



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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MECHANICAL

Valid To: January 31, 2022

Certificate Number: 1888.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following mechanical, metallurgical and environmental simulation tests on metallic and polymeric materials.¹

<u>Test</u>	<u>Specification</u>
<u>Metallic Testing</u>	
Notched Bar (Charpy) Impact	ASTM E23, A370, EN 10045-1, ISO 148-1, EN ISO 9016
Tensile Testing	ASTM E8, A370, B557, EN895, EN ISO 4136, ISO 6892
Fastener Testing, Tensile (Axial/Wedge), Proof Fractured Toughness	ASTM F606/F606M, SAE J429 ASTM E1290, E1820, E399
Bend Testing	ASTM E290, A370, EN910, EN ISO 5173
Brinell Hardness of Metallic Materials (10mm-3000kg, 1500kg, 1000kg, 500kg)	ASTM E10, A370, ISO 6506-1
Rockwell Hardness of Metallic Materials (15N, 30N, 45N, 15T, 30T, 45T, A, B, C)	ASTM E18, A370
Microhardness of Materials (HK-500g, 100g) (HV 1000g, 500g, 100g)	ASTM E384, E92, EN 1043-2, ISO 6507-2, EN ISO 9015-2
Vickers Macrohardness (HV-5000g, 10,000g)	ASTM E92, EN 1043-1, ISO 6507-1, EN ISO 9015-1
Leeb Hardness	ASTM A956
<u>Metallographic Analysis</u>	
Macroscopic and Microscopic Examination of Welds	EN 1321
Inclusion Evaluation	ASTM E45, E3
Microstructure of Graphite in Iron	ASTM A247

Test**Specification**

Grain Size	ASTM E112
IGA Susceptibility	ASTM A262
Metal and Oxide Coating Thickness	ASTM B487, B748 (SEM)
Coating Weight	ASTM A90
Anodizing Coating Weight	ASTM B137
Decarb Depth	ASTM E1077
Case Depth (Optical)	ATS Proc. MAT-P-905, ASM HBK, Vol 9(9 th edition), Vol 7 (8 th edition)
SEM/EDS	ATS MAT-P-914, MAT-P-915, ASTM E1508
Image Analysis	ASTM E1245, E562
Coating Thickness (XRF method)	ASTM B568
Shock & Vibration	Customer Profiles
Single Axis, with Slip Table	MIL-STD-810H (Method 514, 516); IEC 60068-2-
20 000 lbf shock	27; IEC 60068-2-31; 60068-2-64
12 000 lbf	
(5 to 2000) Hz	
Sine and Random	
2 in peak to peak	
Seismic Testing	IEEE 344, GR-63-CORE, AC-156
Acid Dissolution Testing of Anodic Coatings	ASTM B680
Conductivity Measurement	ASTM E1004
Weld and Braze Evaluation and Qualification	AMS-STD-1595; API 1104; ASME Sec. III, VIII, IX; AWS B2.1/B2.1M, B2.2/B2.2M, D1.1/D1.1M, D1.2/D1.2M, D1.3/D1.3M, D1.4/D1.4M, AASHTO AWS D1.5/D1.5M, D1.6/D1.6M, D1.9/D1.9M, D9.1/D9.1M, D14.1/D14.1M, D14.3/D14.3M, D14.4/D14.4M, D14.6/D14.6M, D15.1/D15.1M, D17.1/D17.1M, D17.2/D17.2M, D17.3/D17.3M, D3.6, D18.1/D18.1M; ISO 15614-1; BS EN287-1, BS EN 288-8, BS EN 1418, BS EN 287-2 (Canceled 12/17/04) ³ , DIN-EN 15085-2, EN ISO 15613, EN ISO 15614- 2, EN ISO 15614-8, EN ISO 15614-11, EN ISO 9606-1, EN ISO 9606-2, EN ISO 9606-3, EN ISO 9606-4; MIL-STD-248D, MIL-STD-1595A, MIL- STD-2219, NAVSEA S9074-AQ-GIB-010/248; NACE MR0175/ISO15156-1, 15156-2, 15156-3; NACE MR0103; NACE SP0472

Test**Specification**

Failure Investigation

ATS Proc. MAT-P-931, ATS MAT-P-949, ATS MAT-P-959, ASM HBK Vol.11 and the testing on accreditation scopes 1888.01, 1888.02 & 1888.04

Computed Tomography

ATS Proc. MAT-P-1203

Non-Metals testing

Pencil Hardness

ASTM D3363

Tape Adhesion

ASTM D3359, FLTM BI 106, GM 9502P³; ISO 2409

Specular Gloss

ASTM D523, ISO 2813

Color

ASTM D2244, ISO 7724

Coating Impact (Gardner)

ASTM D2794, ISO 6272-1

Izod Impact (Method A)

