



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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MECHANICAL

Valid To: December 31, 2012

Certificate Number: 0038.01

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

Tensile/elongation; hardness (durometer, Rockwell, & Wallace); compression; impact (Izod, Charpy, & GM9300P); strength at room and high temperatures; shear strength; physical properties following fluid exposure; burst strength of paper, hoses and tubing; tear strength using tongue, elmdorf, and trapezoid methods; filler, glass, carbon black content; volume change; specific gravity and density; cleanability; dimensional stability; water absorption; melt flow/index; migration and contact staining; flammability; compression set; low-temperature brittleness; deflection temperature; permeability, vapor transmission; on plastics, rubber, elastomer, composite, paper/paperboard, construction elements, and textile products.

Weatherometer (xenon & carbon arc); sunlamp & QUV exposure; fadometer; ozone resistance; fogging; salt spray; CASS; humidity; condensing; crocking; water immersion; taber abrasion; gravelometer; specular gloss; luminous transmittance; chromaticity; color reading; corrodokote; oil/gas immersion solvent and detergent resistance; thermal shock; paint adhesion; spot test acid/water & soap; cleanability; coating thickness; flexibility; perspiration; scrub resistance; dime scrape; cure test; thumbnail hardness; oven aging; scab corrosion; environmental cycling; accelerated corrosion; filiform corrosion

Environmental Chambers: Temperature, dust and humidity exposures are performed during durability cycling simulating actual environment; microprocessors control chambers allowing automatic cycling and tracking of desired time, temperature and humidity; sizes up to 4m x 10m x 5m; Flow Measurement (liquid and/or gas): hydraulic pump performance; fan and blower delivery capabilities, radiator heat exchange capacity, heater output; Dynamometer Measurements: 3/4 to 50 horsepower; Stress Measurements; Pressure Testing; Durability Testing Mechanical/Electrical Cycling; Marine Products (pumps/motors/electronics); Hydrostatic Leak Testing (up to 40,000 psi); Electrodynamics vibration systems: generate controlled sine or random vibration, sine-on random vibration control, transient vibration control, mechanical shock in sawtooth, half-sine & squared wave forms, field data replication, operating or non-operating mode environments, high or low temperature & humidity conditions can be applied; Servohydraulic Test Systems: control of displacement, force or acceleration; thermal shock, liquid and air; light intensity; sound; MAST, HALT/HAST.

Component Durability; Pressure Cycling; Pressure-Vacuum Cycling; Fuel Recirculation; Temperature Cycling; Component Performance Testing; Fuel Exposure and Fuel Compatibility;

Fuel Dispensing and Capacity Testing; Performance Testing including fuel flow and electrical evaluation; Hydrostatic Burst Testing; ECE Burn Testing on Plastic Fuel Tanks, CARB Diurnal Testing, Permeation Testing (including: Guideline 24), Injector & Manifold Testing on Fuel Lines and Connectors; Fuel Tanks; Fuel Pumps and Modules; Fuel Injectors; Fuel Filters; Fuel Pressure Regulators; Fuel Level Senders; Fuel Rails; Fuel Filler Necks, Plastic & Metal Fuel tanks; Intake Manifolds; Spark Arrestors; Carbon Canisters; Gas Caps.

using the following capabilities:

<u>Parameter</u>	<u>Range</u>
Force	(0.01 to 100 000) lbf
Pressure	(0.008 to 50 000) psi
Pulse Pressure	(0 to 6 000) PSI, (0 to 20) Hz
Torque	1 in·oz to 100 000 ft·lb
Temperature	(-100 to 650) °C
Humidity	5 % to 98 %
Vacuum	(0.008 to 29.98) inHg
Airflow	0.01 cc/min to 5000 cfm
Air Velocity	(25 to 3000) ft·min
Sound	20 Hz to 20 kHz, (30 to 100) dB
Liquid Flow	0.01 cc/min to 225 gpm
Dimensional	(0.00015 to 36.000) in
Light Intensity	(0.01 to 3300) lux
Vibration Load Capacity	Up to 24 000 lbf
Vibration Frequencies	(3 to 2700) Hz
Displacement	3 in PK to PK
Vibration Acceleration	Up to 200 g
Load/Impact Velocity	1/2 SINE < 1 ms to 35 m/s at Terminal Peak
Mechanical Shock Capacity	Up to 3 500 g
Combined Environments:	-77 °C to 177 °C; 20 % RH o 95 % RH
Servohydraulic Stroke	Up to 60 in
Servohydraulic Load Capacity	Up to 100 000 lb
Servohydraulic Frequencies	Up to 50 Hz

Also using customer specific test methods utilizing any combination of test equipment parameters listed above as well as the following tests and standards but not limited to:

AATCC 104	Spot Test Water & Soap
AATCC 6	Spot Test Acid
AATCC TM 15	Perspiration
AATCC TM 8	Crocking, Dry & Wet
ASTM B117	Operating Salt Spray (Fog) Apparatus
ASTM B368	Copper-Accelerated Acetic Acid-Salt Spray (Fog) Testing (CASS Test)

