



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 Analytical Services, Inc.
4450 Cranwood 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-1354

Certificate Number



ANAB Approval

Certificate Valid: 09/25/2018-11/23/2020
Version No. 007 Issued: 09/25/2018



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 Analytical Services, Inc.

4450 Cranwood Parkway

Cleveland, OH 44128

Cynthia Hagan 216-438-5208

chagan@nslanalytical.com

www.nslanalytical.com

TESTING

Valid to: **November 23, 2020**

Certificate Number: **AT-1354**

Chemical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Wet Gravimetric Ni, Si, P, Cu, Ag, Re, S	WC-001M5 WC-001M7 ASTM E350 (WC defined) WC-001M11 WC-001M18 WC-001M23 WC-001M26	Metal Alloys	Wet Gravimetric
Wet Colorimetric P Wet Colorimetric Cr+6	WC-001M2 AC-006M1 ISO 3613 AC-012	All Metal Alloys, Ceramics, Chemicals, Plastics	GENESYS 5 & GENESYS 10S Spectrophotometer
Elemental Analysis	ICP-003 ASTM E1479	All Metal Alloys, Ceramics, Chemicals, Plastics	PE Optima 5300 PE Optima 7300
Elemental Analysis	ALY-008 ASTM E415 ASTM E1086	Al, Co, Fe, Ni, Ti Alloys	Spark OES SpectroLab M
C Analysis	ALY-005 ALY-011 ASTM E1019 ASTM E1941	Most Metal Alloys, Ceramics	Combustion LECO CS444-LS LECO 844
H Analysis	ALY-006 ASTM E1447	Metal Alloys, excluding Al, Mg	Fusion LECO RH404 LECO H836
N Analysis	ALY-002 ALY-003 ASTM E1019 ASTM E1409	All Metal Alloys, Oxides, Nitrides, Ceramics	Fusion LECO TC436 LECO TC436DR

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Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
O Analysis	ALY-002 ALY-003 ASTM E1019 ASTM E1409	Most Metal Alloys, excluding Al, Ceramics, Carbides, Nitrides	Fusion LECO TC436 LECO TC436DR
S Analysis	ALY-005 ALY-011 ASTM E1019	Most Metal Alloys, Ceramics, Graphite	Combustion LECO CS444LS LECO 844
Elemental Analysis	MS-003 MS-006	All Metal Alloys, Ceramics, Chemicals, Plastics	ICP-MS NEXION 300/350X PE ELAN DRcE PE ELAN DRcEB PE ELAN DRcII
Se, Te, Cd	AA-002 ASTM E1184	Co, Cr, Fe, Mo, Ni Alloys	AA-GF PE AAnalyst 600
Elemental Analysis	ALY-010 ASTM E572 ASTM E1172	Co, Fe, Ni, Ti Alloys	XRF Analysis PanAlytical
Titration Method for Cr Titration Method for B	WC-001M10 (ASTM E350, WC defined) WC-002 WC-001M1 (ASTM E371) WC-001M3 (ASTM C791 - WC defined); WC-002	Metal Alloys, Chemicals	Titration Metrohm 785 DMP
Total Pb per 16CFR Part 1303: Lead Paint Regulation Lead in Non-Metal Children's Products Lead in Children's Metal Products Lead in Children's Metal Jewelry	CPSC-01 CPSC-CH-E1001-08.3 CPSC-CH-E1002-08.3 CPSC-CH-E1003-09.1	Children's Products Sample Preparation and Analysis	ICP-MS PE ELAN DRcE PE ELAN DRcEB PE ELAN DRcII NEXION 300/350X ICP-OES PE Optima 5300 PE Optima 7300



