SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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MECHANICAL

Valid To: September 30, 2026 Certificate Number: 0859.03

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform weathering and corrosion tests:

Laboratory Accelerated Weathering and Corrosion Exposures:
Using controlled irradiance xenon arc Q-SUN™ chambers, fluorescent-ultraviolet condensation QUV™ apparatus, Q-FOG™ cyclic corrosion testers, laboratory ovens, environmental chambers and controlled temperature baths

Evaluations:
Visual and instrumental evaluations to measure degradation effects, including gloss and color, mechanical measurements of physical properties before and after exposure

On the following materials:

Automotive Components, Plastics, Paints, Textiles, Roofing, Sealants, Glass, Photovoltaic, and Solar Heating materials

WEATHER DURABILITY TESTING WITH XENON ARC LAMPS		
Type of Test [1]	**Measurement / Test Parameter**	**Measurement and Testing Range**
Weathering Resistance: *Q-SUN*	Irradiance	0.25-1.30 W/m^2 @ 340 nm 0.45-2.40 W/m^2 @ 420 nm 20-125 W/m^2 @ TUV (300 - 400 nm)
	Optical Filter	Daylight Extended UV
	Chamber Temperature	25-65 °C
	BST/BPT Temperature	35-120 °C
	Moisture	10-95 % RH Water Spray
	Cyclic Capability	Light, Dark Light+Spray, Dark+Spray Front + Back Spray Front + Dual Solution Spray
Colorfastness to Window-Filtered Light: *Q-SUN*	Irradiance	0.25-0.85 W/m^2 @ 340 nm 0.45-2.40 W/m^2 @ 420 nm 20-108 W/m^2 @ TUV (300 - 400 nm)
	Optical Filter	Window
	Chamber Temperature	25-65 °C
	BST/BPT Temperature	35-120 °C
	Moisture	10-95 % Relative Humidity
	Cyclic Capability	Light, Dark

WEATHER DURABILITY TESTING WITH FLUORESCENT UV LAMPS		
Type of Test [1]	**Measurement / Test Parameter**	**Measurement and Testing Range**
Weathering Resistance: *QUV*	Lamps Irradiance BST/BPT Temperature Moisture Cyclic Capability	UVA-340, -351, UVB-313, UVC-254 0.20-2.04 W/m^2 @ 340 nm (UVA-340) 0.20-1.54 W/m^2 @ 340 nm (UVA-351) 0.20-2.04 W/m^2 @ 310 nm (UVB-313) 1.0-13.0 mW/cm^2 @254 nm (UVC-254) 35 - 80 °C Continuous condensation Water Spray Light, Dark Light + Condensation or Water Spray Dark + Condensation or Water Spray

CORROSION RESISTANCE TESTING		
Type of Test [1]	**Measurement / Test Parameter**	**Measurement and Testing Range**
Cyclic Corrosion: *Q-FOG*	Chamber Temperature Solution Solution Application Cyclic Capability	20-70 °C NaCl, other electrolyte solutions Fog Shower (Spray) Fog Shower RH Control (10-95%) Dry

Weathering and Corrosion Evaluations

Type of Test [1]	**Reportable Parameters**	**Equipment Capabilities/Ranges**
Dry Film Thickness	µm (inch mils)	0-500 µm (0-20 mils)
Instrumental Color	Scales CIELAB, Hunter Lab, YXZ, Yxy, YI, WI, Instrumental Gray Scale Tolerances DE, DE2000, CMC	Geometry 45/0 8° Sphere
Specular Gloss	20°, 60° & 85°	20° 0-2000 GU 60° 0-1000 GU 85° 0-160 GU
Visual Assessment (qualitative)	Blistering Chalking Checking/Cracking Chip Impact Color (visual) Corrosion Dirt Erosion Flaking Surface Rust Visual Gray Scale	Light Booth *Illuminant* D65 A CWF *Intensity* 1080 - 1340 lux North Facing Window

Physical and Mechanical Testing

Type of Test [1]	**Measurement / Test Parameter**	**Measurement and Testing Range**
Chip Impact	Chilled iron grit Water worn gravel	Gravel sizes 4-5 mm angular 9.5-15.9 mm Air pressures 0-70 psi Impact time 0-33 sec. Volume per cycle (max) 0-500 g
Length measurement		Caliper (0-150 mm) Ruler (0-150 mm)
Pencil Hardness	Gouge and Scratch Hardness	Pencil range 4H - 4B
Tape Adhesion	Cross-hatch and X-Scribe	1-3 mm spacing Scribe tools Single blade, Multi-cutter

[1] Using the following test methods in addition to customer-supplied methods directly related to the types of tests and parameters above:

LABORATORY ACCELERATED WEATHERING: TESTING WITH XENON ARC LAMPS

ISO 105-B02	Textiles – Tests for Colour Fastness, Part B02: Colour Fastness to Artificial Light: Xenon Arc Fading Lamp Test
ISO 4892-2	Plastics- Methods of Exposure to Laboratory Light Sources; Xenon arc Sources
ASTM G155	Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials

LABORATORY ACCELERATED WEATHERING: TESTING WITH FLUORESCENT UV LAMPS

ISO 4892-3	Plastics- Methods of Exposure to Laboratory Light Sources; Fluorescent UV Lamps
ASTM G154	Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials

LABORATORY ACCELERATED WEATHERING: CORROSION RESISTANCE TESTING

ISO 9227 (NSS Only)	Corrosion Tests in Artificial Atmosphere - Salt Spray Tests
ASTM B117	Salt Spray (Fog) Testing

WEATHERING AND CORROSION EVALUATIONS: DRY FILM THICKNESS (DFT)

ISO 2178	Thickness of Coating on Magnetic Substrates
ISO 2360	Thickness of Coating on Non-Magnetic Substrates
ASTM D7091	Dry Film Thickness of Ferrous and Non-Ferrous Metals

WEATHERING AND CORROSION EVALUATIONS: INSTRUMENTAL COLOR

ISO 4582	Plastics — Determination of changes in colour and variations in properties
ASTM D1003, Method B	Haze and Transmittance of Transparent Plastics
ASTM D2244	Calculation of Color Differences from Instrumentally Measured Color Coordinates

WEATHERING AND CORROSION EVALUATIONS: SPECULAR GLOSS

ISO 2813	Determination of Specular Gloss of Non-Metallic Paint Films at 20°, 60°, and 85°
ASTM D523	Test Method for Specular Gloss

WEATHERING AND CORROSION EVALUATIONS: VISUAL ASSESSMENT

ISO 105-A02	Grey Scale for Assessing Change in Colour
ASTM D2616	Evaluation of Visual Colors Difference with a Gray Scale

PHYSICAL AND MECHANICAL TESTING: CHIP IMPACT

SAE J400	Test for Chip Resistance of Surface Coatings
ASTM D3170	Chipping Resistance of Coatings

PHYSICAL AND MECHANICAL TESTING: PENCIL HARDNESS

ASTM D3363	Film Hardness by Pencil Test

PHYSICAL AND MECHANICAL TESTING: TAPE ADHESION

ISO 2409	Paints and Varnishes – Cross-Cut Test
ASTM D3359	Measuring Adhesion by Tape Test

Additional Standards

LABORATORY ACCELERATED WEATHERING: TESTING WITH XENON ARC LAMPS

ASTM D3424 (Method 3 & 4)	Lightfastness and Weatherability of Printed Matter (Withdrawn 2020)
ASTM D4303 (Method C & D)	Lightfastness of Colorants used in Artists' Materials
ASTM D7356	Accelerated Acid Etch Weathering of Automotive Clearcoats Using a Xenon Arc Exposure Device
ASTM D7869	Xenon Arc Exposure Test with Enhanced Light and Water Exposure for Transportation Coatings
BMW AA-0235	Accelerated weathering crack stability
FLTM BO 116-01	Resistance to Interior Weathering
ISO 105-B04	Part B04: Colour Fastness to Artificial Weathering: Xenon Arc Fading Lamp Test
ISO 105-B06, Conditions 3 & 5	Part B06: Colour Fastness to Artificial Light at High Temperatures: Xenon Arc Fading Lamp Test
ISO 16474-1 (UV & Xenon Arc)	Part 1: General Guidance
ISO 16474-2	Part 2: Xenon Arc Lamps
ISO 11341 (withdrawn 2013)	Xenon Arc Testing for Paints
MBN 10505	Non-Metallic Materials Weathering in a Humid Climate

LABORATORY ACCELERATED WEATHERING: TESTING WITH XENON ARC LAMPS (CONT)

MBN 10506	Non-Metallic Materials Weathering in Dry and Hot Climates
SAE J2412	Accelerated Exposure Automotive Interior Trim Components using a Controlled Irradiance Xenon Arc Apparatus
SAE J2527	Performance Based Standard for Accelerated Exposure of Automotive Exterior Materials using a Controlled Irradiance Xenon Arc Apparatus
VW PV 1303	Non-Metallic Materials, High Temperature Light Exposure Passenger Compartment
VW PV 1306	Exposure test for Determining the Tackiness of Polypropylene Parts
VW PV 3929	Non-Metallic Materials, Weathering in Dry, Hot Climate
VW PV 3930	Non-Metallic Materials, Weathering in Moist, Hot Climate

LABORATORY ACCELERATED WEATHERING: TESTING WITH FLUORESCENT UV LAMPS

ASTM D3424 (Method 8) (Withdrawn)	Lightfastness and Weatherability of Printed Matter (Withdrawn 2020)
ASTM D4585	Testing Water Resistance of Coatings Using Controlled Condensation
ASTM D4587	Fluorescent UV Condensation Exposure of Paint and Related Coatings
ASTM D4674 (Method III and IV)	Accelerated Testing Color Stability of Indoor Plastics
ASTM D5894	Cyclic Salt Fog/UV Exposure of Painted Metal
ISO 11507 (withdrawn 2013)	Fluorescent UV Test on Paints
ISO 16474-3	Part 3 – Fluorescent UV Lamps
SAE J2020	Accelerated Exposure of Automotive Exterior Materials using a Fluorescent UV and Condensation Apparatus