ASTM B380	Corrosion Testing of Decorative Electrodeposited Coatings by the Corrodokote Procedure
ASTM B571	Qualitative Adhesion Testing of Metallic Coatings
ASTM C50	Abrasion-Taber
ASTM C501	Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser
ASTM D1000	Unwind Pull
ASTM D1003	Haze and Luminous Transmittance
ASTM D1004	Initial Tear Resistance of Plastic Film & Sheeting
ASTM D1044	Abrasion-Taber
ASTM D1056	Compression Force
ASTM D1117	Evaluating Nonwoven Fabrics
ASTM D1149	Rubber Deterioration Surface Ozone Cracking In a Chamber
ASTM D1171	Rubber Deterioration Surface Ozone Cracking Outdoors Or Chamber (Triangular
ASTM D1203	Volatile Loss from Plastics Using Activated Carbon Methods
ASTM D1229	Compression Set at Low Temperatures
ASTM D1238	Melt Index (Flow Rate)
ASTM D1415	Rubber Property - International Hardness
ASTM D1499	Filtered Open-Flame Carbon-Arc Exposures for Plastics
ASTM D1525	Vicat Softening Temperature of Plastic
ASTM D1621	Compressive Properties of Rigid Cellular Plastics
ASTM D1622	Apparent Density of Rigid Cellular Plastics
ASTM D1667	Flexible Cellular Materials-Vinyl Chloride Polymers & Copolymers
ASTM D1693	Environmental Stress Cracking
ASTM D1708	Tensile Properties of Plastics
ASTM D1712	Sulfide Staining Resistance of Plastics
ASTM D1735	Standard Practice for Testing Water Resistance of Coatings Using Water Fog Apparatus
ASTM D1777	Thickness of Textile Materials
ASTM D1793	Spot Test Water & Soap
ASTM D1822	Tensile Impact
ASTM D1894	Static & Kinetic Coefficients of Friction of Plastic Film & Sheeting
ASTM D1895	Apparent Density, Bulk Factor, and Pourability of Plastic
ASTM D1938	Tear-Propagation Resistance of Plastic Film and Thin Sheeting by A Single-Tear
ASTM D2097	Newark Flex Test
ASTM D2137	Brittleness Point of Flexible Polymers & Coated Fabrics
ASTM D2240, Shore A & D	Durometer Hardness
ASTM D2244	Calculation of Color Differences From Instrumentally Measured Color Coordinates
ASTM D2247	Water Resistance of Coatings In 100% Relative Humidity
ASTM D2261	Tongue Tear

ASTM D2344	Short-Beam Strength of Polymer Matrix Composite Materials
ASTM D2412	External Loading Characteristics of Plastic Pipe by Parallel Plate Loading
ASTM D256	Izod Pendulum Impact Resistance of Plastics
ASTM D2565	Xenon-Arc Exposure of Plastics Intended for Outdoor Applications
ASTM D2584	Ignition Loss of Cured Reinforced Resins
ASTM D2632	Rubber Property-Resilience by Vertical Rebound
ASTM D2859	Ignition Characteristics of Finished Textile Floor Covering Materials
ASTM D3012	Thermal-Oxidative Stability of Propylene Plastics Using a Specimen Rotator Within An Oven
ASTM D3039	Tensile Properties (Including Poisson's Ratio)
ASTM D3163	Strength of Adhesive Bonded Rigid Lap Shear Joints
ASTM D3330	Peel Adhesion of Pressure Sensitive Tape
ASTM D3359	Adhesion Tape Test
ASTM D3363	Film Hardness by Pencil Test
ASTM D3389	Coated Fabrics Abrasion Resistance (Rotary Platform, Double-Head Abrader)
ASTM D3574	Test Methods for Flexible Cellular Materials/Excluding Test G, I ₄ , Airflow, Test I2 Dynamic Fatigue Test by the Roller Shear At Constant Force, Test I4 Dynamic Fatigue Test for Carpet Cushion
ASTM D3575	Test Methods for Flexible Cellular Materials Made From Olefin (Except Sections 34-35, 45-46, 49-50, 66-67)
ASTM D3763	Standard Test Method for High Speed Puncture Properties of Plastics Using Load and Displacement Sensors
ASTM D3769	Heat Sag
ASTM D3776	Mass Per Unit Area (Weight) of Fabric
ASTM D380	Method for Rubber Hose (Except Sections 12-13)
ASTM D3846	In-Plane Shear Strength of Reinforced Plastics
ASTM D3882	Bow and Skew
ASTM D3884	Abrasion Resistance of Textiles, Taber
ASTM D395	Rubber Property-Compression Set
ASTM D4060	Taber Abrasion, Organic Coatings
ASTM D412	Tensile Properties, Vulcanized Rubber & Thermoplastics Elastomers
ASTM D413	Rubber Property-Adhesion to Flexible Substrate
ASTM D4138	Test Methods for Measurement of Dry Film Thickness of Protective Coating Systems by Destructive Means
ASTM D4157	Abrasion Resistance of Textiles, Wyzenbeek
ASTM D471	Rubber Property-Effect of Liquids
ASTM D4812	Unnotched Cantilever Beam Impact Strength of Plastics
ASTM D4966	Abrasion Resistance of Textile Fabrics
ASTM D4970	Pilling Resistance and Other Related Surface Changes of Textile Fabrics: Martindale Tester

