



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

WESTMORELAND MECHANICAL TESTING & RESEARCH, INC.<sup>1</sup>

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 Youngstown, PA 15696  
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MECHANICAL

Valid Until: September 30, 2017

Certificate Number: 0621.01

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 as well as the (#2) satellite laboratory locations listed below to perform the following tests on aircraft components, automotive components, fasteners, metals & alloys, and plastics & polymers:

<u>Tests</u>	<u>Test Methods</u>
Bearing Strength	AITM 1-0009; ASTM D5961/D5961M
Compression	ASTM E9 (2000)
Ambient	AITM 1-0008; ASTM D695, D6484/D6484M, D6641/D6641M
Non-Ambient (-320 to 576) °F	ASTM D6641
Strain Measurement	ASTM D695, D6641
After Impact	ASTM D7137/7137M; EN 6038
Composites	
Ambient Temperature Tensile	ASTM D638, D3039/3039M, D5766/D5766M, D6742/D6742M
Non-Ambient Temperature Tensile (-320 to 576) °F	ASTM D638, D3039/3039M
Creep Rupture	ASTM E139
Drop Weight	ASTM E208
Dynamic Tear Strength	ASTM E604
Ductility (Bend, Formability)	ASTM E190, E290
Fatigue	
Crack Growth	ASTM E647
Axial, Flexural, Rotating Beam High / Low Cycle	ASTM E466; NASM-1312-11
Flexural	
Ambient Temperature	ASTM C1161, D790, D7264/7264M

Tests	Test Methods
Non-Ambient Temperature	ASTM D7264/7264M
Strain Measurement	ASTM D790, D7264/7264M
Impact Strength	ASTM D7136/7136M
Double Lap Shear – Ambient Temperature	ASTM D3528
Double Lap Shear – Non-Ambient Temperature	ASTM D352
Single Lap Shear – Ambient Temperature	ASTM D1002, D3163, D3164, D3165
Single Lap Shear – Non-Ambient Temperature	ASTM D1002
Fracture Toughness (-450 to 1500) °F	ASTM E399, E1290 (Withdrawn 2008) <sup>2</sup>
Determination of the Opening Mode I Interlaminar Fracture Toughness, $G_{Ic}$ , of Continuous Fiber-Reinforced Composite Materials	AITM 1-0005, 1-0053; ASTM D5528; EN 6033
Hardness	
Brinell (10 mm – 500 & 3000 kg; 2.5 mm – 187.5 kg)	ASTM E10
Rockwell (A, B, C, E, F)	ASTM E18; NASM-1312-6
Superficial (15, 30, 45 N & T)	ASTM E18; NASM-1312-6
Vickers (5, 10 kg)	ASTM E92-82 (Withdrawn 2010) <sup>2</sup>
Microhardness Knoop (10, 25, 50, 100, 200, 300, 500, 1000) gf Vickers (10, 25, 50, 100, 200, 300, 500, 1000) gf	ASTM E384; NASM-1312-6
High Pressure (Hydraulic) Burst	ABM 2-3026; AMS 4081, 4083, 4071; MIL-T-7081D
Impact (Charpy, Izod)	ASTM E23
Jominy	ASTM A255
Peel	
Peel (180°)	ASTM D903
T-Peel	ASTM D1876
Climbing Drum Peel	ASTM D1781
Floating Roller Peel	ASTM D3167
Shear / Double Shear	ASTM F606/F606M; NASM-1312-13, 1312-20
Ambient Temperature by SBS	ASTM D2344/D2344M
Ambient Temperature $\pm 45^\circ$ Tension	ASTM D3518/D3518M
Ambient Temperature by Compression	ASTM D3846
Ambient Temperature by V Notch	ASTM D5379/D5379M, D7078/D7078M
Non-Ambient Temperature (-100 to 576) °F	ASTM D5379/D5379M, D7078/D7078M
Core Shear (-320 to 572) °F	ASTM C273/C273M
Stress Durability (Hydrogen Embrittlement)	ASTM F519; NASM-1312-5A
Stress Rupture	ASTM E139, E292; NASM-1312-10
Surface Roughness	ASME B46.1

<u>Tests</u>	<u>Test Methods</u>
<u>Tensile</u>	
Tensile and Proof Load	ASTM E8/E8M, F606/F606M; NASM-1312-8
Tensile (1,000,000 lbs capacity)	ASTM A370, D638, E8/E8M, E21
Ambient Temperature	
Temperature Range (-450 to 2200) °F	
Tensile Properties of Aluminum and Magnesium Alloy	ASTM B557
<u>Sandwich Testing</u>	
Flatwise Tension, Sandwich	ASTM C297; EN 6062
Sandwich Flexure	ASTM C393
<u>Weld Operator and Procedure Qualification Testing</u>	AWS D1.1, D1.2, D1.5, D4.0; ASME Sec. IX
<u>Metallographic Evaluation</u>	
Alpha Case	WMTR-7003
Banding / Identification of Microstructures	ASTM E1268; ASM Metals Handbook Vol. 9
Depth of Decarburization	ASTM E1077; SAE J121
Grain Size	ASTM E112
Inclusion Content	ASTM E45 (Methods A & D)
Micro & Macro Exam	ASTM E407, E340
Plating Thickness	ASTM B487; NASM-1312-12
Preparation	ASTM E3
SEM with Energy Dispersive Spectroscopy	ASTM E1508
<u>Environmental Simulation</u>	
CASS	ASTM B368
<u>Corrosion Testing</u>	
Exfoliation Corrosion	ASTM G34
Intergranular Corrosions Susceptibility	ASTM A262 (Methods A & E), G28
Pitting & Crevice Corrosion Susceptibility	ASTM G48
Stress Corrosion Cracking Susceptibility	ASTM G38, G39, G44, G47, G49
Humidity Exposure	MIL-STD-1312-3; NASM-1312-3
Salt Spray (Fog)	ASTM B117



