



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

METAL IMPROVEMENT COMPANY TECHNOLOGY SERVICE (SUZHOU) CO., LTD. –
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MECHANICAL

Valid To: November 30, 2022

Certificate Number: 1140.09

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following types of tests on aluminum alloys, brass & bronze, carbon steel, cast iron, cobalt alloys, low alloy steel, nickel alloys, stainless steel alloys, titanium alloys for the following industries: aerospace, automotive, nuclear, medical device, consumer products and industrial goods, metal production, general manufacturing, utilities, petrochemical and power generation:

| Test | Test Method(s) |
|---|--|
| <u>Coatings and Platings</u> | |
| Thickness by Cross Section | ASTM B487 |
| <u>Mechanical Properties</u> | |
| Charpy Impact (Room Temperature to -60° C) | ASTM A370, E23; ISO 148-1; GB/T 229 |
| Creep, Creep Rupture | ASTM E139; GB/T 2039 |
| Stress Rupture | ASTM E139, E292; GB/T2039 |
| Hydrogen Embrittlement Test (Specimen Type 1a) | ASTM F519 |
| Hardness | |
| Brinell (1000, 3000 kgf) | ASTM A370, E10; GB/T 231.1 |
| Microhardness | |
| Vickers (HV 0.05, HV 0.1, HV0.2, HV0.3, HV0.5, 1 Kgf) | ASTM E384; GB/T 4340.1 |
| Rockwell (BW, C, 15N, 15TW, 30N, 30TW) | ASTM A370, E18; GB/T 230.1 |
| Tensile, Room Temperature – 300KN Max (UTS, YS, EL, R/A), Young's Modulus | ASTM A370, B557/557M, E8/E8M; GB/T 228.1; ISO 6892-1 |
| Tensile, Elevated Temperature ($\leq 1100^{\circ}$ C) | ASTM E21; GB/T 228.2; ISO 6892-2 |
| Low Cycle Fatigue ($\leq 1100^{\circ}$ C) | ASTM E606/E606M |
| High Cycle Fatigue ($\leq 1100^{\circ}$ C) | ASTM E466 |
| Coating Shear Fatigue | ASTM F1160 |
| Fracture Toughness | ASTM E399; GB/T 4161 |
| Fatigue Crack Growth Rates | ASTM E647; GB/T 6398 |

| Test | Test Method(s) |
|--|--|
| <u>Metallographic Evaluation</u> | |
| Alpha Case | ASTM E407 |
| Carburization/Effective Case Depth | SAE J423 (Optical and Hardness Methods); GB/T 9450 |
| Decarburization | ASTM E1077 (Optical); GB/T 224 |
| Grain Size | ASTM E112; GB/T 6394, 24177; GE E50TF133; ISO 643 |
| IGA | AMS 2772; AMS-H-6088; ASTM A262 (Method A & E), G110 |
| Inclusion Content | ASTM E45 (Method A); GB/T 10561 |
| Microstructure | ASTM A247, E3, E407; GB/T 13298; ISO 20160 |
| Macroetching | ASTM E340, E381; GB/T 226, 1979 |
| Replication | ASTM E1351 |
| Photomicrography | ASTM E883 |
| Stereological Evaluation of Porous Coating on Medical Implants | ASTM F1854 |
| Failure Analysis | Using the methods listed above in accordance with the ASM Handbook Volume 11 |
| <u>Chemical Analysis</u> | |
| Combustion Analysis (C, H, N, O, S) | ASTM E1019, E1409, E1447, E1941 |
| OES (Al, Co, Cu, Fe, Ni, Ti base metals) Elements: Al, B, Bi, C, Co, Cr, Cu, Fe, Mg, Mn, Mo, N, Nb, Ni, P, Pb, S, Si, Sn, Ta, Ti, V, Zn, Zr | ASTM A751, E415, E1086, E1251, E2994, E3047; CZP-045 ¹ |
| <u>Fasteners</u> | |
| Hardness | ASTM F606/606M; GB/T 3098.1 |
| Proof (Internal & External Threads) | ASTM A370, F606/606M; SAE J429, J995; ISO 898-1, 898-2; GB/T 3098.1, 3098.2 |
| Tensile (Axial & Wedge) | ASTM F606/606M, E8/E8M, A370; SAE J429, J995 |
| Stress Durability (Hydrogen Embrittlement) | ASTM F606/606M; GB/T3098.1; ISO 15330 |

¹Methods starting with CZP are internal methods



Accredited Laboratory

A2LA has accredited

METAL IMPROVEMENT COMPANY TECHNOLOGY SERVICE (SUZHOU) CO. LTD. - IMR TEST LABS SUZHOU

Suzhou, Jiangsu, People's Republic of China

for technical competence in the field of

Mechanical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *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 27th day of October 2020.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1140.09
Valid to November 30, 2022

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