ASTM D5034	Tensile Strength
ASTM D5035	Breaking Strength, Textile Fabrics, Strip Method
ASTM D518	Rubber Deterioration-Surface Cracking
ASTM D523	Specular Gloss
ASTM D5420	Gardner Impact
ASTM D543	Resistance of Plastics to Chemical Reagents
ASTM D5587	Tearing Strength of Fabrics by the Trapezoid Procedure
ASTM D5628	Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimens by Means of a Falling Dart (Tup Or Falling Mass)
ASTM D5630, Method B	Ash Content of Thermoplastics
ASTM D570	Water Absorption of Plastic
ASTM D5729	Standard Test Method for Thickness of Nonwoven Fabrics
ASTM D573	Rubber-Deterioration In An Air Oven
ASTM D5733	Tearing Strength of Nonwoven Fabrics by the Trapezoid Procedure
ASTM D575	Rubber Properties In Compression
ASTM D6110	Impact Resistance of Notched Specimens of Plastics
ASTM D6182	Flexibility and Adhesion of Finish on Leather
ASTM D624	Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomer
ASTM D635	Flammability, Rigid Plastics
ASTM D638	Tensile Properties of Plastics (Including Poisson's Ratio)
ASTM D644	Moisture Content of Paper & Paperboard
ASTM D648	Deflection Temperature of Plastics Under Flexural Load In the Edgewise Position
ASTM D673	Resistance to Mar, Sand (Withdrawn)
ASTM D695	Compressive Properties of Rigid Plastics
ASTM D696	Coefficient of Linear Thermal Expansion of Plastics Between (-30 & 30°C)
ASTM D7091	Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals
ASTM D732	Shear Strength of Plastics by Punch Tool
ASTM D737	Air Permeability of Fabrics, Fraiser Method
ASTM D746	Brittleness Temperature of Plastics Elastomers by Impact
ASTM D747	Apparent Bending Modulus of Plastics by Means of a Cantilever Beam
ASTM D750	Deterioration In Carbon-Arc Weathering Apparatus
ASTM D751	Coated Fabrics (Pp 41-49)
ASTM D774	Bursting Strength of Paper
ASTM D785, B, L, M, R	Rockwell Hardness of Plastics and Electrical Insulating Materials
ASTM D790	Flexural Properties of Unreinforced and Reinforced Plastics & Electrical
ASTM D792	Density

ASTM D828	Tensile Breaking Strength of Paper & Paperboard
ASTM D865	Rubber-Deterioration by Heat In Air (Test Tube Enclosure)
ASTM D870	Testing Water Resistance of Coatings Using Water Immersion
ASTM D882	Tensile Properties Thin Plastic Sheeting
ASTM D903	Peel Or Stripping Strength of Adhesive Bonds
ASTM D925	Staining of Surfaces (Contact/Migration/Diffusion) Method a
ASTM D952	Bond of Cohesive Strength of Sheet Plastics & Electrical Insulation
ASTM D955	Mold Shrinkage
ASTM E132	Poisson's Ratio
ASTM E72	Strength Test of Panels
ASTM E96	Water Vapor Transmissions
ASTM F146	Fluid Resistance of Gasket Materials
ASTM F147	Flexibility of Non-Metallic Gasket Materials
ASTM F152	Tension Testing of Nonmetallic Gasket Materials
ASTM F36	Compressibility & Recovery of Gasket Materials
ASTM G152	Carbon Arc Weatherometer, Open Flame (ASTM G23- Expired)
ASTM G153	Carbon Arc Weatherometer, Enclosed (ASTM G23- Expired)
ASTM G154	Fluorescent Light Apparatus for UV Exposure, QUV (ASTM G53- Expired)
ASTM G155	Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials (ASTM G26 – Expired)
ASTM G85	Corrosion Testing
Chrysler LP-463DB-03-01	Plastic Hydrolytic Stability
Chrysler LP-463KB-38-01	Fabric Lint Pickup and Lint Loss
Chrysler LP-463NB-20-01	Melt Point, Fisher-Johns
DIN 40050-9	Protection Against Foreign Objects; Water and Contact; Electrical Equipment
DIN 50017	Humidity Exposure
DIN 50021	Salt Spray
DIN 75 220	Aging Automobile Components in Solar Simulation Units
DIN 75201	Determination of Windscreen Fogging Characteristics of Trim Materials In Motor Vehicles
DOE NE-ID-11173	FreedomCAR Ultracapacitor Test Manual
ECE Reg. 43	Falling Ball Impact Testing
FLTM BI 106-01	Paint Adhesion Test
FLTM BI 107-05	Thermal Shock Test for Paint Adhesion
FLTM BI 110-01	Specular Gloss
FLTM BI 113-01	Spot Test Water & Soap
FLTM BI 113-02	Spot Test Acid
FLTM BI 117-01	Coating Thickness
FLTM BI 123-01	Painted Sheet Metal Corrosion, Apg
FLTM BI 124-01	Filiform Corrosion Test
FLTM BN 107-01	Crocking, Dry & Wet