I. Dimensional Testing<sup>3</sup>:

Parameter	Range	CMC <sup>4</sup> (±)	Technique / Method
Linear	Up to 1 in Up to 4 in Up to 1 in Up to 1 in Up to 21 mm	0.00016 in 0.001 in 0.002 in 0.00002 in 0.0002 mm	Digital micrometers Digital calipers Digital & analog dial indicators Laser micrometer Scanning electron microscope
Angle	Up to 180 °	18 minutes	Comparator
Radii	Up to 10 in	0.0004 in	Comparator

<sup>1</sup>This accreditation covers testing performed at the main laboratory and the satellite laboratories listed below:

Satellite Laboratory  
209 Cherry Hill Drive  
Latrobe, PA 15650

<u>Tests</u>	<u>Test Methods</u>
Tensile	
Tensile	ASTM E8, E111, B557; ISO 6892; NASM 1312-8
Fatigue Test (HCF) Room Temperature to 2200 °F	ASTM E466, E606, EN6072, 3988; ISO 1099; NASM 1312-11
Fracture Toughness Testing	ASTM E399, E1820; EN 2002-23; ISO 12737
K-R Curve Testing	ASTM E561

Satellite Laboratory  
 14 Bay Hill Drive  
 Latrobe, PA 15650

<u>Tests</u>	<u>Test Methods</u>
Compression	ASTM D695, D6641/D6641M
Creep	ASTM E139
Flexural	ASTM D790
Lap Shear	ASTM D1002, D3163, D3164, D3165, D5379
Stress Rupture	ASTM E139, E292
Tensile	ASTM D638, D3039, D5766, D6742
Thermal Analysis	
DMA (Dynamic Mechanical Analysis)	ASTM D7028
DSC (Differential Scanning Calorimetry)	ASTM D3418
TMA (Thermal Gravimetric Analysis)	ASTM E381

<sup>2</sup>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.

<sup>3</sup>This laboratory offers commercial dimensional testing services only. These tests are not equivalent to that of a calibration

<sup>4</sup>Calibration and Measurement Capability (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. Calibration and Measurement Capabilities 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.



## Accredited Laboratory

A2LA has accredited

**WESTMORELAND MECHANICAL TESTING & RESEARCH, INC.**

*Youngstown, PA*

for technical competence in the field of

**Mechanical 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 10<sup>th</sup> day of February 2016.

A handwritten signature in blue ink, appearing to read "J. C. Bunt".

Senior Director of Quality & Communications  
For the Accreditation Council  
Certificate Number 0621.01  
Valid to September 30, 2017

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



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

WESTMORELAND MECHANICAL TESTING & RESEARCH, INC.  
 221 Westmoreland Drive  
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 Michael Self Phone: 724 537 3131  
 E-mail: mself@wmtr.com

CHEMICAL

Valid To: September 30, 2017

Certificate Number: 0621.02

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 metals and fastener tests on steel, stainless steel, aluminum & alloys, nickel & alloys, and titanium:

<u>Tests</u>	<u>Test Methods</u>
Spectroscopy	
Atomic Absorption Ag, As, Ba, Bi, Cd, Cr, Ga, Ni, Pd, Sb, Se, Sn, Ta, Te, Tl, Zn	ASTM E34, E1184
Combustion / Fusion (LECO) C, H <sub>2</sub> , N <sub>2</sub> , O <sub>2</sub> & S	ASTM E1019, E1447, E1409
ICP Ag, Al, As, Au, B, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Dy, Er, Eu, Fe, Ga, Gd, Ge, Hf, Ho, In, Ir, La, Li, Lu, K, Mg, Mn, Mo, Na, Nb, Nd, Ni, Os, P, Pb, Pd, Pr, Pt, Rb, Re, Rh, Ru, Sb, Sc, Se, Si, Sm, Sn, Sr, Tb, Tc, Te, Th, Ti, Tl, Tm, U, V, W, Y, Yb, Zn, Zr	WMTR 5900
Optical Emission (OES) Al, Ag, Au, As, B, Be, Bi, C, Ca, Cd, Ce, Co, Cr, Cu, Dy, Er, Fe, Ga, Gd, La, Li, Mg, Mn, Mo, Na, Nb, Nd, Ni, P, Pb, Pr, S, Sb, Si, Sn, Sr, Ta, Te, Th, Ti, V, W, Y, Yb, Zn, Zr	ASTM E415, E1086, E1251





## Accredited Laboratory

A2LA has accredited

**WESTMORELAND MECHANICAL TESTING & RESEARCH, INC.**

*Youngstown, PA*

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).



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Senior Director of Quality & Communications  
For the Accreditation Council  
Certificate Number 0621.02  
Valid to September 30, 2017

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