Chemical

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Soluble Heavy Metals	CPSC-01 ASTM F 963(Section 4 & Section 8) ASTM F 963-16/-17, 4.3.5.1 ASTM F 963-16/-17, 4.3.5.2 EN 71-3 (section 4 through 10)	Children's Products Sample Preparation and Analysis Surface Coating Materials – Soluble Test For Metals Toy Substrate Materials	ICP-MS PE ELAN DRCE PE ELAN DRCEB PE ELAN DRCII NEXION 300/350X ICP-OES PE Optima 5300 PE Optima 7300 Cold Vapor AA Leeman Hydra
Br, Cl, F, I, S ²⁻	AC-002 ASTM C791 ASTM D512 ASTM D808 ASTM D1179 ASTM D7359 BS EN 14582:2016	Metal Alloys, Ceramics, Chemicals, Plastics	Ion-Selective Electrode Orion EA 940
Hg Analysis	AC-009 ASTM D3223	Metal Alloys, Ceramics, Chemicals, Plastics	Cold Vapor AA Leeman Hydra II
Cl, F, Br, I, NO ₂ , NO ₃ , SO ₄ , PO ₄	AC-008 ASTM D4327 ASTM D7359 BS EN 14582:2016	Metal Alloys, Ceramics, Chemicals, Plastics	Ion Chromatography ICS 2100, ICS 5000
Elemental Analysis	NSL-4010	Ceramics, Chemicals, Carbides, Nitrides	DC Arc Atom Comp 2000
Qualitative Elemental Analysis EDS profile, Surface Morphology, Imaging	SEM-001	Metal Alloys, Ceramics, Composites, Coatings, Fibers, Polymers, Particles	SEM Amray 1830 EDS Detector Oxford 6227
Phthalates	ORG-003 ORG-004 ORG-007 ORG-003M1 CPSC-CH-C1001-09.3 CPSC-CH-C1001-09.4 (2018)	Polymers, Children's Product Analysis	Varian 4000 GC/MS PE Clarus 600 GC PE Clarus 680 SQ 8T GCMS
Qualitative Analysis, Polymer Identification	ORG-002	Polymers, other Organic Compounds	FTIR PE Spectrum 1
Formulation Identification	ORG-005 ASTM E1582 ASTM E2040 ASTM E1131	Polymers, other Organic Compounds	TGA (thermal gravimetric analysis) TA Instruments Q500



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Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Determination of Thermal Characteristics	ORG-006 ASTM E967 ASTM E968	Polymers, other Organic Compounds	DSC (differential scanning calorimeter) TA Instruments Q20
Particle size distribution, wet or dry delivery	PS-01 ISO 13320	Particle Size Analysis	Malvern Mastersizer 3000 Particle Size Analyzer
Qualitative screening of RoHS elements and Alloy Identification	IEC 62321-3-1 ALY-009	RoHS Screening: Metal Alloys, Ceramics, Plastics	Portable XRF XL3t gun
Quantitative screening for Halogens, Sulfur, Br in RoHS	IEC 62321-3-2 AC-008 AC-001M2 AC-001M6 BS EN 14582 :2007 ASTM D7359	RoHS Screening: Metal Alloys, Ceramics, Plastics	Ion Chromatography ICS 2100, ICS 5000
Mercury in polymers, metals and electronics by CV-AAS, ICP-OES	IEC 62321-4	RoHS Testing: Electronics and Consumer Products (All Metals, Alloys, Ceramics, Chemicals, Plastics, Polymers, Coatings)	ICP-OES PE Optima 5300 Cold Vapor AA Leeman Hydra II
Cd, Cr and Pb in Polymers Cd, and Pb in Metals Cd, Cr and Pb in Electronics	IEC 62321-5	RoHS Testing: Electronics and Consumer Products (All Metals, Alloys, Ceramics, Chemicals, Plastics, Polymers, Coatings)	ICP-OES Leeman Profile PE Optima 5300 PE Optima 7300 ICP-MS Nexion 300/350X PE ELAN DRCE PE ELAN DRCEB PE ELAN DRCII
PBB and PBDE in Polymers by GC-MS	IEC 62321-6	RoHS Testing: Electronics and Consumer Products (All Metals, Alloys, Ceramics, Chemicals, Plastics, Polymers, Coatings)	GC-MS Varian 4000 PE Clarus 680 SQ 8T GCMS
Colorimetric Cr+6 on Surface Coatings	IEC 62321-7-1 AC-012 AC-006	RoHS Testing: Electronics and Consumer Products (All Metals, Alloys, Ceramics, Chemicals, Plastics, Polymers, Coatings)	Genesys 5 Genesys 10S Spectrophotometer

Chemical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Colorimetric Cr+6 on Polymers and Electronics	IEC 62321-7-2 AC-012 AC-006	RoHS Testing: Electronics and Consumer Products (All Metals, Alloys, Ceramics, Chemicals, Plastics, Polymers, Coatings)	Genesys 5 Genesys 10S Spectrophotometer
Phthalates	IEC 62321-8 ORG-007	RoHS Testing: Electronics and Consumer Products (All Metals, Alloys, Ceramics, Chemicals, Plastics, Polymers, Coatings)	Varian 4000 GC/MS PE Clarus 680 SQ 8T GCMS

Powders

Metal Powders	ASTM B-213 PC-01	Flow rate	Hall Flow Meter Carney Funnel
Free Flowing Metal Powders	ASTM B-212 ASTM B-964 PC-02	Apparent Density	Hall Flowmeter Funnel
Non- Free-Flowing Metal Powders	ASTM B-417 PC-03		Carney Funnel
Metal Powders	ASTM B-527 PC-05	Tap Density	Quantachrome Auto-Tap
Sieve Analysis-Metal & Other Powders	ASTM B214 PC-004	Sieve Testing	Rotap Sieves

Note:

- This scope is formatted as part of a single document including Certificate of Accreditation No. AT-1354.



Vice President