



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

MIAMI VALLEY MATERIALS TESTING CENTER, LLC
4155 Lisa Drive
Tipp City, OH 45371
Craig Riviello Phone: 937 669 4500

MECHANICAL

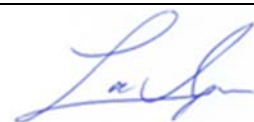
Valid To: November 30, 2019

Certificate Number: 2633.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on aerospace components, metals, metal fasteners, paper, plastics, office furniture, rubber, windows/doors, and wood:

<u>Tests</u>	<u>Test Methods¹</u>
Charpy (-320 to 212 °F)	ASTM E23, A370
Failure Analysis	ASM Handbook 11 using the test methods on the lab's scopes
Weld Procedure / Welder Qualification Testing	Using the tensile, bend, impact, hardness and macroetch methods listed in this document in accordance with: ASME Sec. IX; AWS D1.1 – 1.5
<i>Hardness:</i>	
Rockwell Hardness & Rockwell Superficial Hardness (B, C, 15T, 30T, 15N, 30N)	ASTM E18, A370
Microindentation	
Knoop (500g)	ASTM E384/E92
Vickers (500g)	ASTM E384/E92
<i>Tensile:</i>	
Grey Iron Tensile Testing	ASTM A48
Mechanical Properties of Fasteners, Washers and Rivets	ASTM F606, F606M
Mechanical Testing of Steel Products	ASTM A370 (Sections 5-15, 17)
Tension Testing of Metallic Materials (up to 56,000 lbs Room Temp)	ASTM E8, A370
Plastic Strain Ratio – Drawability (r-value)	ASTM E517
Tensile Strain - Hardening - Formability (n-value)	ASTM E646
Tension Testing Wrought & Cast Aluminum Products	ASTM B557
<i>Metallographic Evaluation:</i>	
Preparation of Metallographic Specimens	ASTM E3
Case Depth	SAE J423; ASTM E384
EDS (Energy Dispersive Spectroscopy)	ASTM E1508
Inclusion Content	ASTM E45

<u>Tests</u>	<u>Test Methods¹</u>
<i>Metallographic Evaluation (continued):</i>	
Determining Average Grain Size	ASTM E112 (Comparison and Intercept); E1181
Volume Fraction of Delta Ferrite	ASTM E562; AMS 2315
Estimating Depth of Decarburization of Steel Specimens	ASTM E1077, F2328, F835, ISO 898-1
Evaluating Graphite Microstructure in Iron Castings	ASTM A247
Macroetching	ASTM E381, A604
Microetching	ASTM E407
Reflected Light Photomicrography	ASTM E883
Corrosion Resistance (IGA)	ASTM A262 (Practice A)
<i>Density:</i>	
Wet Density	ASTM B311
<i>Fasteners:</i>	
Stress Durability (Hydrogen Embrittlement)	SAE/USCAR-7; SAE J78, J81, J1237; GM512M, GM6010M, GM6171M; GMW4205, GMW15170, ASTM F606, F606M, ASME B18.6.4, B18.6.5M
Torque / Tension / Coefficient of Friction	ISO 16047; GMW3044, GMW16819; Ford WZ100; Ford WZ101
Prevailing Torque	ASME B18.16.6, B18.16.6M; IFI 124, IFI 125, IFI 524, IFI 525; Ford ES-21006-S100; WSD-M21P27-A4 GM6175M; GM6194M; GM6189P; GMW14657
Axial Tensile	ASTM A370, F606, F606M; ISO 898-1
Wedge Tensile	ASTM A370, F606, F606M; ISO 898-1, 898-5
Proof Load	ASTM F606, F606M
Hardness	ASTM F606, F606M; ISO 898-1, 898-2, 898-5
<i>Coating Characterization:</i>	
Qualitative Adhesion Testing of Metallic Coatings	ASTM B571 (Sections 3, 4, 5), JDQ 117; Honda HES D2003 (3.4), D6001 (4.4)
Coating Thickness Measurement by Microscopical Exam	ASTM B487, JDQ 117, JDM F15; Honda HES D2003 (3.3), D2008, D2021, D2016, D2028, D6001 (4.2), D6501 (3.2); Honda 5100Z-TR0-6001
Acid Resistance	ASTM D1308; Honda HES D6001, D2016, D2021, D6501 (3.25, 3.28); Honda 5100Z-SGO-A000 (6-15); Honda 5100Z-SEO-000 (6-14); Honda 5100Z-TR0-6001
Evaluation of Painted/Coated/Plated Specimens	ASTM D1654