ASTM D256

Rockwell Hardness, Plastics (HRR, HRM)

ASTM D785; ISO 2039-2

Flexural Properties

ASTM D790; ISO 178

Vicat Softening Temperature

ASTM D1525; ISO 306

Coating Thickness

ASTM D7091

Tensile Properties of Plastics

ASTM D412, D638; ISO 527-1; DIN 53504

Durometer (Shore A & D)

ASTM D2240; DIN 53505

Melt Flow

ASTM D1238

Tear Resistance

ASTM D624, method B, C

Heat Deflection Temperature

ASTM D648; ISO 75-1

Odor Testing

VDA 270

Organic Emissions of Non-Metallic Materials for Automobile (Marks Instrumentation)

VDA 278

Taber Abrasion

ASTM D4060

Fogging

DIN 75201, PV 3015

Flammability of Interior Materials

DIN 75200; FMVSS 302; HES C206; HES D6003

Flammability of Clothing Textiles

16 CFR 1610, ASTM D1230

Flammability of Plastic Materials

UL 94

<u>Test</u>	<u>Specification</u>
Flexible and rigid cellular polymeric materials -- Accelerated ageing tests	ISO 2440
Paints and varnishes -- Visual comparison of colour of paints	ISO 3668
Paints and varnishes -- Evaluation of degradation of coatings -- Designation of quantity and size of defects, and of intensity of uniform changes in appearance –	ISO 4628 Part 1: General introduction and designation system Part 2: Assessment of degree of blistering Part 3: Assessment of degree of rusting Part 4: Assessment of degree of cracking Part 8: Assessment of degree of delamination and corrosion around a scribe or other artificial defect
Paints and varnishes -- Determination of resistance to cyclic corrosion conditions -	ISO 11997 Part 2: Wet (salt fog)/dry/humidity/UV light Part 5 Technical Mechanical Tests - 5.1.1 Manual Scratch Test Part 6 – Climatic Tests – 5.5.1 Filiform Test MBN 10494
<u>Environmental Exposure</u>	
Florida Exposure	PV3929
Kalahari Exposure	PV3930
Immersion in Liquids (Paints & Varnishes)	ISO 2812-1, -2, -3, -4, -5
Salt Spray	ASTM B117, FLTM BI 103, GM 4298P3, DIN 50021, ISO 7253
CASS	ASTM B368
Low Pressure Operational	MIL-STD-810H (Method 500)
High Temperature Storage and High Temperature Operational	MIL-STD-810H (Method 501)
Low Temperature Storage and Low Temperature Operational	MIL-STD-810H (Method 502)
Solar Test	MIL-STD-810H (Method 507)
Blowing Rain, Dripping Rain	MIL-STD-810H (Method 506)
High Humidity Endurance	MIL-STD-810H (Method 507)
Salt Fog	MIL-STD-810H (Method 509)

<u>Test</u>	<u>Specification</u>
IPX8 (Immerse)	IEC 60529
Altitude Testing	MIL-STD-810, RTCA D0160
Filiform Corrosion	ISO 3665, ASTM D2803
Humidity (Condensing)	ASTM D2247, D4585
Water Fog	ASTM D1735, GM 4465P ³
Coating for automotive industry - pressure-water jetting	DIN 55662, DIN EN ISO 16925
Corrosion Test in Artificial Atmospheres- Salt spray test	DIN EN ISO 9227
Procedure for exposing test specimens in condensation water atmospheres	ISO 6270-2
Accelerated Cyclic Corrosion Test	TM 00.00-L-467
Accelerated Corrosion Test	GM9540P
Cyclic Corrosion Lab Test	GMW14872
Exposure Test of Passenger Compartment components	PV 1303
Cyclic Corrosion Test	CETP 00.00 L467
Temperature/Humidity Cycling	GM 9505P ² , IEC 68-2-30, BMW TS 308, PrV303
Cyclic Salt Fog	ASTM G85 appendix 1,2,3,5, GM 9540P ² , SAE J1563, GMW 14872
Stone Chip Resistance	DIN ISO 20567-1, Part 1
Gravelometer	ASTM D3170, SAE J400
Standard Practice for Accelerated Testing for Color Stability of Plastics Exposed to Indoor Office Environments	ASTM D4674
UV Fluorescent Exposure testing	ASTM G154, ASTM D4329, ASTM D4587, ISO 11507
Fluorescent UV-Condensation Exposure testing	ASTM D4587, ASTM D5894; SAE J2020; ISO 4892-3
Xenon Arc Weathering	ASTM G155, ASTM D2565, ASTM D4355, ASTM D4459, ASTM D6695, ASTM D7869; SAE J2527, J1885, J2412; ISO 4892-2; VDA 75202
Resistance to artificial weathering	FLTM BO 101-01

