



CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board

500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

**NSL Metallurgical
4535 Renaissance Parkway
Cleveland, OH 44128**

has been assessed by ANAB
and meets the requirements of international standard

ISO/IEC 17025:2005

while demonstrating technical competence in the field of

TESTING

Refer to the accompanying Scope of Accreditation for information regarding the types of tests to which this accreditation applies.

AT-1495

Certificate Number



ANAB Approval

Certificate Valid: 08/08/2018-10/29/2020
Version No. 004 Issued: 08/08/2018



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. 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 17025:2005

NSL Metallurgical

4535 Renaissance Parkway
Cleveland, OH 44128

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TESTING

Valid to: **October 29, 2020**

Certificate Number: **AT-1495**

Mechanical

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 ASTM A370 ASTM B557 ASTM E8	Metallic Materials	SATEC 100 kip Instron 67 kip MTS 22.5 kip
Fastener Tensile Testing	PT-003M4 ASTM A370 ASTM E8 ASTM E139 ASTM E292 ASTM E340 ASTM E381 ASTM E384 ASTM F606 NASM 1312-6 NASM 1312-8 NASM 1312 -10 NASM 1312 -18 SAE J429 SAE J995	Metallic Fasteners	SATEC 100 kip MTS 22.5 kip Instron 67kip
Bend Testing	PT-003M5 ASTM E290	Metallic Materials	SATEC 100 kip
Charpy Impact	PT-004 PT004M1 ASTM A370 ASTM E23	Metallic Materials	MPM 400 ft-lb Wiedemann Baldwin 240 ft-lb

Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Heat Treat of Specimens	PT-006 AMS2750	Metallic Materials	Cress 1228 Despatch LND1-42-3
Hardness – Brinell	MET-004M1 ASTM E10	Metallic Materials	Detroit DLC-3100
Hardness – Rockwell	MET-004M2 ASTM E18 NASM 1312-6	Metallic Materials	Wilson B523-T LECO LCR500

Metallography

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
SEM Qualitative Elemental Analysis, EDS Profile, Surface Morphology, Imaging	SEM-002 SEM-003	Metal Alloys, Ceramics, Composites, Coatings, Fibers, Polymers, Particles	Hitachi Model SU3500 Thermo Scientific EDS Model 4503A-3UPS-SN
Macroetch	MET-003M9 ASTM E340 ASTM E381	Metallic Materials Steel bars, billets, blooms, and forgings	n/a
Metallography (Macro exam)	MET-003M9 ASTM E340 ASTM E381 AS7456 AS7458	Metallic Materials	Leica M125
Metallography – Alpha Case	MET-003M10 ASTM E3 AMS T9046	Titanium Alloys	Nikon Optiphot Leica DMI 5000 M Leica DMi8 A
Decarburization Carburization	MET-003M8 ASTM E3 ASTM E384 ASTM E1077	Ferrous Alloys	Matsuzawa (Micro) MMT-X7B, Matsuzawa Macro Vickers VMT, Leica DMI 5000 M Leica DMi8 A Nikon Optiphot
Decarburization Carburization	MET-003M8 ASTM F2328	Metallic Fasteners	Matsuzawa(Micro) MMT-X7B, Matsuzawa Macro Vickers VMT Leica DMI 5000 M Leica DMi8 A Nikon Optiphot
Effective Case Depth	MET-003M6 ASTM E384 SAE J423	Metallic Materials	Matsuzawa(Micro) MMT-X7B, Matsuzawa Macro Vickers VMT



Metallography

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Delta Ferrite	MET-003M6 AMS 2315	Metallic Materials	Nikon Optiphot Leica DMI 5000 M Leica DMi8 A
Grain Size	MET-003M1 MET-003M2 MET-003M3 ASTM E112 ASTM E562 ASTM E930	Metallic Materials	Nikon Optiphot Leica DMI 5000 M Leica DMi8 A
Intergranular Attack/Intergranular Oxidation	MET-003M6 PT-003M6 ASTM A262 ASTM E3 AMS 5656	Metallic Materials	Nikon Optiphot Leica DMI 5000 M Leica DMi8 A
Inclusion Rating / Cleanliness	MET-003M5 ASTM E45 SAE J422	Metallic Materials, Ferrous Alloys	Nikon Optiphot Leica DMI 5000 M Leica DMi8 A
Measurement of Metallic and Oxide Coating Thickness by Microscopic Examination of a Cross Section	MET-003M6 ASTM B487	Metallic Materials	Nikon Optiphot Leica DMI 5000 M Leica DMi8 A
Measuring Case Depth	MET-003M6 SAE J423	Ferrous Alloys	Nikon Optiphot Leica DMI 5000 M Leica DMi8 A
Microetching	MET-002M1 ASTM E407	Metallic Materials	n/a
Sample Preparation	MET-002 ASTM E3	Metallic Materials	n/a
Microhardness - Alloy Depletion	MET-003M6 ASTM E1077 ASTM F2328	Metallic Materials	Matsuzawa(Micro) MMT-X7B, Matsuzawa Macro Vickers VMT
Microhardness – Knoop / Vickers	MET-004M3 ASTM E384 NASM 1312-6	Metallic Materials	Matsuzawa(Micro) MMT-X7B, Matsuzawa Macro Vickers VMT

Note:

1. This scope is formatted as part of a single document including Certificate of Accreditation No. AT-1495.


 Vice President