<u>Tests</u>	<u>Test Methods¹</u>
<i>Coating Characterization (continued):</i>	
Alkali Resistance	ASTM D1308; Honda HES D2008, D2016, D2021; Honda 5100-SGO-A000 (6-14); Honda 5100-SEO-000 (6-13); Honda HES D6501 (3.24, 3.28); Honda 5100Z-TR0-6001
Coating Weight	ASTM A90, A428, Honda HES D2008; Honda 5100Z-SGO-A000; Honda 5100Z-SEO-000; Honda 5100Z-TR0-6001
Fuel Resistance	Honda HES D2016, D2021; Honda 5100Z-SGO-A000 (6-17); Honda 5100Z-SEO-000 (6-16); Honda 4251Z-SEP-A000 (5); Honda HES D6501 (3.21, 3.28); Honda 5100Z-TR0-6001
Oil Resistance	Honda HES D2008, D2016, D2021, D2028, D6501 (3.23, 3.28); Honda 5100Z-SGO-A000 (6-16); Honda 5100Z-SEO-000 (6-15); Honda 4251Z-SEP-A000 (6); Honda HES Honda 5100Z-TR0-6001
Degree of Blistering	ASTM D714
Degree of Rusting	ASTM D610
Water Immersion	Honda HES D2008, D2016, D2021, D2028; Honda 5100Z-SGO-A000 (6-8, 6-10); Honda 5100Z-SEO-000 (6-7, 6-9); Honda 4251Z-SEP-A000 (Section 5); Honda HES D6501 Sections 3.18, 3.37; Honda 5100Z-TR0-6001
Coating Adhesion	ASTM D3359; Honda HES D2008, D2016, D2021, D2028, D6501 (3.6); Honda 5100Z-SGO-A000; Honda 5100Z-SEO-000; Honda 5100Z-TR0-6001
<i>Environmental Simulation:</i>	
Salt Spray (Fog)	ASTM B117; ISO 9277; JDM F15, F15X1; Honda HES 6501 Sections 3.15.1, 3.15.2; Honda HES: D2003 (3.2), D2008, D2016, D2021, D2028, D6001; Honda 5100Z-SEO-0000 Section 6-2-1; Honda 5100Z-SGO-A000 Section 6-2-1; Honda 5100Z-TR0-6001; JDQ 115; JDQ 117



<u>Tests</u>	<u>Test Methods¹</u>
<i>Environmental Simulation (continued):</i>	
Hot Salt Water Resistance	Honda 5100Z-SGO-A000 (6-3); Honda 5100Z-SEO-000 (6-3); Honda 5100Z-TR0-6001

¹The laboratory is accredited for the test methods listed above. The accredited test methods are used in determining compliance with the material specifications listed below; however, the inclusion of these material specifications on this Scope does not confer laboratory accreditation to the material specifications. Inclusion of these material specifications on this Scope also does not confer accreditation for every method embedded within the specification or procedure. Only the methods listed above on this Scope are accredited.

Test Specifications:

Specification for Stainless Steel 316 (Surgical Implants)	ASTM F138
Specification for Titanium 6 – 4 (Surgical Implants)	ASTM F136
JDM F15 Addendum – Zinc Clear Chromate C Requirements	BOSSARD CSS3
Specification for Titanium 6-4 (Additive Manufacturing)	ASTM F3001





Accredited Laboratory

A2LA has accredited

MIAMI VALLEY MATERIALS TESTING CENTER, LLC

Tipp City, OH

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 April 2017).



Presented this 2nd day of April 2018.

A handwritten signature in black ink, written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 2633.01
Valid to November 30, 2019
Revised April 09, 2018

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



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4155 Lisa Drive
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CHEMICAL

Valid To: November 30, 2019

Certificate Number: 2633.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on aerospace components, metals, metal fasteners, paper, plastics, office furniture, rubber, windows/doors, and wood:

<u>Tests</u>	<u>Test Methods¹</u>
<i>Spectroscopy:</i>	
Inductively coupled plasma (ICP) (Al, As, B, Be, Bi, Cr, Cu, Fe, Ga, Mg, Mn, Mo, Nb, Ni, P, Pb, Sb, Se, Si, Sn, Ta, Te, Ti, V, W, Y, Zr)	MVMTC WI-16; ASTM E1479, E2371
<i>Optical Emission Spectroscopy (OES):</i>	
Aluminum and Aluminum Alloys (Be, Bi, B, Ca, Cr, Co, Cu, Ga, Fe, Pb, Li, Mg, Mn, Ni, P, Si, Na, St, Sb, Ti, V, Zn)	ASTM E1251
Cast Iron (C, Cr, Cu, Mn, Mo, Ni, P, Si, S, Sb, Ti, V)	ASTM E1999
Copper Based	MVMTC WI-6
Low Alloy Steels and Cast Irons (Less Nitrogen) (Al, As, B, Ca, C, Cr, Co, Cu, Mn, Mo, Ni, Nb, P, Si, S, Sb, Ti, Zr)	ASTM E415
Stainless Steel (Less Nitrogen) (Cr, Ni, Mo, Mn, Si, Cu, C, P, S)	ASTM E1086
Zinc Based	MVMTC WI-6
Nickel Based	MVMTC WI-6
Titanium (Less Oxygen, Hydrogen, Nitrogen) (Al, Fe, V)	MVMTC WI-6
<i>Combustion:</i>	
Combustion LECO (C, S)	ASTM E1019, E1941
<i>Failure Analysis:</i>	
	ASM Handbook 11 using the test methods on the lab's scopes

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Test Specifications:

Specification for Stainless Steel 316 (Surgical Implants)	ASTM F138
Specification for Titanium 6 – 4 (Surgical Implants)	ASTM F136
Standard Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products	ASTM A751
Specification for Titanium 6-4 (Additive Manufacturing)	ASTM F3001





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Tipp City, OH

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).



Presented this 2nd day of April 2018.

A handwritten signature in black ink, written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 2633.02
Valid to November 30, 2019

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