FLTM BN 108-02	Abrasion-Taber
FLTM BN 108-04	Scuffing
FLTM BN 108-13	Scratch Test
FLTM BN 24-2	Automotive Materials, Flammability
FLTM BN102-02	W Flex
FLTM BN106-02	Seam Fatigue Testing
FLTM BN108-03	Resistance to Pilling
FLTM BN108-14	Resistance to Pilling Wear of Leather
FLTM BN157-01	Determination of Leather Softness
FLTM BO 101-01	Resistance to Artificial Weather (Xenon Arc)
FLTM BO 112-06	Stain Resistance
FLTM BO-021-02	Melt Point, Fisher-Johns
FLTM BQ 105-01	Corrosion Testing, Cass
FMVSS 571.206 (Except 5.1.1.4)	Door Locks and Door Retention Components
FMVSS 571.209 (S5.1 & S5.2 only)	Seat Belt Assemblies
FMVSS 571.213 (S5.4.1 only)	Child Restraint Systems
FMVSS 571.223	Rear Impact Guards
FMVSS 571.302	Flammability of Interior Materials
Ford CETP 01.03-L-309	Mini Key Life Test – Side Door Durability
Ford CETP 10.01-L-600	Measuring Fuel Tank Filling Performance
Ford CETP 10.01-L-601	Vehicle or Rig Fuel Tank Filling to Measure Liquid Capacity
Ford IP-0105	Instrument Panel Sunload Resistance
Ford MA-0128	Simulated Sunload Resistance – Exterior
Ford MA-0130	Humidity Aging
Ford MA-0131	Heat Age
Ford OR-0329	Sunload Resistance- Exterior Ornamentation
Ford/GM 6F-6T70/75	Joint Supplier Sediment Procedure
GM 10004C	Transmission and Engine Oil Cooler Plumbing System
GM 10005C	Radiators – Durability and Performance (Inactive)
GM 4298P	Salt Spray Test
GM 4465P	Humidity Test
GM 4476P	CASS Test Copper-Accelerated Acetic Acid Salt Spray Test (Fog)
GM 4486P	Test of Ozone Resistance of Elastomer Compounds
GM 9003P	Corrosion Test for Seal Compounds
GM 9011P	Test for Cold Shock Resistance of Sealers, Deadeners and Vinyl Films
GM 9032P	Impact Strength of Plastics
GM 9033P	Colorfastness to Crocking (Rubbing)
GM 9058P	Procedure for Qualifying Hose Coupling Assemblies
GM 9059P	Thermal-Oxidative Stability Characteristics of Plastics

GM 9060P	Qualifying Quick-Connector Fittings for Nylon Fuel Line Usage
GM 9061P	Permeability Test for Fuel Hose and Tubing
GM 9067P	Gasoline Extractables In Hose
GM 9070P	Testing Flammability of Materials
GM 9071P	Tape Adhesion Test for Paint Finishes
GM 9077P	Glass Content of Glass Reinforced Plastic
GM 9082P	Abrasion Resistance of Textiles, Wyzenbeek
GM 9102P	Corrosion Creep Back Test Method
GM 9125P	Accelerated Exposure of Automotive Materials (Xenon Arc)
GM 9126P	Cleanability
GM 9128P	Mildew
GM 9130P	Resistance to Odor
GM 9133P	Water Spotting
GM 9141P	Staining of Surfaces (Contact/Migration/Diffusion)
GM 9146P	Wicking and Blistering of Convertible Top End Roof Trim Materials
GM 9193P	Internal Bond Strength
GM 9200P	Accelerated Aging and Steaming
GM 9201P	Crease Resistance
GM 9203P	Stress Mark Susceptibility of Plastic Materials
GM 9214P	Staining of Trim Material
GM 9300P	Impact Test for Plastic Materials (Instrumented Or Non-Instrumented)
GM 9302P	Stress Mark Susceptibility
GM 9305P	Fogging Characteristics of Automotive Interior Trm Materials
GM 9306P	Ash Determination
GM 9310P	Variable Surface Temperature Heat Exposure Test (Sept 1988)
GM 9327P	Accelerated Weathering, Xenon
GM 9329P	High Temperature Humidity Aging
GM 9500P	Gasoline Puddle Test for Gasoline Fill Areas
GM 9501P	Gasoline Dip Test for Painted Parts
GM 9502P	Knife Cross-Hatch Adhesion Test Procedure for Painted Elastomeric Plastic Substrates
GM 9503P	Evaluating Brittleness of Painted Plastics
GM 9505P	Automotive Environmental Cycles
GM 9506P	Dime Scrape Test to Determine Paint Adhesion and Brittleness
GM 9507P	Thumbnail Hardness Test for Painted Parts
GM 9508P	Chip Resistance of Coating
GM 9509P	Solvent Rub Method for Determining Cure of Painted Metal Or Plastic Substrates
GM 9511P	Scab Corrosion Creep Back of Paint Systems On Metal Substrates
GM 9515P	Abrasion-Taber
GM 9517P	Perspiration

