



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

HURST METALLURGICAL RESEARCH LAB, INC.
2111 West Eules Blvd. (Highway 10)
Eules, TX 76040-6707
Mahesh Madhani Phone: 817 283 4981

MECHANICAL

Valid To: May 31, 2013

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 and Standard Industry Practices
Fractographic Investigation	ASM Handbook, Volume 12, 9 th Edition and Standard Industry Practices
Metallographic Sample Preparation	ASM Handbook, Volume 9, 9 th Edition; ASTM B 665, E 3, E 340, E 768, E 1920
Metallurgical Tests	
Macroetch Evaluation	ASTM E 381; MIL-STD-867
Microetching	ASTM E 407
Metallographic Evaluation	ASM Handbook, Volume 9, 9 th Edition; ASTM A 247
Coating Thickness	ASTM B 487
Coating Weight	ASTM A 90, A 428
Case Depth	ASTM E 384, E 407; SAE J423
Presence of Carburization/Decarburization	ASTM E 384, E 407, E 1077, F 2328, F 2328M; SAE J121, J121M, J419
Grain Size	ASTM B 390, E 930, E 1181, E 1382
Grain Flow	ASTM E 340
Discontinuity/Defects	ASTM F 788, F 812; SAE J122, J123, J1061
Inclusions/Second Phase Particles	ASTM E 45, E 1245; SAE J422
Degree of Banding	ASTM E 1268
Detrimental Intermetallic Phase in Duplex SS	ASTM A 923
Porosity in Cemented Carbides	ASTM B 276
Corrosion Testing	ASTM A 262, A 763, G 28, G 34, G 46, G 48, G 110
Chemical Passivation/Free Iron	ASTM A 380, A 967
Degree of Rusting (Visual and Imaging Software)	ASTM D 610
Permeability of Feebly Magnetic Materials	ASTM A 342 (Test Method 3)
Measuring Adhesion by Tape Test	ASTM D 3359
Qualitative Adhesion Testing of Metallic Coatings	ASTM B 571

Test

Test Method(s)

Mechanical Tests

Tensile/Tension

ASTM A 48, A 370, B 557, B 557M, E 8, F 606, F 606M; SAE J416, J429, J1216

Compression

ASTM E 9

Flattening

ASTM A 370, E 290

Shear

ASTM D 1002, D 3528, F 606, F 606M

Hardness

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

ASTM E 18; SAE J417; NACE MR0175/ISO 15156

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

ASTM E 18; SAE J417; NACE MR0175/ISO 15156

Brinell (500 kgf, 1500 kgf, 3000 kgf)

ASTM E 10, E 110; SAE J417

Knoop/Vickers (100 to 1000) gf

ASTM B 578, E 384; SAE ARP 1820, J417

Comparative

ASTM A 883

Proof Load

ASTM A 370, F 606, F 606M; SAE J429, J995, J1216

Wedge Tension

ASTM A 370, F 606, F 606M; SAE J429, J1216

Charpy, V-notch Impact

ASTM A 370, E 23

Bend Test

ASTM A 370, E 190, E 290

Weld Evaluations

Weld 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, D9.1, D14.1, D17.1; ASME B&PV Code Section VIII and Section IX; API STD 1104

Chemical Analysis/Alloy Identification

Optical Emission Spectroscopy (OES)

ASTM E 415, E 1086, E 1251; HMRL CHE-2*

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)

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)

* User's Manual





The American Association for Laboratory Accreditation

World Class Accreditation

Accredited Laboratory

A2LA has accredited

HURST METALLURGICAL RESEARCH LAB, INC.

Eules, 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 11th day of March 2011.





President & CEO

For the Accreditation Council
Certificate Number 3152.01
Valid to May 31, 2013

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