copper Sulfate	ASTM A380; MIL-STD-753 (Method 102)
Exfoliation Corrosion	ASTM G34
Humidity Testing	AMS-QQ-P-35; AMS2700
Intergranular Corrosion Susceptibility	ASTM A262 (Practices A and E), ASTM G110
Salt Spray (Fog)	ASTM B117; ISO 9227; MIL-STD-810
Fastener Testing	
Axial Tensile Strength	ASTM A370, ASTM E8/E8M, ASTM F606/F606M; ISO 898-1, ISO 6892-1; MIL-STD-1312-8; NASM 1312-8
Coating Thickness of Fasteners – Microscopial Method	MIL-STD-1312-12; NASM 1312-12
Cone Proof of Internally Threaded Fasteners	ASTM A962/A962M, ASTM F606/F606M, ASTM F812/F812M; IFI 533; SAE J122
Double Shear	ASME 18.8.2, ASTM B565; MIL-STD-1312-13; NASM 1312-13
Drive	ASME B18.6.3; SAE J81, SAE J933
Elevated Temperature Tensile	MIL-STD-1312-18; NAS3350; NASM 1312-18, NASM 25027
Free Height/Compression/Flattening	FF-W-100; ASME B18.21.1
Hardness – Rockwell (A, B, C, E, F, 15N, 30N, 45N, 15T, 30T, 45T)	ASTM A370, ASTM E18, ASTM F606/F606M; ISO 898-1, ISO 3738-1; MIL-STD-1312-6; NASM 1312-6; SAE J1199
High Cycle Fatigue (HCF)	MIL-STD-1312-11; NAM 1312-111; NASM 1312-11
Humidity Testing	MIL-STD-1312-3; NASM 1312-3
Hydrogen Embrittlement (Stress Durability)	AMS-QQ-P-416; ASTM F519, ASTM F606/F606M; SAE J81; MIL-STD-1312-5; NASM 1312-5, NASM 1312-14
Microhardness (10-1000 HV, 10-1000 Knoop)	ASTM E384; MIL-STD-1312-6; NASM 1312-6
Proof Load of Full-Size Externally Threaded Fasteners	ASTM A370, ASTM F606/F606M; ISO 898-1; MIL-STD-1312-8; NASM 1312-8

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Test(s):	**Test Method(s):**
Proof Load of Internally Threaded Fasteners	ASTM A370, ASTM F606/F606M; ISO 898-2, ISO 898-6; SAE J995
Recess Strength Test in Both Installation and Removal Directions	MIL-STD-1312-25; NASM 1312-25
Reusability Test of Self-Locking Internally Threaded Fasteners	AS7251, AS7252, AS7253; NAS 3350; NASM 25027
Salt Spray (Fog)	MIL-STD-1312-1; NASM 1312-1
Single Shear	ASTM F606/F606M; MIL-STD-1312-20; NASM 1312-20
Stress Rupture of Fasteners	MIL-STD-1312-10; NASM 1312-10
Surface Discontinuities of Externally Threaded Fasteners	ASTM A490, ASTM F788/F788M; ISO 6157-1, ISO 6157-3; SAE J123, SAE J1061
Surface Discontinuities of Internally Threaded Fasteners	ASTM F812/F812M; SAE J122
Torque	MIL-DTL-18240
Torsional Strength Test of Thread Rolling and Self Drilling Tapping Screws	ASME B18.6.3; SAE J78, SAE J81, SAE J933
Total Extension at Fracture of Externally Threaded Fasteners	ASTM F606/F606M; ISO 3506; JIS B1054
Twist Test of Lock Washers	ASME B18.21.1; FF-W-84
Wedge Tensile Strength of Full-Size Threaded Fasteners	ASTM A370, ASTM F606/F606M; ISO 898-1, ISO 6892-1; MIL-STD-1312-8, MIL-STD-1312-18; NASM 1312-8, NASM 1312-18; SAE J82, SAE J429
Wrench Torque Test of Externally Wrenched Nuts of Spline, Hexagon and Double Hexagon Wrenching Configuration	NASM 25027
Yield Strength of Full-Size Threaded Fasteners	ASTM A370, ASTM F606/F606M; MIL-STD-1312-8; NASM 1312-8
Coating Testing	
Abrasion Resistance	ASTM D4060
Adhesion	ASTM B571 *(excluding Draw, File, Impact, Peel, and Push methods);* ASTM D3359; FED-STD-141; MIL-C-83488; SAE J207
Coating Thickness – Microscopic Method	ASTM B487
Coating Weight	MIL-A-8625
Porosity	AMS 2460
Specimen Preparation[1]	
Heat Treat	SOP 63.00[2]
Low Stress Grinding and Polishing[2]	GE P1TF79