GM 9525P	Thermal Shock Test for Paint Adhesion
GM 9531P	Water Jet Test
GM 9540P	Accelerated Corrosion Test
GM 9600P	Car Wash Simulation Test
GM 9635P	Dust-Out From Fiber Sound Absorber Pad
GM 9652P	Resistance to Pilling of Automotive Upholstery
GM 9676P	Procedure for Qualifying Quick Connector Fittings for Vapor Fuel Line
GM 9684P	Parting Lines
GM 9736P	Sulfur Dioxide Spot Test
GM 9900P	Cleanability
GM 9902P	Noncontact Staining Measurement of Elastomers
GMN3148TP (except sections 2.3.1.14 and 4.3.13.3.4)	Lamps – Component Laboratory Tests
GMN7005	Fuel Tank Capacity and Filling Performance
GMN8020TP (except section 4.3.1.2.2.4)	Lamps – Development and Validation Test Procedures
GMN6752	Quantify Foreign Material on Engine and Transmission Components/Assemblies
GMNA9518P	Paint Thickness of Painted Flexible Plastic Parts
GMW3172	Specification for Electrical/Electronic Component Analytical /Development/Validation (A/D/V) Procedures for Conformance to Vehicle Environmental, Reliability, and Performance Requirements
GMW3191	Connector Test and Validation Specification
GMW3232	Flammability
GMW3235	Fogging
GMW3414	Colorfastness to Artificial Light
GMW3431, except section 4.4.7	General Procedures for Testing Switches
GMW8287	Highly Accelerated Life Testing Halt/Hast
GMW14093	Determination of Impact Resistance of Plastic Components
GMW14102	Determination of Water Spotting Test
GMW14124	Automotive Environmental Cycles
GMW14130	Scuff and Mar Resistance
GMW14141	Die Migration
GMW14162	Colorfastness to Artificial Light
GMW14334	Chemical Resistance to Fluids
GMW14444 (Sections 3.3.7, 3.4.11, 3.4.12, 3.4.13, 3.4.15, 3.4.16, 3.4.19 only)	Material Related Interior Part Performance
GMW14445	Sunscreen and Insect Repellent Resistance
GMW14688	Resistance to Scratching
GMW14698	Scratch Resistance of Organic Coatings and Self-Adhesive Foils
GMW14829	Tape Adhesion Test for Paint Finishes

GMW14872	Cyclic Corrosion Laboratory Tests
GMW14892 (Section 3.1.5)	Adhesion
GMW14906	Lamp Development and Validation Test Procedures
GMW15487	Resistance to Abrasion of Organic Coating
GMW15651	Hook Fastener Resistance
GMW16037	Quantify Cleanliness of Powertrain Components
GMW16190	Determination of Cantilever Sag Resistance
GMW3182	Determination of Mass per Area
GMW3205	Test Method for Determining the Resistance to Odor Propagation of Interior Materials
GMW3259	Determination of Resistance to Mildew Growth
GMW3326	Tearing Strength of Textile Materials by Trapezoid Method
GMW3387	Fiber Degradation of Automotive Textiles
GMW3402	Soil and Cleaner Resistance of Automotive Materials
GMW3405	Seam Fatigue for Automobile Textiles
GMW4090	Weave and Yarn Count
HES C 206	Flammability
HES D6508	Fogging of Interior Materials for Automobiles
IBM CH6-0430-102	Flammability
IEC 60068-2-68 (Except LA1 and LC1)	Dust and Sand
IEC 60068-2-78	Test Cab: Damp Heat, Steady State
IEC 61215	Crystalline Silicon Terrestrial PV Modules
IEC 61646	Thin Film Terrestrial PV Modules
IEC 61730-2	PV Module Safety Qualification Requirements for Testing
ISO 1133	Plastics – Determination of the Melt Mass-Flow Rate (MFR) and the Melt Volume-Flow Rate (MVR)
ISO 1183-1	Determining the Density of Non-Cellular Plastics Using Immersion Method
ISO 12945-2	Determination of Fabric Propensity to Surface Fuzzing and to Pilling, Modified Martindale Method
ISO 12947-1	Abrasion Resistance of Fabrics by the Martindale Method
ISO 12947-2	Abrasion Resistance of Fabrics by the Martindale Method – Specimen Breakdown
ISO 12947-3	Abrasion Resistance of Fabrics by the Martindale Method – Mass Loss
ISO 12947-4	Abrasion Resistance of Fabrics by the Martindale Method – Assessment of Appearance Change
ISO 16750	Road Vehicles – Environmental Conditions and Testing for Electrical and Electronic Equipment
ISO 176	Determination of Loss of Plasticizers-Active Charcoal Method
ISO 178	Determination of Flexural Properties
ISO 179	Plastics – Determination of Charpy Impact Properties
ISO 179-1	Determination of Charpy Impact Properties, Non-Instrumented Impact Test

