SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

AKRON RUBBER DEVELOPMENT LABORATORY, INC.
2887 Gilchrist Road
Akron, OH 44305
Rick Behne Phone: 330 794 6600

MECHANICAL

Valid To: March 31, 2024 Certificate Number: 0255.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on rubber, plastics, textiles, latex, condoms, adhesives, sealers and adhesive tapes:

## CONDITIONING

| Test Method | Test |
|---|---|
| ASTM D618 | Conditioning of Plastics for Testing |
| ASTM D832 | Rubber Conditioning for Low Temperature Testing |

## ABRASION

| Test Method | Test |
|---|---|
| ASTM C1353/C1353M | Abrasion Resistance of Dimension Stone Subjected to Foot Traffic Using a Rotary Platform Abraser |
| ASTM D1630 | Rubber Property – Abrasion Resistance (Footwear Abrader) |
| ASTM D3389 | Coated Fabrics Abrasion Resistance (Rotary Platform Abrader) |
| ASTM D4060 | Abrasion Resistance Organic Coatings by the Taber Abraser |
| ASTM D5963 | Rubber Properties – Abrasion Resistance (Rotary Drum Abrader) |
| BS ISO 4649 | Rubber, Vulcanized or Thermoplastic – Determination of Abrasion Resistance using a Rotating Cylindrical Drum Device |
| DIN ISO 4649 | Determination of Abrasion resistance using a rotating cylindrical drum device |
| ISO 4649 | Determination of Abrasion resistance using a rotating cylindrical drum device |
| Ford FLTM BN 107-01 | Crocking Test – Interior Trim Materials |
| ASTM D3884 | Standard Guide for Abrasion Resistance of Textile Fabrics (Rotary Platform, Double-Head Method) |


5202 Presidents Court, Suite 220 | Frederick, MD 21703-8515 | Phone: 301 644 3248 | Fax: 240 454 9449 | www.A2LA.org

**ELECTRICAL**

| Test Method | Test |
|---|---|
| ASTM D150 | AC Loss Characteristics and Permittivity (Dielectric Constant of Solid Electrical Insulation |
| ASTM D257 | DC Resistance or Conductance of Insulating Materials |
| ASTM D991 | Volume Resistivity of Electrically Conductive and Antistatic Products |

**EXPOSURE TESTING**

| Test Method | Test |
|---|---|
| ***Accelerated Aging and Heat Resistance*** | |
| ASTM D454 | Rubber – Deterioration by Heat and Air Pressure |
| ASTM D572 | Rubber – Deterioration by Heat and Oxygen |
| ASTM D573 | Rubber – Deterioration in an Air Oven |
| ASTM D794 – 1993 (Withdrawn 1998) | Determining Permanent Effect of Heat on Plastics |
| ASTM D865 | Rubber – Deterioration by Heating in Air (Test Tube Enclosure) |
| ASTM D1055 – 2009 (Parts 15-16) (Withdrawn in 2014) | Accelerated Aging Tests |
| ASTM D3045 | Heat Aging of Plastics Without Load |
| ASTM D3574 (Test J) | Flexible Cellular Materials – Slab, Bonded, and Molded Urethane Foams – Steam Autoclave Aging |
| ASTM D3574 (Test K) | Flexible Cellular Materials – Slab, Bonded, and Molded Urethane Foams – Dry Heat Aging |
| DIN 53 508 | Accelerated Ageing of Rubber |
| ISO 188 | Rubber, vulcanized or thermoplastic – Accelerated Ageing and Heat Resistance Tests |
| JIS K6257 | Rubber, Vulcanized or Thermoplastic – Determination of Heat Ageing Properties |
| SAE J2236 | Determining Continuous Upper Temperature Resistance of Elastomers |

**LOW TEMPERATURE**

| Test Method | Test |
|---|---|
| ASTM D746 | Brittleness Temperature of Plastics and Elastomer by Impact |
| ASTM D1329 | Evaluating Rubber Property – Retraction at Lower Temperatures (TR Test) |
| ASTM D2137 | Rubber Property – Brittleness Point of Flexible Polymers and Coated Fabrics |
| ISO 812 | Rubber, Vulcanized or Thermoplastic – Determination of Low Temperature Brittleness |
| JIS K6261-1 | General Introduction and Guide: Determination of low temperature properties |

**LOW TEMPERATURE (*continued*)**

| Test Method | Test |
|---|---|
| JIS K6261-2 | Low temperature Brittleness |
| JIS K6261-3 | Low temperature stiffness |
| JIS K6261-4 | Low temperature retraction |

**ULTRAVIOLET FLUORESCENT LAMPS/XENON**

| Test Method | Test |
|---|---|
| ASTM D750 | Rubber Deterioration Using Artificial Weathering Apparatus |
| ASTM D1148 | Rubber Deterioration-Discoloration from Ultraviolet (UV) or UV/Visible Radiation and Heat Exposure of Light-Colored Surfaces and Xenon-Arc Apparatus |
| ASTM D2565 | Xenon-Arc Exposure of Plastics Intended for Outdoor Applications |
| ASTM D4329 | Fluorescent Ultraviolet (UV) Lamp Apparatus Exposure of Plastics |
| ASTM D4587 | Fluorescent UV-Condensation Exposures of Paint and Related Coatings |
| ASTM D4799 | Accelerated Weathering Test Conditions and Procedures for Bituminous Materials (Fluorescent UV, Water Spray, and Condensation Method) |
| ASTM D5208 | Fluorescent Ultraviolet (UV) Exposure of Photodegradable Plastics |
| ASTM D5215 | Instrumental Evaluation of Staining of Vinyl Flooring by Adhesives |
| ASTM D6662 (Section 6.3) | Polyolefin-Based Plastic Lumber Decking Boards |
| ASTM G151 | Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources |
| ASTM G154 | Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials |
| ISO 4892-3 | Methods of Exposure to Laboratory Light Sources – Fluorescent UV Lamps |
| MIL-DTL-85052B (Section 4.4.4.3.1) | General Specification for Clamp, Loop, Cushion: Ultraviolet Exposure |
| Navistar MPAPS GT-31 (2014) | Accelerated Weathering of Non-Metallic Materials |
| SAE J2020 | Accelerated Exposure of Automotive Exterior Materials Using a Fluorescent UV and Condensation Apparatus |
| ASTM D4459 | Xenon-Arc Exposure of Plastics Intended for Indoor Applications |
| ASTM D4637/D4637M (Sections 8.19 & 8.20) | Weather Resistance of EPDM Sheet Used in Single-Ply Roof Membrane |
| ASTM D6695 | Xenon-Arc Exposure of Paint and Related Coatings |
| ASTM D6878/D6878M (Section 7.13) | Weather Resistance of Thermoplastic Polyolefin Based Roofing |