LABORATORY ACCELERATED WEATHERING: CORROSION RESISTANCE TESTING

ASTM D1735	Water Resistance of Coatings using Water Fog Apparatus
ASTM D2247	Water Resistance to 100% relative Humidity
ASTM G85 *(except A4)*	Modified Salt Spray (Fog) Testing
EN 13523-8	Coil Coated Metals - Resistance to Salt Spray (Fog)
FLTM BI 103-01	Salt Spray Resistance Test for Painted Panels and Parts
Ford TM-00.00-L-467	Laboratory Accelerated Cyclic Corrosion Test
GB/T 10125	Corrosion tests in artificial atmospheres-salt spray tests
GMW 3286	Salt Spray Test
GMW 14729	High Humidity Test
GMW 14872	Cyclic Corrosion Laboratory Test
GMW 15282	Corrosion/Underutting Scribe Creepback
NES M 0007	Section 33 - Cyclic Corrosion (CCT-1, CCT-2, and CCT-4)
SAE J1959	Underbody Vehicle Corrosion Protection
VDA 233-102	Cyclic Corrosion of Materials and Components in Automotive Construction
VW PV 1210	Corrosion Test Body and Attachments

WEATHERING AND CORROSION EVALUATIONS

ASTM D1654	Evaluation of Painted or Coated Specimens to Corrosive Environments
ASTM D1729	Visual Evaluation of Color Difference of Opaque Materials
ASTM D1925-70 (withdrawn 1995)	Test Method for Yellowness Index of Plastics
ASTM D4214	Evaluating the Degree of Chalking of Exterior Paint Films
ASTM E1164	Spectrometric Data for Object Color Evaluation
ASTM E1331	Color by Spectrophotometry Using Hemispherical Geometry
ASTM E1348	Transmittance and Color by Spectrophotometry Using Hemispherical Geometry
ASTM E133	Calculating Yellowness and Whiteness Indices from Instrumentally Measured Color Coordinates
DIN 67530 (Superseded by DIN EN ISO 2813)	Gloss Assessment of Plane Surfaces of Paint Coatings and Plastic (Superseded by DIN EN ISO 2813)
EN 13523 Part 2	Specular Gloss
EN 13523 Part 3	Colour Difference Instrumental Comparison
EN 13523 Part 22	Coil Coated Metals – Colour Difference – Visual Comparison
ISO 2808	Paints and Varnishes Determination of Film Thickness
ISO 3668	Paints And Varnishes -- Visual Comparison Of Colour Of Paints
ISO 4628 Part 1	Part 1 - General Introduction and Designation System
ISO 4628 Part 2	Part 2 - Assessment of Degree of Blistering
ISO 4628 Part 3	Part 3 - Assessment of Degree of Rusting
ISO 4628 Part 4	Part 4 - Assessment of Degree of Cracking
ISO 4628 Part 5	Part 5 - Assessment of Degree of Flaking
ISO 4628 Part 6	Part 6 - Assessment of Degree of Chalking by Tape Method
ISO 4628 Part 7	Part 7 - Assessment of Degree of Chalking by Velvet Method
ISO 4628 Part 8	Part 8 – Assessment of Degree of Delamination and Corrosion Around a Scribe or Other Artificial Defect
ISO 4628 Part 10	Part 10 - Assessment of Degree of Filiform Corrosion
SAE J1545	Instrumental Color Difference Measurement for Exterior Finishes, Textiles and Trim
SAE J1767	Instrumental Color of Automotive Trim Material

PHYSICAL AND MECHANICAL TESTING

EN 13523 Part 4	Pencil Hardness
FLTM BI 157-04	High Performance Stone Chip Test
FLTM BI 157-06	High Performance Stone Chip Resistance Test New Rating Scale
GM 9071P (Superseded 2012)	Tape Adhesion Test for Paint Finishes
GMW 14700	Chip Resistance of Coatings

FOR GENERAL TESTING (MULTIPLE DISCIPLINES)

ASTM G147	Conditioning and Handling of Nonmetallic Materials for Natural and Artificial Weathering Tests
ASTM G151	Exposing Nonmetallic Materials in Accelerated Test Devices that use Laboratory Light Sources
ISO 4892-1 *(UV, Xenon Only)*	Plastics- Methods of Exposure to Laboratory Light Sources; General Guidance

[2] This laboratory meets the A2LA P112 Flexible Scope Policy

Accredited Laboratory

A2LA has accredited

Q-LAB DEUTSCHLAND GMBH

Saarbrücken, Germany

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 12th day of November 2024.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 0859.03
Valid to September 30, 2026

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