ISO 1798	Flexible Cellular Polymeric Materials- Determination of Tensile Strength and Elongation At Break
ISO 180	Plastics – Determination of Izod Impact Strength
ISO 188	Rubber, Vulcanized Thermoplastic-Accelerated Aging & Heat Resistance Test
ISO 20653	Road Vehicles – Degree of Protection (IP-Code) – Protection Against Foreign Objects, Water and Access – Electrical Equipment
ISO 22088-3	Determination of Resistance to Environmental Stress Cracking (ESC)
ISO 2577	Plastic-Thermosetting Molding Materials –Determination of Shrinkage
ISO 2808, Mtd 5B/6A	Paints and Varnishes – Determination of Film Thickness
ISO 291	Std. Atmosphere, Conditioning
ISO 306	Determination of Vicat Softening Temperature (VST) of Thermoplastic Materials
ISO 3386-2	Flexible Cellular Polymeric Materials – Determination of Stress-Strain Characteristics In Compression
ISO 34-1	Determination of Tear Strength of Thermoplastic/Vulcanized Rubber Using Trouser, Angle and Crescent Pieces
ISO 3451-1	Determination of Ash
ISO 37	Determination of Tensile Stress/Strain Properties of Thermoplastic/Vulcanized Rubber
ISO 3795	Flammability
ISO 4892-2	Xenon Exposure Testing
ISO 4892-3	Fluorescent Light Apparatus for UV Exposure, QUV
ISO 4892-4	Carbon Arc Weatherometer, Open Flame
ISO 5084	Determination of Thickness of Textiles and Textile Products
ISO 527-1	Tensile Properties Part 1 General Principles
ISO 527-2	Tensile Properties Part 2 Test Conditions for Molding and Extrusion Plastic
ISO 527-3	Tensile Properties Part 3 Film, Sheets
ISO 527-4	Tensile Properties Part 4 Isotropic and Orthotropic Fiber-Reinforced Plastics
ISO 527-5	Tensile Properties Part 5 Test Conditions for Unidirectional Fiber-Reinforced Plastics
ISO 62	Plastics-Determination of Water Absorption
ISO 6722	Road Vehicle 60 V to 600 V Single Core Cable Methods
ISO 75-1	Plastics-Determination Temperature of Deflection Under Load Part 1 General Test Method
ISO 75-2	Plastics – Determination of Temperature of Deflection Under Load Part 2 Plastics and Ebonite
ISO 75-3	Plastics – Determination of Temperature of Deflection Under Load Part 3 High Strength Thermosetting
ISO 815	Determination of Compression Set of Thermoplastic/Vulcanized Rubber At Ambient, Elevated, Or Low Level Temperatures
ISO 8295	Coefficient of Friction

ISO 845	Cellular Plastics and Rubbers – Determination In Apparent Density (Bulk)
ISO 868	Plastic and Ebonite – Determination of Indentation Hardness by Means of A Durometer (Shore Hardness)
ISO 9227	Corrosion Testing, Salt Spray
JIS D 0203 (R2, S1, S2)	Moisture, Rain & Spray Test for Automobile Parts
JIS D 0207	Dust Test for Automobile Parts (F-Type Only)
JIS D 1601	Vibration Testing Methods for Automobile Parts
JIS D 205	Weatherability for Automotive Parts
JIS Z 87451	Specular Glossiness Methods of Measurement
John Deere JDQ 53.3	Environmental Testing of Electrical/Electronic Components/Assemblies
MES CF 050	Flammability
MIL-STD 810C, D, E, F, G (Sections 500, 501, 502, 503, 507, 512, 513, 516, 520, 524, 528 only)	Environmental Test Methods & Engineering Guidelines
MSJP9-4	Flammability
NES M0131	Methods of High Temperature Test for Passenger Compartment Synthetic Resin Parts
NES M0132	Thermal Cycle Test Methods for Plastic Parts
NES M0133	Chemical Resistance Test Methods
NES M0134	Falling Ball Impact
NES M0135	Weatherability and Light Resistance, Carbon Arc
NES M0136	Abrasion Resistance
NES M0153	Moisture Resistance Test Method
Nissan 96030 NDS00	Air Spoiler Testing
PF 10174	Transmission and Engine Cooler Lines – Severe Service (Expired)
PF 10523	Coupled Hose – Transmission Cooler Lines
PF 11051	Coupled Hose – Transmission Oil Cooler Plumbing Assy
PF 4088	Exterior Automotive Lighting Devices
PF 4091	Liftgate and Decklid Latches
PF 4614	Suspension – Shock Absorbers – Mounting Attachment Strength
PF 8406	Air Conditioning Condenser Assembly
PF 8728	Door Handle - Exterior
PSTC 1	Non-ASTM Peel
RTCA DO-160	Environmental Conditions/Test Procedures for Airborne Equipment
SAE ARP1536	Abrasion Test Procedure for Chafe Guard
SAE J 1153	Hydraulic Master Cylinders for Motor Vehicle Brakes Test Procedure
SAE J 1351	Hot Odor Test for Insulation Materials
SAE J 1389	Corrosion Test for Insulation Materials
SAE J 1530	Resistance to Abrasion, Bearding, and Fiber Loss of Carpet, Taber