**ULTRAVIOLET FLUORESCENT LAMPS/XENON *(continued)***

| Test Method | Test |
|---|---|
| ASTM D7869 | Xenon Arc Exposure Test with Enhanced Light and Water Exposure for Transportation Coatings |
| ASTM F1515<br>(Water Cooled Xenon Only) | Measuring Light Stability of Resilient Flooring by Color Change |
| ASTM G26-96 (Withdrawn in 2000) | Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials |
| ASTM G155 | Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials |
| Boeing BMS 1-57L-2011<br>(Section 8.10) | Weather Resistance – Silicon Rubber, Extreme Low Temperature Resistant |
| Fiat 50451-2009 (Method A) | Accelerated Aging by Atmospheric Agents |
| Ford FLTM BO 116-01 | Resistance to Interior Weathering |
| Ford ESB-M9P4-A-1978[2] (Withdrawn) | Rubber Parts – Migration Staining Against Paint |
| GM9902P-96 Withdrawn | Noncontact Staining Measurement of Elastomers (Xenon-Arc) |
| GMW 3414 | Artificial Weathering of Automotive Interior Trim Materials |
| GMW 14162 (Methods A, B or D) | Colorfastness to Artificial Weathering |
| GMW 14650, 4.11 | Compatibility |
| GMW 14743, Table 1 | Elastomer for Wiper Blades – Paint Staining |
| Honda HES D2500-10<br>(Sections 3.12.1b & 3.12.2) | Light Resistance/Weather Resistance – Resin Materials for Vehicles |
| Honda HES D6601-99A | Accelerated Test Method for Light Resistance with Xenon-Arc Lamp |
| ISO 105-B02 | Colour Fastness to Artificial light: Xenon Arc Fading Lamp Test |
| ISO105-B01 | Color fastness to Daylight |
| ISO 105-B06<br>(Conditions 3, 4, 5 or 6) | Colour Fastness and ageing to Artificial Light at High Temperatures: Xenon Arc Fading Lamp Test |
| ISO 3865 | Rubber, Vulcanized or Thermoplastic – Methods of Test for Staining in Contact with Organic Material |
| ISO 4892-1 | Methods of Exposure to Laboratory Light Sources – General Guidance |
| ISO 4892-2 | Methods of Exposure to Laboratory Light Sources – Xenon-Arc Lamps |
| ISO 11341-2004[2] (Withdrawn) | Paints and Varnishes – Artificial Weathering and Exposure to Artificial Radiation – Exposure to Filtered Xenon-Arc Radiation |
| ISO 30013 | Rubber and Plastics Hoses – Methods of Exposure to Laboratory Light Sources – Determination of Changes in Colour, Appearance and Other Physical Properties |
| JASO M 305 (Section 5.14) | Weatherstrips for Automobiles – Weatherability Test |
| JASO M 346 | Light-Exposure Test Method by Xenon-Arc Lamp for Automotive Interior Part |
| JIS B 7754 | Light-Exposure and Light-and-Water-Exposure Apparatus (Xenon-arc Lamp Type) |

**ULTRAVIOLET FLUORESCENT LAMPS/XENON *(continued)***

| Test Method | Test |
|---|---|
| MIL-STD-810G Method 506 (Procedure 11 Only) | Determining the Effects of Solar Radiation on Material |
| Nissan NES M0135 (Except 1-II-1B and 1-II-3 Using Air Cooled Xenon Lamps) (2008 Only) | Weatherability and Light Resistance Test Methods for Synthetic Resin Parts |
| PSA Peugeot – Citroen D27-1389-07 | Paint Coatings Rubbers and Plastics Artificial Weathering by Weatherometer |
| Renault D27 1911 D-07 | Rubbers and Plastic, Paint Coatings Artificial Ageing Using a Weatherometer |
| SAE J1885-2005 (Withdrawn in 2008) | Accelerated Exposure of Automotive Interior Trim Components Using a Controlled Irradiance Water Cooled Xenon-Arc Apparatus |
| SAE J1960-2004 (Withdrawn in 2008) | Accelerated Exposure of Automotive Exterior Materials Using a Controlled Irradiance Water Cooled Xenon-Arc Apparatus |
| SAE J2027 (Section 5.2.8) | Standard for Protective Covers for Gasoline Fuel Line Tubing, Chemical Resistance (Xenon-Arc) |
| SAE J2412 | Accelerated Exposure of 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 |
| Suzuki SES N3292-00 Methods WAL-2 & WAN-2 | Test Methods of Weatherability and Light Resistance for Plastic Parts |
| Toyota TSH1585G-10 (Except Test Types IV & V) | Xenon-Arc Lamp Type Methods for Accelerated Weathering Resistance of Paint Film |
| Toyota TSL0601G-11 (Methods B & E) | Criteria for Test for Quality of Color Change by Aging |
| Toyota TSM0501G-03 (Section 9.20 with Atlas Ci65 or Equivalent) | Accelerated Weather (Light) Resistance Test |
| UL 1581 (Section 1200) | Sunlight Resistance |
| UL 2556 (Section 4.2.8.5) | Weather (Sunlight) Resistance |
| VW PV 1303-01 | Exposure Test of Passenger Compartment Components |
| VW PV 3929-18 | Non-Metallic Materials: Weathering in Dry, Hot Climate |
| VW PV 3930-17 | Non-Metallic Materials: Weathering in Moist, Hot Climate |
| Yamaha YGK-8-501 (2008) | Painting – Accelerated Weatherability |

## ADHESION

| Test Method | Test |
|---|---|
| AFG-01 - 1984 | Adhesive for Field-Gluing Plywood to Wood Framing |
| ASTM D903 | Peel or Stripping Strength of Adhesive Bonds |
| ASTM D2229 (Sections 10.5 to 12) | Standard Test Method for Adhesion Between Steel Tire Cords and Rubber |
| ASTM D3359 | Measuring Adhesion by Tape Test |
| ASTM D3498 | Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems |

## CHEMICAL RESISTANCE

| Test Method | Test |
|---|---|
| ASTM D471 | Rubber Property – Effect of Liquids |
| ASTM D543 | Evaluating the Resistance of Plastics to Chemical Reagents |
| ASTM D6284 | Rubber Property – Effect of Aqueous Solutions with Available Chlorine and Chloramine |
| DIN 53 521 – 1987 (Withdrawn in 1999) | Determination of the Behavior of Rubber and Elastomers when Exposed to Fluids And Vapours |
| DIN ISO 1817 | Determination of the effect of liquids |
| JIS K6258 | Rubber, Vulcanized or Thermoplastic – Determination of the Effect of Liquids |
| ISO 1817 | Rubber, Vulcanized or Thermoplastic – Determination of the Effect of Liquids |
| ASTM F146 | Fluid Resistance of Gasket Material |
| GMW14334 | Chemical Resistance to Fluids |
| NES M0133 2010 | Testing methods of chemical resistance for plastic parts |

## COLOR

| Test Method | Test |
|---|---|
| AATCC EP-1 | Grey Scale for Color Change |
| ASTM D1003 Method B | Haze and Luminous Transmittance of Transparent Plastics |
| ASTM D2244 | Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates |
| ASTM E313 | Calculating Yellowness and Whiteness Indices from Instrumentally Measured Color Coordinates |
| ASTM E1164 | Obtaining Spectrometric Data for Object-Color Evaluation |
| ASTM E1331 | Reflectance Factor and Color by Spectrophotometry Using a Hemispherical Geometry |
| ISO 105/A02 | Grey Scale for Assessing Change in Colour |
| ISO 105/A04 | Method for the Instrumental Assessment of the Degree of Staining of Adjacent Fabrics |
| SAE J1545 | Instrumental Color Difference Measurement for Exterior Finishes, Textiles and Colored Trim |

## COMPRESSION

| Test Method | Test |
|---|---|
| ASTM D395 | Compression Set |
| ASTM D575 | Rubber Properties in Compression |
| ASTM D623 Method A only | Heat Generation and Flexing Fatigue in Compression |
| ASTM D695 | Compressive Properties of Rigid Plastics |
| ASTM D790 | Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials |
| ASTM D945 | Rubber Properties in Compression or Shear (Mechanical Oscillograph) |
| ASTM D1055 (17-19) – 2009 (Withdrawn in 2014) | Compression Set Under Constant Deflection |
| ASTM D1055 (27-30) – 2009 (Withdrawn in 2014) | Low-Temperature Test (Compression/Deflection) |
| ASTM D1229 | Compression Set at Low Temperatures |
| ASTM D3574 (Test C) | Compression Force Deflection Test |
| ASTM D3574 (Test D) | Constant Deflection Compression Set |
| ASTM D3575 (Section 9-16) | Flexible Cellular Materials Made from Olefin Polymers – Compression Set Under Constant Deflection |
| ASTM D3575 (Section 17-24) | Flexible Cellular Materials Made from Olefin Polymers – Compression Deflection |
| ASTM F1342 (Procedure A) | Protective Clothing Material Resistance to Puncture |
| ISO 178 Type I, II, III | Determination of Flexural Properties |
| ISO 815-1 | Determination of Compression Set – at Ambient or Elevated Temperatures |
| ISO 815-2 | Determination of Compression Set – at Low Temperatures |
| ISO 1653 - 1975 (Withdrawn in 1993) | Vulcanized Rubbers - Determination of Compression Set under Constant Deflection at Low Temperatures |
| ISO 3386-1 | Determination of stress strain characteristics in compression-Low density materials |
| DIN EN ISO 3386-1 | Determination of stress strain characteristics in compression-Low density materials |
| JIS K6262 | Rubber, Vulcanized or Thermoplastic – Determination of Compression Set at Ambient, Elevated or Low Temperatures |
| ASTM D4014 | Shear Modulus and Related Testing for Elastomeric Bridge Bearings |
| ASTM D1667 (Parts 16-20) | Compression Deflection Test Method |
| ASTM D1667 (Parts 21-25) | Compression Set Under Constant Deflection |

## CONDOM TEST (Except Burst Testing)

| Test Method | Test |
|---|---|
| ASTM D3492 | Rubber Contraceptives (Male Condoms) |
| ISO 4074 Except annex G, K, and section M.3 | Natural Rubber Latex Male Condoms – Requirements and Test Methods |
| BS EN ISO 4074 Except annex G and section M.3 | Natural Rubber Latex Male Condoms – Requirements and Test Methods |
| ASTM D7661 | Determining Compatibility of Personal Lubricants with Natural Rubber Latex Condoms |

## CORROSION EVALUATION

| | |
|---|---|
| SAE J1389 | Corrosion Test for Insulation Materials |

## CRACK RESISTANCE

| Test Method | Test |
|---|---|
| ASTM D813 | Rubber Deterioration – Crack Growth |
| ASTM D1693 | Environmental Stress – Cracking of Ethylene Plastics |

## DIMENSIONAL STABILITY

| Test Method | Test |
|---|---|
| ASTM D1204 | Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperatures |
| ASTM D3575 – Suffix S (Sections 35-42) | Flexible Cellular Materials Made from Olefin Polymers – Thermal Stability |
| ASTM D3767 | Rubber Properties – Measurement of Dimensions |

## DENSITY

| Test Method | Test |
|---|---|
| ASTM D792 | Density and Specific Gravity of Plastics by Displacement |
| ISO 1183-1 Method A | Plastics – Methods for Determining the Density of Non-Cellular Plastics |
| ASTM D1667, X3 | Suggested Test Method for Density (Suffix W) |
| ASTM D1622 | Standard Test method for Apparent Density of Rigid Cellular Plastics |
| ASTM D3574 (Test A) | Density Test Urethane Foams |
| ASTM D3575 (Suffix W, Procedure A) | Density – Flexible Cellular Materials Made from Olefin Polymers |

## EXTENSION CYCLING FATIGUE/CUT GROWTH

| Test Method | Test |
|---|---|
| ASTM D430 | Rubber Deterioration – Dynamic Fatigue |
| ASTM D1052 | Measuring Rubber Deterioration – Cut Growth Using Ross Flexing Apparatus |
| ASTM D4482 | Rubber Property – Extension Cycling Fatigue |