Specification**Test**

Measurement of Gloss of Painted Panels	FLTM BI 110-01
Resistance to Interior Weathering	FLTM BO 116-01
Artificial Weathering of Automotive Interior Trim Materials	GMW3414
Colorfastness to Artificial Weathering	GMW14162; ISO 105-B02, 105-B04
Weatherability for Automotive Parts	JIS D 0205 Sections 1-6, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 7.8, 7.9, 7.10, 8-9
Solar Simulation	DIN 75220
<u>CPSC Testing</u> ¹	
Small Parts Testing	16 CFR 1500, 16 CFR 1501
Toy Chests	ASTM F834-08, ASTM F963-17 Section 4.41, 8.27
Toy Chest Lids and Closures	ASTM F963-17 Section 8.27.1
Sound Producing Toys	ASTM F963-17 Section 4.5, 8.20
Small Objects	ASTM F963-17 Section 4.6
Accessible Edges	ASTM F963-17 Section 4.7, 16 CFR 1500.49
Projections	ASTM F963-17 Section 4.8
Accessible Points	ASTM F963-17 Section 4.9, 16 CFR 1500.48
Wires or Rods	ASTM F963-17 Section 4.10, 8.12
Nails and Fasteners	ASTM F963-17 Section 4.11
Folding Mechanisms and Hinges	ASTM F963-17 Section 4.13,
Cords, Straps, and Elastics	ASTM F963-17 Section 4.14, 8.22
Stability and Overload Requirements	ASTM F963-17 Section 4.15, 8.15, 8.26
Confined Spaces	ASTM F963-17 Section 4.16
Wheels, Tires, and Axles	ASTM F963-17 Section 4.17, 8.11
Holes, Clearances, and Accessibility of Mechanisms	ASTM F963-17 Section 4.18
Simulated Protective Devices	ASTM F963-17 Section 4.19
Pacifiers	ASTM F963-17 Section 4.20
Toy Pacifiers	ASTM F963-17 Section 4.20.2

Specification

Test

Projectile Toys	ASTM F963-17 Sections 4.21.2.3, 4.21.2.6, 4.21.3.3, 4.21.4
Teethers and Teething Toys	ASTM F963-17 Section 4.22
Rattles	ASTM F963-17 Section 4.23
Squeeze Toys	ASTM F963-17 Section 4.24
Battery Operated Toys	ASTM F963-17 Section 4.25, 8.17, 8.18, 8.19
Toys Intended to be Attached to a Crib or Playpen	ASTM F963-17 Section 4.26
Stuffed and Beanbag-Type Toys	ASTM F963-17 Section 4.27, 8.9.1
Toy Gun Marking	ASTM F963-17 Section 4.30
Certain Toys with Spherical Ends	ASTM F963-17 Section 4.32
Pompoms	ASTM F963-17 Section 4.35, 8.16
Hemispherical-Shaped Objects	ASTM F963-17 Section 4.36
Yo-Yo Elastic Tether Toys	ASTM F963-17 Section 4.37, 8.23
Magnets	ASTM F963-17 Section 4.38, 8.24, 8.25
Jaw Entrapment in Handles and Steering Wheels	ASTM F963-17 Section 4.39
Overload of Ride-On Toys and Toy Seats	ASTM-F963-17 Section 8.28
Pacifier Testing	16 CFR 1511
Rattle Testing	16 CFR 1510
<u>European Toy Safety</u>	
Mechanical and Physical Properties	EN-71: Part 1 § 8.2–8.14, 8.16–8.20, 8.23, 8.24, 8.27, 8.28 (excluding earphones), 8.29–8.35
Flammability	EN-71: Part 2, ASTM F963-17-Section A5
<u>Electrical Testing</u>	
Dielectric Strength	MIL-STD-202G Method 301
Insulation Resistance	MIL-STD-202G Method 302
Contact Resistance	MIL-STD-1344A Method 3004.1

¹The Consumer Product Safety Improvement Act (CPSIA) requires that every children's product subject to a federal consumer product safety requirement be tested by a Consumer Product Safety Commission (CPSC) accepted laboratory for compliance with the applicable federal children's product safety requirements. Accreditation by A2LA does not infer acceptance by the CPSC. Please verify this organization's acceptance status by using the CPSC's searchable database, located at <http://www.cpsc.gov/cgi-bin/labsearch/>.

² Tests also performed in accordance with customer and industry standards directly related to the above listed testing parameters.

³ This laboratory's scope contains withdrawn or superseded methods. As a clarifier, this indicates that the applicable method itself has been withdrawn or is now considered "historical" and not that the laboratory's accreditation for the method has been withdrawn.



Accredited Laboratory

A2LA has accredited

APPLIED TECHNICAL SERVCIES, LLC

Marietta, GA

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 14th day of February 2020.

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

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1888.01
Valid to January 31, 2022
Revised March 10, 2021

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