



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017⁵

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MECHANICAL

Valid To: January 31, 2021

Certificate Number: 0603.01

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 at the location listed above to perform the following tests on composites, adhesives, metals and metal fasteners:

Test:

Test Method:

Mechanical Testing

Knoop and Vickers Hardness (HV0.5, HV1, HV5, HV10; HK200, HK500, HK1000)	ASTM E384, E92
Brinell Hardness (500 and 3000 Kg)	ASTM E10, E110
Rockwell Hardness (A, B, C, E, 15N, 30N, 45N, 15T, 30T, 45T)	ASTM E18, F3125
Leeb Portable Hardness	ASTM A956
Fatigue Testing (+58 to +350) °F, (1 to 50) Hz Bend	ASTM E466; NASM 1312-11 ASTM E190; ASME Section IX; AWS D1.1, 17.1; BPS 4311
Magnetic Permeability	ASTM A342
Weld Operator and Weld Procedure Qualification	API 1104; ASME Sect. IX; AWS B2.1/B2.1M, B4.0, D1.1/D1.1M, D1.2/D1.2M, D1.3/D1.3M, D17.1, D17.2/D17.2M, D1.5
Hydrogen Embrittlement (Notch Tension) Weld Hardness Profile	ASTM E292, F519; NASM 1312-5, 14 NACE MR0175/ ISO 15156, SP0472 RP0472 ¹ (Superseded by SP0472, 2005)
Jominy End-Quench Tensile Properties	ASTM A255 ASTM A370, B557, E8/E8M; ISO 6892-1, 898-1; AWS D1.1, 1.2, 1.3, 1.6, 4.0; ASME Section IX; BPS-4431; ISO 3506-2
Impact Properties (Charpy) (-320 °F to RT)	ASTM A370, E23
Nick Break Testing Fillet Break	API 1104, 1107 ¹ (Superseded by 1104) AWS B4.0

Test:**Test Method:****Chemical Properties**

Carbon/Sulfur Determination
 Oxygen/Nitrogen/Hydrogen Determination
 Spectroscopy, OES (Al, Fe, Cu, Ti, Mg, Ni base)

ASTM E1019
 ASTM E1019, E1409, E1447
 ASTM B954, E415, E1086, E1251, E1999;
 DIN EN 15079

- **Aluminum Base:**

Si, Fe, Cu, Mn, Mg, Cr, Ni, Zn, Ti, Be, B, Li, Pb,
 Sn, Sr, V, Zr, Sb, Ag, Al.

- **Iron Base:**

C, Mn, P, S, Si, Ni, Cr, Mo, Al, Co, Cu, Nb, Ti, V,
 W, Pb, Sn, As, B, N, Ta, Mg, Fe.

- **Copper Base:**

Zn, Pb, Sn, P, Mn, Fe, Ni, Si, Cr, Al, S, As, Be, Ag,
 Co, Sb, Cu.

- **Titanium Base:**

C, Al, V, Fe, B, Cr, Cu, Mo, Ni, Si, Sn, Zr, Ti.

- **Nickel Based:**

C, Mn, P, S, Si, Cu, Cr, Mo, W, Fe, Al, B, Co, Nb,
 Pb, Ti, V, Ta, Zr, N, Ni.

- **Magnesium Base:**

Al, Zn, Mn, Cu, Si, Fe, Ni, Sn, Pb, Be, Mg.

EDS in SEM (Semi-Quantitative)

ASTM E1508

Metallographic Evaluation

Metallographic Preparation/Microetch
 Grain Size (Comparison)

ASTM E3, E407
 ASTM E112

Inclusion Rating
 Carburization/Decarburization

ASTM E45 (Method A)
 ASTM E1077; AMS 2759/1-/5; ARP 1820;
 AMS-H-6875

Microstructure Evaluation

ASTM E1268; AMS 2380, 4911; BAC 5636;
 NAS 4002, 4003, 4004; ASM Hbk Vol. 9

Graphite in Cast Iron
 Plating/Coating Thickness
 Case Depth

ASTM A247
 ASTM B487, B748
 SAE J423

Macroetching
 Corrosion Susceptibility
 Volume Percent

ASTM A604/A604M, E340, E381; AMS 6400
 ASTM A262 (Practice A), A923 (Method A)
 ASTM E562

IGA, Eutectic Melting, HTO

AMS-H-6088¹ (Superseded by SAE AMS 2770-2772),
 2772; BPS 4139; BHT LTI-1005; BAC 5602; STP54-101,
 ASTM G110