**FLAMMABILITY**

| Test Method | Test |
|---|---|
| ASTM C1166 | Flame Propagation of Dense and Cellular Elastomeric Gaskets and Accessories |
| ASTM D635 | Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position |
| ASTM D3801 | Measuring the Comparative Burning Characteristics of Solid Plastics in a Vertical Position |
| ASTM D5132 | Horizontal Burning Rate of Polymeric Materials Used in Occupant Compartments of Motor Vehicles |
| USDOT FMVSS-302-03 | Flammability of Interior Materials – Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses |
| IEC 60695-11-10 | 50W Horizontal and Vertical Flame Test Methods |
| ISO 3795 | Determination of Burning Behavior of Interior Materials |
| SAE J369 | Flammability of Polymeric Interior Materials – Horizontal Test Method |
| UL94 (except sections 9,10,11 and 12) | Flammability of Plastic Materials for Parts in Devices and Appliances |
| VW TL1010-2008 | Burning Behavior – Materials used in Vehicle Interiors |

**FOGGING CHARACTERISTICS**

| Test Method | Test |
|---|---|
| Chrysler LP-463DB-12-01 – 2000 Withdrawn | Fogging Resistance of Interior Materials |
| GMW 3235 | Fogging Characteristics of Trim Materials |
| SAE J1756 | Determination of the Fogging Characteristics of Interior Automotive Materials |

**FRICTION PROPERTIES**

| Test Method | Test |
|---|---|
| ASTM D1894 | Static and Kinetic Coefficients of Friction of Plastic Film and Sheeting |

**GLOSS (20°/60°/85°)**

| Test Method | Test |
|---|---|
| ASTM D523 | Specular Gloss |
| ASTM D4039 | Reflection Haze of High-Gloss Surfaces |
| Federal Standard 141D (Methods 6101.1, 6103 &6104 only) | 60°, 85°, 20° Specular Gloss |
| Ford FLTM BI 110-01 | Measurement of the Gloss of Paint Panels |
| Honda HES D2500-10 (Section 3.10 only) | Gloss Test |
| JIS Z 8741 | Specular Glossiness |
| ISO 2813 | Gloss values at 20°, 60°, 85° |

## GLOVE TESTING

| Test Method | Test |
|---|---|
| ASTM D120 | Rubber Insulating Gloves |
| ASTM D3577 | Rubber Surgical Gloves |
| ASTM D3578 | Rubber Examination Gloves |
| ASTM D5151 | Detection of Holes in Medical Gloves |
| ASTM D5250 | Poly (Vinyl Chloride) Gloves for Medical Application |
| ASTM D6124 | Residual Powder on Medical Gloves |
| ASTM D6319 | Nitrile Examination Gloves for Medical Application |
| ARDL 2140 | Lubricant Testing on Gloves |
| BS EN 455-1 | Medical Gloves for Single Use – Requirements and Testing for Freedom from Holes |
| BS EN 455-2 | Medical Gloves for Single Use – Requirements and Testing for Physical Properties |
| BS EN ISO 374-2 | Determination of Resistance to Penetration |

## HARDNESS

| Test Method | Test |
|---|---|
| ASTM D2240 (Types A, D, M, and OO) | Rubber Property – Durometer Hardness |
| DIN 53 505-2000 (Withdrawn in 2012) | Shore A and Shore D Hardness Testing of Rubber |
| ISO 868 (Types A and D) | Plastics and Ebonite – Determination of Indentation Hardness by Means of a Durometer (Shore Hardness) |
| DIN ISO7619-1 | Rubber, Vulcanized or Thermoplastic-Determination of Indentation Hardness |
| JIS K 6253-2 M and CM only | Rubber, Vulcanized or Thermoplastic – Determination of Hardness (Hardness Between 10 IRHD and 100 IRHD) |
| ASTM D1415 | Rubber Property – International Hardness |
| ISO 48-2 M, N and CM only (Withdrawn) | Rubber, Vulcanized or Thermoplastic – Determination of Hardness (Hardness between 10 IRHD and 100 IRHD) |
| ASTM D785 (Scale R) | Rockwell Hardness of Plastics and Electrical Insulating Materials |

## HDT/VICAT SOFTENING POINT

| Test Method | Test |
|---|---|
| ASTM D648 (Method A) | Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position |
| ASTM D1525 (Rate B) | Vicat Softening Temperature of Plastics |
| ISO 75-1 | Determination of Temperature of Deflection under Load – General Test Method |
| ISO 75-2 | Determination of Temperature of Deflection under Load – Plastics and Ebonite |
| ISO 75-3 | Determination of Temperature of Deflection under Load – High-Strength Thermosetting Laminates and Long-Fibre-Reinforced Plastics |
| ISO 306 (Method A120) | Determination of Vicat Softening Temperature |

**HOSE TESTING**

| Test Method | Test |
|---|---|
| ASTM D380 (Except 14-17) | Standard Test Method for Rubber Hoses |
| ASTM D622 | Rubber Hose for Automotive Air and Vacuum Brake Systems |
| SAE J1037 | Windshield Washer Tubing |

**IMPACT**

| Test Method | Test |
|---|---|
| ASTM D256 (Method A) | Determining the Izod Pendulum Impact Resistance of Plastics |
| ASTM D4812 | Unnotched Cantilever Beam Impact Resistance of Plastics |
| ASTM D5420 | Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Hammer (Gardner Impact) |
| ISO 179-1 | Determination of Charpy Impact Properties |
| ISO 180 | Determination of Izod Impact Strength |

**INJECTION MOLDING TEST SPECIMENS**

| Test Method | Test |
|---|---|
| ASTM D3641 | Injection Molding Test Specimens of Thermoplastics Molding and Extrusion Materials |

**MELT FLOW**

| Test Method | Test |
|---|---|
| ASTM D1238 (Procedures A, B & D) | Melt Flow Rates of Thermoplastics by Extrusion Plastometer |
| ISO 1133-1 | Determination of the Melt Mass Flow Rate (MFR) and Melt Volume-Flow Rate (MVR) of Thermoplastics |

**ODOR TESTING**

| Test Method | Test |
|---|---|
| Delphi SD2-208 (Section 5.3.2) 2012 | Odor Test |
| GMW 3205 | Determining the Resistance to Odor Propagation of Interior Materials |
| GMW 14131 | Compatibility of Interior Trim Materials with Amines |
| SAE J1351 | Hot Odor Test for Insulation Materials |
| VDA 270 | Determination of odor characteristics of trim materials |

