



The American Association for Laboratory Accreditation

World Class Accreditation

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 2nd day of December 2009.





President & CEO

For the Accreditation Council
Certificate Number 0621.01
Valid to September 30, 2011

For the tests or types of 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
Youngstown, PA 15696
Michael Self Phone: 724 537 3131
E-mail: mself@wmtr.com

MECHANICAL

Valid Until: September 30, 2011

Certificate Number: 0621.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on aircraft components, automotive components, fasteners, metals & alloys, and plastics & polymers:

<u>Tests</u>	<u>Test Methods</u>
Hardness	
Brinell	ASTM E10
Rockwell (B, C, E, F, N)	ASTM E18; NASM-1312-6
Superficial (15, 30, 45 N & T)	ASTM E18; NASM-1312-6
Vickers	ASTM E92
Microhardness (Knoop, Vickers)	ASTM E384; NASM-1312-6
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	
Compression	ASTM E9 (2000)
Shear / Double Shear	ASTM F606/F606M; NASM-1312-13
Ductility (Bend, Formability)	ASTM E190, E290
Stress Rupture	ASTM E139, E292; NASM-1312-10
Creep Rupture	ASTM E139
Stress Durability (Hydrogen Embrittlement)	ASTM F606/F606M; NASM-1312-5A
Impact (Charpy, Izod)	ASTM E23
Drop Weight	ASTM E208
High Pressure (Hydraulic) Burst	AMS 4081, 4083
Dynamic Tear Strength	ASTM E604

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TestsTest MethodsMetallographic Evaluation

Preparation	ASTM E3
Grain Size	ASTM E112
Micro & Macro Exam	ASTM E407, E340
Banding / Orientation of Microstructures	ASTM E1268
Inclusion Content	ASTM E45
Plating Thickness	ASTM B487; NASM-1312-12
Depth of Decarburization	ASTM E1077; SAE J121

SEM with Energy Dispersive Spectroscopy ASTM E1508

Mechanical Properties

Fracture Toughness (-450 to 1500) °F	ASTM E399, E1290
Fatigue Crack Growth	ASTM E647
Fatigue (Axial, Flexural, Rotating Beam High/Low Cycle)	ASTM E466, F606; NASM-1312-11
Surface Roughness	ANSI Standard B46.1

Dimensional Testing:

Parameter	Range	CMC* (±)	Technique	Standards
Linear	(0 to 1) in	0.00016 in	Digital micrometers	MIL-STD-120
	(0 to 4) in	0.001 in	Digital calipers	
	(0 to 1) in	0.002 in	Digital & Analog dial indicators	
	(0 to 1) in	0.00002 in	Laser micrometer	WMTR 17803
Angle	(0 to 180) °	18 minutes	Comparator	MIL-STD-120
Radii	(0 to 10) in	0.0004 in	Comparator	MIL-STD-120

*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.



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WESTMORELAND MECHANICAL TESTING & RESEARCH, INC.

Youngstown, PA

for technical competence in the field of

Chemical Testing

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Presented this 2nd day of December 2009.





President & CEO

For the Accreditation Council
Certificate Number 0621.02
Valid to September 30, 2011

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



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

WESTMORELAND MECHANICAL TESTING & RESEARCH, INC.

221 Westmoreland Drive
Youngstown, PA 15696
Michael Self Phone: 724 537 3131
E-mail: mself@wmtr.com

CHEMICAL

Valid To: September 30, 2011

Certificate Number: 0621.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following metals and fastener tests on steel, stainless steel, aluminum & alloys, nickel & alloys, titanium:

Tests

Test Methods

Spectroscopy

Atomic Absorption

Ba, Sb, As, Cd, Tl, Sn, Pb, Ag, Te, Bi, Se, Cr,
Ga, Ni, Pd, Ta, Zn

ASTM E34, E1184

Optical Emission (OES)

ASTM E415, E1086, E1251

ICP

Li, Be, B, Na, Mg, Al, Si, P, K, Ca, Sc, Ti, V, Cr,
Mn, Fe, Co, Ni, Cu, Zn, Ga, La, Hf, Ta, W, Re,
Os, Ir, Pt, Au, Tl, Pb, Bi, Th, U, Ge, As, Se, Rb,
Sr, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, In,
Sn, Sb, Te, Cs, Ba, Ce, Pr, Nd, Rb, Dy, Er, Eu,
Gd, Ho, Lu, Sm, Tb, Tm, Yb

WMTR 5900

Combustion / Fusion (LECO)

C, S, H₂, N₂ & O₂

ASTM E1019, E1447, E1409

Corrosion Tests

Intergranular Corrosions Susceptibility

ASTM A262 (Methods A & E)

Stress Corrosion Cracking Susceptibility

ASTM G38, G39, G44, G47, G49; Customer Specs.

Pitting & Crevice Corrosion Susceptibility

ASTM G48

Environmental Simulation

Salt Spray (Fog)

ASTM B117

Humidity Exposure

MIL-STD-1312-3; NASM-1312-3

CASS

ASTM B368