# CERTIFICATE OF ACCREDITATION

## The ANSI National Accreditation Board

Hereby attests that

**NSL Metallurgical**
**4564 Johnston Parkway**
**Cleveland, OH 44128**

Fulfills the requirements of

## ISO/IEC 17025:2017

In the field of

## TESTING

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

Jason Stine, Vice President

Expiry Date: 29 October 2028

Certificate Number: AT-1495

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. 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).

# SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017


## NSL Metallurgical

4564 Johnston Parkway
Cleveland, OH 44128
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## TESTING

ISO/IEC 17025 Accreditation Granted: **21 October 2026**

Certificate Number: **AT-1495** Certificate Expiry Date: **29 October 2028**

**Mechanical Testing**

| Specific Tests and/or Properties Measured | Specification, Standard, Method, or Test Technique | Items, Materials or Product Tested | Key Equipment or Technology |
|---|---|---|---|
| Room Temperature Tensile | PT-003M1<br>ASTM A370<br>ASTM B557<br>ASTM E8<br>ISO 6982-1 | Metallic Materials | Instron 300LX<br>Instron 5985<br>Instron 5585 |
| Elevated Temperature Tensile | PT-003M1<br>ASTM E21<br>ISO 6892-2 | Metallic Materials | Instron 300LX |
| Fastener Tensile Testing | PT-003M4<br>ASTM A370<br>ASTM E8<br>ASTM E139<br>ASTM E292<br>ASTM E340<br>ASTM E381<br>ASTM E384<br>ASTM F606<br>NASM 1312-6<br>NASM 1312-8<br>NASM 1312 -10<br>NASM 1312 -18<br>SAE J429<br>SAE J995 | Metallic Fasteners | Instron 300LX<br>Instron 5985<br>Instron 5585 |

**Mechanical Testing**

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|---|---|---|---|
| Stress Rupture Testing | PT-005<br>ASTM E139<br>ASTM E292 | Metallic Materials | ATS Frames 1 thru 8 |
| Bend Testing | PT-003M5<br>ASTM E290 | Metallic Materials | Instron 5985<br>Instron 5585 |
| Charpy Impact | PT-004<br>PT004M1<br>ASTM A370<br>ASTM E23<br>ISO 148-1 | Metallic Materials | MPM 400 ft-lb<br>Wiedemann Baldwin 240 ft-lb |
| Heat Treat of Specimens | PT-006<br>AMS2750 | Metallic Materials | Cress 1228<br>Despatch<br>LND1-42-3 |
| Hardness – Brinell | MET-004M1<br>ASTM E10 | Metallic Materials | Detroit<br>DLC-3100 |
| Hardness – Rockwell | MET-004M2<br>ASTM E18<br>NASM 1312-6 | Metallic Materials | LECO LCR500 |

**Mechanical Testing - Metallography**

| Specific Tests and/or Properties Measured | Specification, Standard, Method, or Test Technique | Items, Materials or Product Tested | Key Equipment or Technology |
|---|---|---|---|
| SEM<br>Qualitative Elemental Analysis, EDS Profile, Surface Morphology, Imaging | SEM-002<br>SEM-003 | Metal Alloys, Ceramics, Composites, Coatings, Fibers, Polymers, Particles | Hitachi<br>Model SU3500<br>Thermo Scientific EDS<br>Model 4503A-3UPS-SN |
| Macroetch | MET-003M9<br>ASTM E340<br>ASTM E381<br>ASTM A604 | Metallic Materials<br>Steel bars, billets, blooms, and forgings | n/a |
| Metallography<br>(Macro exam) | MET-003M9<br>ASTM E340<br>ASTM E381<br>AS7456<br>AS7458<br>ASTM A604 | Metallic Materials | Leica M125 |
| Metallography – Alpha Case | MET-003M10<br>ASTM E3<br>AMS T9046 | Titanium Alloys | Nikon Optiphot<br>Leica DMI 5000 M<br>Leica DMi8 A |



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|---|---|---|---|
| Decarburization<br>Carburization | MET-003M8<br>ASTM E3<br>ASTM E384<br>ASTM E1077 | Ferrous Alloys | Matsuzawa (Micro) MMT-X7B, Matsuzawa Macro Vickers VMT,<br>Leica DMI 5000 M<br>Leica DMi8 A<br>Nikon Optiphot |
| Decarburization<br>Carburization | MET-003M8<br>ASTM F2328 | Metallic Fasteners | Matsuzawa(Micro) MMT-X7B, Matsuzawa Macro Vickers VMT<br>Leica DMI 5000 M<br>Leica DMi8 A<br>Nikon Optiphot |
| Effective Case Depth | MET-003M6<br>ASTM E384<br>SAE J423 | Metallic Materials | Matsuzawa(Micro) MMT-X7B, Matsuzawa Macro Vickers VMT |
| Delta Ferrite | MET-003M11<br>AMS 2315 | Metallic Materials | Nikon Optiphot<br>Leica DMI 5000 M<br>Leica DMi8 A |
| Grain Size | MET-003M1<br>MET-003M2<br>MET-003M3<br>ASTM E112<br>ASTM E562<br>ASTM E930 | Metallic Materials | Nikon Optiphot<br>Leica DMI 5000 M<br>Leica DMi8 A |
| Intergranular Attack/Intergranular Oxidation | MET-003M6<br>PT-003M6<br>ASTM A262<br>ASTM E3<br>AMS 5656<br>ISO 3651-2 | Metallic Materials | Nikon Optiphot<br>Leica DMI 5000 M<br>Leica DMi8 A |
| Inclusion Rating / Cleanliness | MET-003M5<br>ASTM E45<br>SAE J422 | Metallic Materials, Ferrous Alloys | Nikon Optiphot<br>Leica DMI 5000 M<br>Leica DMi8 A |
| Measurement of Metallic and Oxide Coating Thickness by Microscopic Examination of a Cross Section | MET-003M6<br>ASTM B487 | Metallic Materials | Nikon Optiphot<br>Leica DMI 5000 M<br>Leica DMi8 A |



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|---|---|---|---|
| Measuring Case Depth | MET-003M6<br>SAE J423 | Ferrous Alloys | Nikon Optiphot<br>Leica DMI 5000 M<br>Leica DMi8 A |
| Microetching | MET-002M1<br>ASTM E407 | Metallic Materials | n/a |
| Sample Preparation | MET-002<br>ASTM E3 | Metallic Materials | n/a |
| Microhardness - Alloy Depletion | MET-003M6<br>ASTM E1077<br>ASTM F2328 | Metallic Materials | Matsuzawa(Micro) MMT-X7B,<br>Matsuzawa Macro Vickers VMT |
| Microhardness – Knoop / Vickers | MET-004M3<br>ASTM E384<br>NASM 1312-6 | Metallic Materials | Matsuzawa(Micro) MMT-X7B,<br>Matsuzawa Macro Vickers VMT |
| Surface Roughness | MET-006<br>ISO 4287<br>ASME B46.1 | Metallic Materials | Mahr Pocketsurf IV |

Jason Stine, Vice President



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