## OZONE TESTING

| Test Method | Test |
|---|---|
| ASTM D518-99 (Withdrawn in 2008) | Rubber Deterioration – Surface Cracking |
| ASTM D1149 | Rubber Deterioration – Cracking in an Ozone Controlled Environment |
| ASTM D1171 | Rubber Deterioration – Surface Ozone Cracking Outdoors or Chamber (Triangular Specimens) |
| ASTM D3395-99 (Withdrawn in 2008) | Rubber Deterioration – Dynamic Ozone Cracking in a Chamber |
| DIN 53 509-1-1990 (Withdrawn in 2011) | Resistance of rubber to ozone cracking |
| ISO 1431-1 | Rubber, Vulcanized or Thermoplastic – Resistance to Ozone Cracking – Static and Dynamic Strain Testing |
| Ford BP 101-01 | Degradation by ozone |
| FMVSS 106 TP-106 April 2008 (sections 12.A.13 & 12.B.6) | Laboratory test procedure for FMVSS 106 brake hoses |
| SAE J1401 Section 4.2.9 & 4.2.13 | Hydraulic Brake Hose Assemblies for use with nonpetroleum base hydraulic fluids |
| GM4486P-1995(Withdrawn 2011) | Test for Ozone Resistance of Elastomer Compounds |

## RESILIENCE BY REBOUND

| Test Method | Test |
|---|---|
| ASTM D2632 | Rubber Property – Resilience by Vertical Rebound |
| ASTM D7121 | Rubber Property – Resilience Using Schob Type Rebound Pendulum |
| DIN 53 512 | Rubber, Vulcanized or Thermoplastic – Determination of Rebound Resilience |
| ISO 4662 (Pendulum Method) | Determining the Rebound Resilience of Rubber using the Schob Pendulum |

## SPONGE PROPERTIES

| Test Method | Test |
|---|---|
| ASTM D1056 (Sections 16-22) | Compression-Deflection |
| ASTM D1056 (Sections 23-26) | Oil Immersion |
| ASTM D1056 (Sections 27-34) | Fluid Immersion |
| ASTM D1056 (Sections 35-42) | Compression-Deflection Change after Oven Aging |
| ASTM D1056 (Sections 43-49) | Water Absorption Test |
| ASTM D1056 (Sections 50-56) | Compression Set Under Constant Deflection |
| ASTM D1056 (Sections 57-61) | Low Temperature Flex Test |
| ASTM D1056 (Sections 62-68) | Density (Suffix W) |

**STAIN RESISTANCE**

| Test Method | Test |
|---|---|
| AATCC Evaluation Procedure 2 | Grey Scale for Staining |
| ASTM D925 | Rubber Property – Staining of Surfaces (Contact and Migration) |
| GM9240P-88[2] (Withdrawn 2013) | Perspiration Resistance |
| BN 103-01 | Resistance of Coated Fabrics and Plastic Film to Migration Staining and Blocking |
| ISO 3865 | Rubber, Vulcanized or Thermoplastic – Methods for Staining in Contact with Organic Materials |
| Nissan NES M0142-1991 (Section 18 & 19) | Staining/Indirect Staining |

**STIFFNESS**

| Test Method | Test |
|---|---|
| ASTM D1053 | Rubber Property – Stiffening at Low Temperatures: Flexible Polymers and Coated Fabrics (Torsional Stiffness) |

**TENSILE TESTS**

| Test Method | Test |
|---|---|
| ASTM D412 (Method A) | Vulcanized Rubber and Thermoplastic Elastomers – Tension |
| ASTM D413 | Rubber Property – Adhesion to Flexible Substrate |
| ASTM D429 | Rubber Property – Adhesion to Rigid Substrates |
| ASTM D624 | Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers |
| ASTM D638 | Tensile Properties of Plastics |
| ASTM D882 | Tensile Properties of Thin Plastic Sheeting |
| ASTM D1002 | Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal) |
| ASTM D1004 | Tear Resistance (Graves Tear) of Plastic Film and Sheeting |
| ASTM D1708 | Tensile Properties of Plastics by Use of Microtensile Specimens |
| ASTM D3163 | Determining Strength of Adhesively Bonded Rigid Plastic Lap-Shear in Shear by Tension Loading |
| ASTM D3574 (Test E) | Flexible Cellular Materials – Slab, Bonded, and Molded Urethane Foams – Tensile Test |
| ASTM D3574 (Test F) | Flexible Cellular Materials – Slab, Bonded, and Molded Urethane Foams – Tear Test |
| ASTM F152 | Tension Testing of Nonmetallic Gasket Materials |
| DIN 53 504 | Determination of Tensile Strength |

**TENSILE TESTS (*continued*)**

| Test Method | Test |
|---|---|
| ISO 34-1 | Rubber, vulcanized or thermoplastic – Determination of Tear Strength – Trouser, Angle and Crescent Test Pieces |
| ISO 34-2 | Rubber, Vulcanized or Thermoplastic – Determination of Tear Strength – Small (Delft) Test Pieces |
| ISO 37 | Rubber, Vulcanized or Thermoplastic – Determination of Tensile Stress-Strain Properties |
| ISO 527-1 | Plastics – Determination of Tensile Properties |
| ISO 6383-1 | Film and Sheeting – Determination of Tear Resistance – Trouser Tear Method |
| JIS K 6251 | Rubber, Vulcanized or Thermoplastic – Determination of Tear Strength |
| JIS K6252-1 | Rubber, Vulcanized or Thermoplastic- Determination of tear strength Trouser, angle crescent pieces |
| JIS K6252-2 | Rubber, Vulcanized or Thermoplastic- Determination of tear strength Small (delft) test pieces |
| JIS K6252-2007 (Withdrawn) | Rubber, Vulcanized or Thermoplastic – Determination of Tensile Stress-Strain Properties |
| DIN 53 507 – 1983 (Withdrawn) | Determination of Tear Growth Propagation Trouser Test Piece |
| ASTM D3137 | Standard Test Method for Rubber Property- Hydrolytic Stability |

**LOW TEMPERATURE BENDING**

| Test Method | Test |
|---|---|
| ASTM D2136 | Coated Fabrics – Low Temperature Bending Test |

**VAPOR TRANSMISSION OF VOLATILE LIQUIDS**

| Test Method | Test |
|---|---|
| ASTM D814 | Rubber Property – Vapor Transmission of Volatile Liquids |

**VOLATILE LOSS**

| Test Method | Test |
|---|---|
| ASTM D1203 | Volatile Loss of Plastics Using Activated-Carbon Method |