IGO/IGA
 Alpha Case
 Dendrite Arm Spacing
 End Grain Pitting

AMS-H-6875; ASTM F2111; BSS 7219
 P3TF19; BATS 2751
 ARP 1947
 BSS 7219; ASTM F2111

Test:**Test Method:****Corrosion**

Exfoliation Corrosion
Pitting / Crevice Corrosion Resistance
Salt Spray

ASTM G34
ASTM G48
ASTM B117; NASM 1312-1; MIL-STD-1344; ISO 9227

Physical Properties / NDT

Electrical Contact Resistance
Electrical Conductivity
Surface Roughness
Coating Weight
Coating Adhesion (Bend test)
Liquid Penetrant Inspection (Water Washable
Fluorescent)
Magnetic Particle Inspection (Bench Fluorescent)
Visual Inspection
Nital Etch Inspection

MIL-DTL-5541
ASTM E1004
ASME B46.1
ASTM A90/A90M, A428, B137; MIL-A-8625
ASTM B571
ASTM E1417/E1417M; BPS 4089; SS8806;
BAPS 172-02; BSS 7039
ASTM E1444; BPS-4075; SS8805
EN 970; AWS D1.1, 1.2; BATS 2333; ASME Section XI
AMS 2649; NDTs 9111; MIL-STD-867;
STP 53-701

Fastener Testing

Fastener Hardness
Stress Durability
Decarburization
Discontinuities

Rotational Capacity
Wedge and Axial Tensile
Axial Proof Load (Internal & External Threads)
Double Shear

ASTM F606/F606M, F3125, A325, A490; NASM 1312-6
ASTM B839, F606; NASM 1312-5, -14
ASTM F2328; SAE J419, J121¹ (Superseded by F2328)
ASTM F788, F812; SAE J122; NAS 498, 4002, 4003,
4004, 4008
ASTM A325, A490, F3125; DOT TEX 452A
ASTM F606/F606M, F3125, A325; NASM 1312-8
ASTM F606/F606M, F3125; SAE J995; NASM 1312-32
NASM 1312-13

Composites and Adhesives Testing

Lap Shear, Single (+58 to +350) °F
Flow, Film Adhesive
Drape, Film Adhesive
Weight, Film Adhesive
T-Peel Strength
Sandwich Beam Flexure (+58 to +350) °F
Climbing Drum Peel

MMM-A-132B; GM 4362A
SS8612; MMM-A-132B
SS8612; MMM-A-132B
SS8612; MMM-A-132B
MMM-A-132B
ASTM C393/C393M; C-M605; GM4309A
ASTM D1781

Other Testing

Failure Analysis
Lab Specimen Heat Treatment
SEM

ASM Handbook 11 (Using Other Test Methods on Scope)
AMS-H-6875; BPS 4017, 4140
OEM Manual

I. Dimensional Testing^{2,4}

Parameter/Equipment	Range	CMC ³ (±)	Technique/Method
Length – 1D	Up to 1 in	0.0003 in	Micrometers/MIL-STD-120 (Withdrawn 1996) ¹
2D	Up to 6 in	0.001 in	Digital calipers/MIL-STD-120 (Withdrawn 1996) ¹
	X axis: Up to 11 in	0.0002 in	Optical comparator/MIL-STD-120 (Withdrawn 1996) ¹
	Y axis: Up to 5 in	0.0002 in	Optical comparator/MIL-STD-120 (Withdrawn 1996) ¹
Angle	Up to 360°	0.03°	Optical comparator/MIL-STD-120 (Withdrawn 1996) ¹
Radius	Up to 2.25 in	0.0004 in	Optical comparator/MIL-STD-120 (Withdrawn 1996) ¹

¹ This laboratory’s scope contains withdrawn or superseded methods. As a clarifier, this indicates that the applicable method itself has been withdrawn or is now considered “historical” and not that the laboratory’s accreditation for the method has been withdrawn.

² This laboratory offers commercial dimensional testing service only.

³ Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine measurements of nearly ideal measurement standards or nearly ideal measuring equipment. CMC’s represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific measurement performed by the laboratory may be greater than the CMC due to the behavior of the customer’s device and to influences from the circumstances of the specific measurement.

⁴ This test is not equivalent to that of a calibration.

⁵ This laboratory also meets the requirements of ISO/IEC 17025:2005.



Accredited Laboratory

A2LA has accredited

AADFW, INC.

Euless, TX

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 11th day of February 2019.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 0603.01
Valid to January 31, 2021

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