SAE J 1545	Delta-E Value (Color Measurement)
SAE J 1756	Fogging Characteristics of Interior Automotive Materials Recommended
SAE J 1847	Taber Abrasion
SAE J 1885	Accelerated Exposure of Automotive Interior Trim Components Using a Controlled Irradiance Water Cool (Obsolete)
SAE J 1960	Xenon Arc Accelerated Exposure (External) (Obsolete)
SAE J 2044	Quick Connector Specification for Liquid Fuel and Vapor/Emissions Systems
SAE J 2334	Cosmetic Corrosion
SAE J 2464	Shock (Mid-1 and Mid-2 only), Drop, Penetration, Roll-Over, Immersion, Crush, High Temperature Hazard, Thermal Stability, Cycling without Thermal Management, Thermal Shock Cycling, Passive Propagation Resistance, Short Circuit, Overcharge, Overdischarge, Separator Shutdown Integrity
SAE J 315	Mullen Burst Test
SAE J 323	Cold Cracking of Flexible Plastic Materials
SAE J 365	Scuffing Resistance, Taber
SAE J 369	Automotive Materials, Flammability
SAE J 400	Chip Resistance of Surface Coatings
SAE J 575	Lighting Devices and Components for Use On Vehicles Less Than 2032mm
SAE J 578	Color Specification
SAE J 684	Trailer Couplings, Hitches & Safety Chains Automotive Type
SAE J 855	Stretch and Set
SAE J 861	Crocking
SAE J 903	Passenger Car Windshield Wiper Systems
SAE J 913	Wicking
SAE J 948	Resistance to Abrasion
SAE J1355	Test Method for Measuring Thickness of Resilient Insulating Paddings
SAE J2044	Quick Connect Coupling Specification for Liquid Fuel and Vapor/Emissions Systems
SAE J2412	Accelerated Exposure of Automotive Interior Trim Components using a Controlled Irradiance Xenon-Arc
SAE J2527	Accelerated Exposure of Automotive Exterior Materials using a Controlled Irradiance Xenon-Arc
SAE J398	Fill Capacity Testing
SAE J882	Thickness of Textile Materials
SAE J883	Dimensional Stability of Automotive Textiles
SAE J912	Blocking Resistance
SAE J949	Stiffness (Modulus of Bending)
Toyota TSM0503G	Fogging Test Method for Non-Metallic Materials
Toyota TSM0505G	Smell Quality of Non-Metallic Materials
TS M0500G	Flammability

UL 1642	Safety for Lithium Batteries
UL 2054	Safety for Household and Commercial Batteries
UL 94 HB	Flammability of Plastic Parts, Horizontal
UL 94 VO	Flammability of Plastic Parts, Vertical
UL Subject 2271	Outline of Investigation for Batteries for use in Light Electric Vehicle (LEV) Applications
UL Subject 2580	Outline of Investigation for Batteries for use in Electric Vehicles
UN ST/SG/AC.10	Transport of Dangerous Goods Lithium Batteries
USCAR 20	Field Correlated Life Test Supplement to SAE/USCAR-2
USCAR15	Specification for Testing Automotive Miniature Bulb Socket/Circuit Plate Assemblies
USCAR2	Performance Specification for Automotive Electrical Connector Systems
USCAR21	Performance Specification for Cable-to-Terminal Electrical Crimps
USCAR3	Standard for Testing Automotive Miniature Bulbs
VDA AK 1.4.2	Qualification Test for E-Fan With EC/DC Drive Motor
VW PV1200	Resistance to Environmental Cycle Test (+80/-40) °C
VW PV1303	Exposure Test of Passenger Compartment Components
VW PV2005	Resistance to Environmental Cycle Test
VW PV3015	Determining Condensable Constituents (G)
VW PV3305	Test of Ozone Resistance and Permanent Deformation
VW PV3316	Reference Photographs after Exposure to Ozone
VW PV3357	Insulating Material Behavior during Flame Exposure
VW PV3900	Odor Test
VW TL1010	Materials for Vehicle Interiors, Burning Behavior
VW TL526 39	Polypropylene, Reinforced, Impact-Resistant, for Dashboard Materials Requirements

The laboratory is accredited for the test methods listed above. The accredited test methods are used in determining compliance with any material specifications included on this Scope below; however, the inclusion of these material specifications on this Scope does not confer laboratory accreditation to the material specifications. Inclusion of these material specifications on this Scope also does not confer accreditation for every method embedded within the specification. Only the methods listed above on this Scope are accredited.

Chrysler:

MS-DC 40	Co-Extruded Polyethylene Film
MS JF-1000	Bodycloth Performance
MS JP 1-3	Color Durability of Interior Materials
PF-10952	Floor Console Assembly System Requirements
PF-11084	Door Trim Panel Assembly and Components
PF-11203	Material Durability Requirements for Interior Plastic Trim Components
PF-11356	Instrument Panel Module System Requirements
PF-6494	Locator Clips/Wiring Harness Testing
PF-9688	Electrical/Electronic Device Environmental and Durability Test Specifications
DCX-DC-10611	Electrical/Electronic Component Environmental Testing Specifications

Ford:

ES-3U5A-9002-AA	Steel Fuel Tank Pressure/Vacuum Testing
ES-5L2P-7W092-AA	Contamination, Engine Components
ES-7T4E-6B616-AA	Contamination, Transmission Components
WSS-M8P18	Fabric Performance
WSS-M1F27	Luxury Leather
WSS-M1F28	Leather
WSS-M15P27-D	Headlining
WSS-M15P32-C	Trim Assembly, Enclosed Luggage Compartment Covering
WSS-M15P45-A	Performance, Instrument Panel Assembly, Flexible Cover Skin Material (Except Section 3.12)
WSS-M15P4-E	Interior Trim, Assembly Performance
WSS-M15P4-F	Assembly performance, Hard Mold-in-Color Interior Components
WSS-M2P181-B	Paint Performance, Flexible Substrates, Exterior

FMVSS:

FMVSS 571.106	Brake Hoses
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GM:

GM 1131M	Sealing Compounds for Use With Fasteners and Attaching Clips
GM 1502M	Windshield Washer Tubing
GM213M	Low Permeation Fuel Lines: Multilayered Construction
GM 2152M	Disposable Protective Film

GM 2215M	Glass Fiber Insulation Material
GM 2617M	Interior Trim Parts Performance (Except 3.4.2.1)
GM 2727M	Spun Bonded Nylon
GM 273M	Corrosion Protective Coating for Brake Rotors
GM 2740M	Dimensional Stability, Trim Panels (Expired)
GM 277M	Adhesive Performance of Inner Door Water Deflectors
GM 2751M	Automotive Upholstery Fabric
GM 2755M	Composite Floor Mat Testing
GM 2763M	Elastic Braid Cord
GM 3107M	Adhesion Requirements for Closed Cell Foam Tape (Dec 1997)
GM 3602M	Adhesion Requirements of Bond Interior Assemblies
GM 3622M	Adhesion Requirements of Pressure Sensitive Adhesive Coated Parts
GM 3626M	Polyethylene Film
GM 3802M	Mounting Tape-Exterior Tape
GM 3803M	Weather-Strips
GM 4345 M	Corrosion Protective Coatings Zinc Plating
GM 4350M	Oil Resistance
GM 4351M	Decorative Second Surface Finishes (Except 2.1.2.4)
GM 4372M	Decorative Chromium Plating – Copper, Nickel, Chromium Type
GM 4373M	Decorative Second Surface Finishes
GM 4374M	Decorative Second Surface Finishes
GM 4435M	Protective Finishes – Phosphate Type
GM 6083M	Polyurethane Foam for Headline Applications
GM 6086M	Flexible Expanded Rubber Materials
GM 6090M	Automotive Materials, Flammability
GM 6121M	Performance Requirements of Labels
GM 6140M	Coolant Hose Striation Resistance
GM 6173M	Corrosion Protective Coatings Zinc
GM 6174M	Corrosion Protective Coating Phosphate
GM 6197M	Transmission Oil Cooler Hose
GM 6210M	Power Steering Return Hose
GM 6211M	Power Steering Remote Reservoir Hose
GM6264M	Plastic Fuel and Vapor Lines, Plastic Fuel Filters, Plastic Clips
GM 6273M	Performance Requirements for Air Induction Elastomeric Ducts
GM 6291M	Polyurethane Foam for Trim Pads
GM6406M	Low Permeation Vapor Lines-Multilayered Construction
GM 7001M	Plastic Molding Compounds
GM 7111M	Corrosion Protective Coating Phosphate
GM 7400M	Plastic Parts
GM 7451M	Finish Durability Requirements for Decorative Interior Plastic Parts (Except 3.2.3)
GM 7452M	Exterior Plastic Parts

GM 7469M	Applied Graphics On Plastic Parts
GMW14444	Material Related Interior Part Performance
GMW14231	Automotive Fabrics
JIS:	
JIS L 1096	Woven Fabrics
Hyundai:	
MS300-32	Woven, Knit
MS 320-05	Fabrics for Seats
Nissan:	
NES M 0094	Flammability of Automotive Materials
SAE:	
SAE J 1128	Wire Testing
SAE J 1639	Test Methods for Nylon Materials
SAE J 17	Latex Foam Rubbers
SAE J 30	Fuel and Oil Hoses
Toyota:	
Toyota TSH3130G	Paint Quality for Interior Parts
USABC:	
USABC	Electrochemical Storage System Abuse Test Procedure Manual: Test for the Following: Vibration, Drop, Penetration, Roll-Over, Immersion, Crush, Radiant Heat, Thermal Stability, Compromise of Thermal Insulation, Overheat/Thermal Runaway, Thermal Shock Cycling, Elevated Temperature Storage, Extreme Cold Temperature.
VW:	
VW PV3366	Elastomer Seals
VW TL496	Door and Side Trim Panel ASSY Material Requirements

¹ Note: This accreditation covers testing performed at the main laboratory listed and fuels testing at the satellite laboratory located at 25440 Sherwood, Center Line, MI 48015.



The American Association for Laboratory Accreditation

World Class Accreditation

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A2LA has accredited

ELEMENT - WARREN

Warren, MI

for technical competence in the field of

Mechanical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *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 8 January 2009*).

Presented this 30th day of March 2011.





President & CEO

For the Accreditation Council
Certificate Number 38.01
Valid to December 31, 2012
Revised May 7, 2012

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