**WATER ABSORPTION**

| Test Method | Test |
|---|---|
| ASTM D570 | Water Absorption of Plastics |
| ASTM D3575 – Suffix L (Sections 26-32) | Flexible Cellular Materials Made from Olefin Polymers – Water Absorption |
| ISO 62 | Plastics – Determination of Water Absorption |
| BS EN ISO 62 | Plastics – Determination of Water Absorption |
| ISO 6916-1 Annex E | Flexible cellular polymeric materials-Sponge and expanded cellular rubber |

**CONVEYOR BELTING, FLAT TYPE**

| Test Method | Test |
|---|---|
| ASTM D378 (Section 9.2.2 to 9.5) | Preparation of test specimen and tensile, Elongation, hardness and test testing |
| ASTM D378 (Section 9.6) | Procedure for Physical properties of Elastomeric covers after heat Aging |
| ASTM D378 (Section 9.7) | Coefficients of Friction, Static and Kinetic |
| ASTM D378 (Section 9.8) | Abrasion Resistance |
| ASTM D378 (Section 9.9) | Ozone Resistance |
| ASTM D378 (Section 9.10) | Electrical Surface Resistance |
| ASTM D378 (Section 10) | Immersion Tests |
| ASTM D378 (Section 11) | Adhesion Tests |

**O-RING TESTING**

| Test Method | Test |
|---|---|
| ASTM D1414 (Section 7) | Dimensional Measurement |
| ASTM D1414 (Section 8) | Tension Testing |
| ASTM D1414 (Sections 10 & 11) | Compression Set Testing |
| ASTM D1414 (Section 12) | Low Temperature Retraction |
| ASTM D1414 (Section 13) | Relative Density |
| ASTM D1414 (Section 14) | Immersion Testing |
| ASTM D1414 (Section 15) | Heat Aging |
| ASTM D1414 (Section 16) | Hardness Testing |

*Using customer generated test specifications based on the above parameters and testing technologies listed above.

*The laboratory is accredited for the test methods listed above. The accredited test methods are used in determining compliance with the material specifications listed 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.*

ASTM: C923, C1115, C1173, D378, D1056, D1248, D1414, D2000, D6878 / D6878M, E308, D751

DaimlerChrysler: MS-AG-81, MS-AR-20, MS-AR-23, MS-AR-24, MS-AR-26, MS-AR-30, MS-AR-80, MS-DC-16

Ford: ESF-M4D101-A, ESF-M4D423-A, WSK-M4D695-A Withdrawn, WSS-M2D378-B1Withdrawn, WSS-M2D379-B1 Withdrawn, WSS-M2D380-B1 Withdrawn, WSS-M2D381-B1 Withdrawn, WSS-M2D382-B1Withdrawn

GM: GM6086M Withdrawn 2012, GM7001M Withdrawn 2011, GMP.ABS.018R Withdrawn 2012, GMP.E/P.003 Withdrawn 2011, GMP.E/P.029 Withdrawn 2010, GMP.E/P.071 Withdrawn 2011, GMP.TES.012 Withdrawn 2013, GMP.EP.001 Withdrawn 2011, GMP.PE.002 Withdrawn 2011, GMP.PE.003 Withdrawn 2011, GMP.PE.004 Withdrawn 2011, GMP.PE.005 Withdrawn 2011, GMP.PE.006 Withdrawn 2016, GMP.PE.007 Withdrawn 2011, GMP.PE.009 Withdrawn 2011, GMN8423Withdrawn, GMN11106 Withdrawn 2010, GMW15473 Withdrawn 2015, GMW17408

ISO: 4074-1

JIS: K 6301:1995 (Withdrawn 1996)

Underwriters Laboratory: UL746B (UL 94 Only)

# Accredited Laboratory

A2LA has accredited

## AKRON RUBBER DEVELOPMENT LABORATORY, INC.

*Akron, OH*

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 19th day of April 2022.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 0255.01
Valid to March 31, 2024
Revised February 26, 2024

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

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

AKRON RUBBER DEVELOPMENT LABORATORY, INC.
2887 Gilchrist Road
Akron, OH 44305
Rick Behne Phone: 330 794 6600

CHEMICAL

Valid To: March 31, 2024 Certificate Number: 0255.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests in accordance with Good Laboratory Practices (GLP) Regulations per 21 CFR 58, 210, 211, and 820 on adhesives, plastics, thermoplastics, rubbers and elastomers:

## SPECTROSCOPY

| Test Method | Test |
|---|---|
| ASTM D3677 | Identification by Infrared Spectrophotometry |
| ASTM D5673 | Elements in Water by Inductively Coupled Plasma-Mass Spectrometry |
| ASTM D7558 | Colorimetric/Spectrophotometric Procedure to Quantify Extractable Chemical Dialkyldithiocarbamate, Thiuram and Mercaptobenzothiazole Accelerators in Natural Rubber Latex and Nitrile Gloves |
| ASTM E1252 | General Techniques for Obtaining Infrared Spectra for Qualitative Analysis |

## CHROMATOGRAPHY

| Test Method | Test |
|---|---|
| ASTM D4327 | Standard Test Method for Anions in Water by Suppressed Ion Chromatography |
| ASTM F2466 | Determining Silicone Volatiles in Silicone Rubber for Transportation Applications |
| Daimler Chrysler LP-461J-127[1] (Withdrawn) | Silicone Volatiles Determination in Silicone Rubber |
| Ford AV-102-01 | Determination of Percent Silica-Producing Volatiles in Silicone Rubber Adhesives/Sealers Which Cure at Room Temperature |
| GM 9009P[1] (Withdrawn) | Test for Volatiles in Silicone Rubber |
| ARDL 3138 | Identification of Rubber Chemicals by High Performance Liquid Chromatography |
| ARDL 3174 | Residual Accelerator Analysis |
| ARDL 3110 | Thin Layer Chromatography (TLC) |
| ARDL 3160 | Gas Chromatrograph/Mass Spectrometer and Auto Sampler |



5202 Presidents Court, Suite 220 | Frederick, MD 21703-8515 | Phone: 301 644 3248 | Fax: 240 454 9449 | www.A2LA.org

**DENSITY**

| Test Method | Test |
|---|---|
| ASTM D297 (Section 16.3.1) | Rubber Products – Chemical Analysis |
| ASTM D1817 | Rubber Chemicals – Density |
| ASTM D792 | Density and Specific Gravity of Plastics by Displacement |

**GRAVIMETRIC**

| Test Method | Test |
|---|---|
| ASTM D297 (Sections 17-29, 41-51) | Rubber Products – Chemical Analysis |
| ASTM D5630 | Standard Test Method for Ash Content in Plastics |

