



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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MECHANICAL

Valid To: May 31, 2017

Certificate Number: 3152.01

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

<u>Test</u>	<u>Test Method(s)</u>
Failure Investigation Using all or part of the following test methods	ASM Handbook, Volume 11, 9 th Edition
Fractographic Investigation	ASM Handbook, Volume 12, 9 th Edition
Metallographic Sample Preparation	ASM Handbook, Volume 9, 9 th Edition; ASTM B665, E3, E340, E768, E1920
Metallurgical Tests	
Macroetch Evaluation	ASTM E381; MIL-STD-867
Microetching	ASTM E407
Metallographic Evaluation	ASM Handbook, Volume 9, 9 th Edition; ASTM A247
Coating Thickness	ASTM B487
Coating Weight	ASTM A90/A90M, A428/A428M
Case Depth	ASTM E384, E407; SAE J423
Presence of Carburization/Decarburization	ASTM E384, E407, E1077, F2328/F2328M; SAE J121/J121M, J419
Grain Size	ASTM E112, E1181, E1382
Grain Flow	ASTM E340
Discontinuity/Defects	ASTM F788, F812; SAE J122
Inclusions/Second Phase Particles	ASTM E45, E1245; SAE J422
Degree of Banding	ASTM E1268
Detrimental Intermetallic Phase in Duplex SS	ASTM A923
Determining Volume Fraction	ASTM E562
Corrosion Testing	ASTM A262, A763, G28, G34, G46, G48, G110
Chemical Passivation/Free Iron	ASTM A380, A967
Degree of Rusting (Visual and Imaging Software)	ASTM D610

Peter M. Meyer

(A2LA Cert. No. 3152.01) 06/04/2015

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Test

Test Method(s)

Metallurgical Tests (cont'd)

Permeability of Feebly Magnetic Materials
Measuring Adhesion by Tape Test
Qualitative Adhesion Testing of Metallic
Coatings

ASTM A342 (Test Method 3)
ASTM D3359
ASTM B571

Mechanical Tests

Tensile/Tension

ASTM A48, A370, B557/B557M, E8, E517,
F606/F606M, E646; SAE J429

Flattening

ASTM A370, E290

Shear

ASTM F606/F606M

Hardness

Rockwell (A, B, C, E, F)

ASTM E18; SAE J417;
NACE MR0175/ISO 15156

Superficial (15N, 15T, 30N, 30T, 45N, 45T)

ASTM E18; SAE J417;
NACE MR0175/ISO 15156

Brinell (500 kgf, 1500 kgf, 3000 kgf)

ASTM E10, E110; SAE J417

Knoop/Vickers (200 gf, 500 gf)

ASTM B578, E384; SAE ARP 1820, J417

Comparative

ASTM A833

Proof Load

ASTM A370, F606/F606M;
SAE J429, J995

Wedge Tension

ASTM A370, F606/F606M; SAE J429

Charpy, V-notch Impact

ASTM A370, E23

Bend Test

ASTM A370, E190, E290

Weld Evaluations

Weld/Welder Qualification Tests

ANSI/AWS B2.1, B2.2, B4.0, C1.1, C1.4, D1.1,
D1.2, D1.3, D1.4, D1.5, D1.6, D1.9, D3.6M,
D9.1, D14.1, D15.1, D17.1, D17.2;
API STD 1104;
ASME B&PV Code Section VIII and Section IX

Chemical Analysis/Alloy Identification

Optical Emission Spectroscopy (OES)

ASTM A751, E415, E1086, E1251;
HMRL CHE-2¹

Carbon and Alloy Steels

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

Stainless Steels

(Fe, C, Mn, P, S, Si, Cu, Ni, Cr, Mo, Al, Ti, V,
Nb, Co, W, As, B, Pb, Ta)

Aluminum Alloys

(Al, Si, Fe, Cu, Sn, Mn, Mg, Pb, Zn, Cr, Ni, Ti,
B, Be, V)

Tool Steel

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

Test**Test Method(s)**

Chemical Analysis/Alloy Identification

Optical Emission Spectroscopy (OES) (cont'd)

ASTM E415, E1086, E1251; HMRL CHE-2¹

Copper and Copper-Nickel Alloys

(Cu, Si, Fe, Sn, Mn, S, Pb, Zn, As, P, Ni, Al, Cd, Te)

Nickel Alloys

(Ni, C, W, Si, Fe, Zr, Mn, S, Mo, Mg, Cu, Co, Al, B, P, Ti, Nb, V, Cr)

Dimensional Testing²

Parameter	Range	CMC ³ (±)	Technique / Method
Length ⁴ –	One Dimensional	Up to 6 in	Digital caliper
		Up to 8 in	
	Two Dimensional	Up to 1 in	Digital micrometer
		Up to 1 in	Point micrometer
		Up to 0.6 in	Microscope with image analysis software
Up to 3 in	Optical stereoscope with image analysis software		
Angle ⁴	(0 to 360)°	0.001°	Microscope with image analysis software
	(0 to 360)°	0.001°	Optical stereoscope with image analysis software

¹ Hurst Lab Procedure (internal).² This laboratory offers commercial dimensional testing services.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. CMCs 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.
(A2LA Cert. No. 3152.01) 06/04/2015




Accredited Laboratory

A2LA has accredited

HURST METALLURGICAL RESEARCH LABORATORY, 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 17025:2005 *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 4th day of June 2015.

A handwritten signature in black ink, reading "Peter Abney".

President & CEO
For the Accreditation Council
Certificate Number 3152.01
Valid to May 31, 2017

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