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Test(s):	Test Method(s):
Weld & Braze Testing, Procedure Qualification and Performance Qualification	
Bend[1]	API 1104; ASTM A488, ASTM E190; AWS B2.1, AWS B4.0, AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.5, AWS D1.6, AWS D1.9, AWS D14.1, AWS D15.1, AWS D17.1, AWS D18.1; ASME BPVC SEC IX, CGA C-3; ISO 5173; NAVSEA S9074-AQ-GIB-010/248
Hardness	API 5L, API 5CT, API 650; ASME BPVC SEC IX; AWS D15.2; ISO 1514, ISO 9015, ISO 15156; NAVSEA S9074-AQ-GIB-010/248
Tension Test	AMS 2680, AMS 2694; API 1104, API 5L, API 5CT, API 650; ASME BPVC SEC IX, ASTM A488; AWS B2.1, AWS B2.2, AWS B4.0, AWS D1.1, AWS D1.2, AWS D1.4, AWS D1.5, AWS D1.6, AWS D1.9, AWS D14.1, AWS D15.1, AWS D17.1, AWS D18.1; CGA C-3; ISO 4136, ISO 15614; NAVSEA S9074-AW-GIB-010/248
Weld Macro	API 1104, API 5L, API 650; ASME BPVC SEC IX; ASTM A488, ASTM E190; AWS B2.1, AWS B4.0, AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.5, AWS D1.6, AWS D1.9, AWS D14.1, AWS D15.1, AWS D15.2, AWS D17.1, AWS D18.1; GCA C-3; ISO 15614, ISO 17639; NAVSEA S9074-AW-GIB-010/248
Weld Visual	AMS 2680; ASME BPVC SEC IX, ASME BPVC SEC III-DIV 1, ASME BPVC SEC VIII-DIV 1, ASME BPVC SEC V, ASME B31.1, ASME B31.3; ISO 15614, ISO 9606; NAVSEA S9074-AQ-GIB-010/248; AWWA D 100; API 1104, API 650, API 620; AWS D17.1, AWS D17.2, AWS B2.1, AWS D1.1, AWS D1.2, AWS D1.4, AWS D1.5, AWS D1.6, AWS D1.9, AWS D14.1, AWS D14.3, AWS D15.1, AWS D18.1
Non-Destructive Testing	
Magnetic Particle Inspection (Wet Fluorescent)	ASTM E1444; MIL-STD-1949, MIL-STD-271
Penetrant (Water Washable Fluorescent)	ASTM E1417; MIL-STD-271, MIL-STD-6866

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Huntington Beach, CA 92649

Test(s):	**Test Method(s):**
Post-Weld Heat Treat	ASME BPVC SEC II-DIV 1, ASME BPVC SEC VIII-DIV 1, ASME BPVC SEC IX, ASME B31.1, ASME B31.3; AWS D1.1, AWS D1.5
Heat Treat	SOP 63.00[2]
Inertia Welding of Mechanical Test Specimens	SOP 270[2]
Low Stress Grinding	GE P1TF79
Jominy *(Conditioning only)*	ASTM A255
Electrical Conductivity	ASTM E1004; MIL-STD-1537

[1] Specimens machined or heat treated at the satellite address listed below and tested at the address listed above.

[2] Laboratory developed method.

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