**RUBBER AND FOOD CONTACT ASSESSMENT**

| Test Method | Test |
|---|---|
| ARDL 3171 | Formula Evaluation and Extractable Testing |
| 21 CFR 177.2600 | Rubber Articles Intended for Repeated Use |

**STATE OF CURE**

| Test Method | Test |
|---|---|
| ARDL 3135 | Crosslink Density |

**MICROSCOPY**

| Test Method | Test |
|---|---|
| ARDL 3809 | Light Optical (LOM): Carbon Black/Inorganic Filler Dispersion |
| ASTM D3576 (Procedure B) | Light Optical (LOM): Cell Size – Cellular Plastics |
| ARDL 3802 | Light Optical (LOM): Cell Size – Cellular Plastics |
| ARDL 3812 | Light Optical (LOM): Failure Analysis |
| ARDL 3816 | Scanning Electron (SEM/EDX) |
| ARDL 3815 | Scanning Electron: Microdispersion of Inorganic Fillers |
| ARDL 3813 | Scanning Electron: Elemental Analysis |
| ASTM D3849-95a Historical | Transmission Electron: Primary Aggregate |
| ARDL 3803 | Transmission Electron: Primary Aggregate |
| ARDL 3805 | Transmission Electron: Polymer Morphology |

**POLYMER BARRIER PROPERTIES**

| Test Method | Test |
|---|---|
| ASTM D1434 (Procedure V) | Determining Gas Permeability Characteristics of Plastic Film and Sheeting |
| ASTM D6978 | Standard Practice for Assessment of Resistance of Medical Gloves to Permeation by Chemotherapy Drugs |
| ASTM F739 | Permeation of Liquids and Gases Through Protective Clothing Materials Under Conditions of Continuous Contact |

**POLYMER BARRIER PROPERTIES *(continued)***

| Test Method | Test |
|---|---|
| ASTM F1383 | Permeation of Liquids and Gases Through Protective Clothing Materials Under Conditions of Intermittent Contact |
| ISO 6529 | Protective Clothing – Protection Against Chemicals – Determination of Resistance of Protective Clothing Materials to Permeation by Liquids and Gases |
| BS EN 374-3-2003 (Withdrawn) | Protective Gloves Against Chemicals and Micro-Organisms – Determination of Resistance to Permeation by Chemicals |
| DIN EN 16523-1 | Determination of Material Resistance to Permeation by Chemicals – Permeation by Liquid Chemical Under Conditions of Continuous Contact |
| ASTM E96/E96M | Water Vapor Transmission of Materials |
| ASTM F903 | Resistance of Materials Used in Protective Clothing to Penetration by Liquids |

**THERMAL**

| Test Method | Test |
|---|---|
| ASTM D3418 | Transition Temperatures and Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calorimetry (DSC) |
| ASTM D3850 | Rapid Thermal Degradation of Solid Electrical Insulating Materials by Thermogravimetric Method (TGA) |
| ASTM D3895 | Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry (DSC) |
| ASTM D4419 | Measurement of Transition Temperatures of Petroleum Waxes by Differential Scanning Calorimetry (DSC) |
| ASTM D4565 (Sections 17-18) | Physical and Environmental Performance Properties of Insulations and Jackets for Telecommunications Wire and Cable |
| ASTM D4591 | Determining Temperatures and Heats of Transitions of Fluoropolymers by Differential Scanning Calorimetry (DSC) |
| ASTM D7426 | Assignment of the DSC Procedure for Determining Tg of a Polymer or an Elastomeric Compound |
| ASTM E793 | Enthalpies of Fusion and Crystallization by Differential Scanning Calorimetry (DSC) |
| ASTM E794 | Melting and Crystallization Temperatures by Thermal Analysis |
| ASTM E1269 | Determining Specific Heat Capacity by Differential Scanning Calorimetry (DSC) |
| ASTM E1356 | Assignment of the Glass Transition Temperatures by Differential Scanning Calorimetry (DSC) |
| ASTM E2160 | Heat of Reaction of Thermally Reactive Materials by Differential Scanning Calorimetry (DSC) |

**THERMAL *(continued)***

| Test Method | Test |
|---|---|
| ASTM F2625 | Measurement of Enthalpy of Fusion, Percent Crystallinity, and Melting Point of Ultra-High-Molecular Weight Polyethylene by Means of Differential Scanning Calorimetry |
| ISO 11357-2 | Plastics – Differential Scanning Calorimetry (DSC) – Determination of Glass Transition Temperature and Glass Transition Step Height |
| ISO 11357-3 | Plastics – Differential Scanning Calorimetry (DSC) – Determination of Temperature and Enthalpy of Melting and Crystallization |
| ISO 11357-5 | Plastics – Differential Scanning Calorimetry (DSC) – Determination of Characteristic Reaction – Curve Temperatures and Times, Enthalpy of Reaction and Degree of Conversion |
| ASTM D5992 | Standard Guide for Dynamic Testing of Vulcanized Rubber and Rubber-Like Materials Using Vibratory Methods |
| ASTM E1640 | Assignment of the Glass Transition Temperature by Dynamic Mechanical Analysis |
| ISO 6721-4 | Plastics – Determination of Dynamic Mechanical Properties – Tensile Vibration – Non-Resonance Method |
| ASTM E831 | Linear Thermal Expansion of Solid Materials by Thermomechanical Analysis |
| ISO 11359-1 | Plastics – Thermomechanical Analysis (TMA) – General Principles |
| ISO 11359-2 | Plastics – Thermomechanical Analysis (TMA) – Determination of Coefficient of Linear Thermal Expansion and Glass Transition Temperature |
| ASTM D6370 | Rubber – Compositional Analysis by Thermogravimetry (TGA) |
| ASTM E1131 | Compositional Analysis by Thermogravimetry |
| ASTM E2550 | Thermal Stability by Thermogravimetric |
| ISO 9924-1 | Determination of the Composition of Vulcanizes and Uncured Compounds by Thermogravimetric |
| ISO 9924-2 | Rubber and Rubber Products – Determination of the Composition of Vulcanizates and Uncured Compounds by Thermogravimetry – Acrylonitrile-Butadiene and Halobutyl Rubbers |
| ISO 9924-3 | Determination of the Composition of Vulcanizes and Uncured Compounds by Thermogravimetric |

**LEACHING FOR HALIDES AND SULFUR**

| Test Method | Test |
|---|---|
| ASTM D512 | Standard Test Methods for Chloride Ion in Water |
| ASTM D516 | Standard Test Method for Sulfate Ion in Water |
| MIL-STD 2041E (SH) – Notice 1- Appendix A Section A.6 | Control of Detrimental Materials |
| MIL-STD 2190 (SH)[1] (Withdrawn) | Non-Metallic Seal Materials |
| ASTM D3566 (Sections 9.1-9.15) | Rubber – Determination of Bromine in the Presence of Chlorine by Oxygen Combustion |

## CARBON BLACK

| Test Method | Test |
|---|---|
| ASTM D1510 (Method A) | Iodine Adsorption Number |
| ASTM D2414 | Oil Absorption Number (OAN) |
| ASTM D1506 (Method A) | Ash Content |
| ASTM D1618 | Transmittance of Toluene Extract |
| ASTM D1619 (Method A) | Carbon Black – Sulfur Content |
| ASTM D1508 | Pelleted Fines and Attrition |
| ASTM D1509 (Method A) | Carbon Black – Heating Loss |
| ASTM D1514 | Sieve Residue |
| ASTM D1513 | Pour Density Pelleted |
| ASTM D1512 (Method A) | pH Value |
| ARDL 3187 | Calibration of Volumetric Cup Used for ASTM D1513, Pour Density |

## MOISTURE CONTENT BY KARL FISCHER TITRATION

| Test Method | Test |
|---|---|
| ASTM D6869 | Coulometric and Volumetric Determination of Moisture in Plastics Using the Karl Fischer Reaction (the Reaction of Iodine with Water) |
| ISO 15512 | Plastics – Determination of Water Content |

## FLASHPOINT

| Test Method | Test |
|---|---|
| ASTM D92 | Flash Points and Fire Points by Cleveland Open Cup Tester |

## CONTACT ANGLE DETERMINATION & SURFACE TENSION

| Test Method | Test |
|---|---|
| ASTM D5946 | Corona-Treated Polymer Films Using Water Contact Angle Measurements |
| ASTM D7334 | Surface Wettability of Coatings, Substrates, and Pigments by Advancing Contact Angle Measurement |
| ASTM D7490 | Measurement of the Surface Tension of Solid Coatings, Substrates, and Pigments Using Contact Angle Measurements |
| ISO 15989 | Plastics – Film and Sheeting – Measurement of Water-Contact Angle of Corona-Treated Films |
| ASTM D1417 (Section 7) | Rubber Lattices – Synthetic |

## PERSONAL PROTECTIVE EQUIPMENT

| Test Method | Test |
|---|---|
| BS EN ISO 374-4 | Resistance to Degradation by Chemicals |
| BS EN ISO 21420 Clause 5.1 and 6.1 | Sizing and Measurement of Gloves |
| BS EN ISO 21420 Clause 4.3.2 and ISO 3071 | pH Determination of Gloves |
| BS EN ISO 21420 Clause 5.2 | Dexterity of Gloves |

Note: *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*

Note: *The laboratory is accredited for the test methods listed above. The accredited test methods are used in determining compliance with the material and/or safety specifications listed 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*.

ASTM D4626, E682
European Standards: BS EN 71-3
Vanderbilt Latex Handbook (3rd Edition) (for Reference Only)
EPA Method 24 (see Note 1 below)

Note: For Determination of Volatile Matter Content, Water Content, Density and Weight Solids of Surface Coatings, refer to test methods ASTM D1475, D2369 and D4017 in the accredited portion of this scope listed above.

# Accredited Laboratory

A2LA has accredited

## AKRON RUBBER DEVELOPMENT LABORATORY, INC.

*Akron, OH*

for technical competence in the field of

## Chemical 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 19th day of April 2022.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 0255.02
Valid to March 31, 2024
Revised February 26, 2024

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

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

AKRON RUBBER DEVELOPMENT LABORATORY, INC.
75 E. Robinson Avenue
Barberton, Ohio 44207
Rick Behne  Phone: 330 794 6600

MECHANICAL

Valid To: March 31, 2024  Certificate Number: 0255.03

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on rubber, plastics, textiles, latex, condoms, adhesives, sealers and adhesive tapes:

## SAMPLE PREPARATION AND MOLDING

| Test Method | Test |
|---|---|
| ASTM D2229 (Sections 6 to 10.4) | Standard Test Method for Adhesion Between Steel Tire Cords and Rubber |
| ASTM D3182 | Procedures for Mixing Standard Compounds and Preparing Standard Vulcanized Sheets |
| ASTM D3183 | Rubber – Preparation of Pieces for Test Purposes from Products |
| ASTM D3767 | Standard Practice for Rubber – Measurement of Dimensions |

## MISCELLANEOUS

| Test Method | Test |
|---|---|
| ASTM D6147 | Determination of Force Decay (Stress Relaxation) in Compression |
| ASTM F36 | Compressibility and Recovery of Gasket Materials |
| ASTM F1112 | Statics Testing of Tubeless Pneumatic Tires for Rate of Loss of Inflation Pressure |
| ISO 3384-1 | Determination of Stress Relaxation in Compression |

## CONVEYOR BELTING, FLAT TYPE

| Test Method | Test |
|---|---|
| ASTM D378 (Section 8) | Measurement of Dimensions |
| ASTM D378 (Section 9.2.1) | Preparation of Cover Pieces |
| ASTM D378 (Section 12) | Breaking Strength Testing of Conveyor Belting |
| ASTM D378 (Section 12) | Modulus Testing of Conveyor Belting |
| ASTM D378 (Section 14) | Carcass Tear Test (Propagation Resistance) |



5202 Presidents Court, Suite 220 | Frederick, MD 21703-8515 | Phone: 301 644 3248 | Fax: 240 454 9449 | www.A2LA.org

**CONVEYOR BELTING, FLAT TYPE (*Continued*)**

| | |
|---|---|
| ASTM D378 (Section 16) | Breaking Strength of Mechanical Fastenings (Static Testing Method) |
| ASTM D378 (Section 17) | Elevator Belt Bolt Holding Strength |

**ELECTRICAL**

| **Test Method** | **Test** |
|---|---|
| ASTM D149 | Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulation Materials at Commercial Power Frequencies |

**FEA MODELING AND SUPPORT TESTING**

| **Test Method** | **Test** |
|---|---|
| ASTM D4014 (Except 8.2.3, 8.2.5 & 8.2.6) | Plain and Steel-Laminated Elastomeric Bearings for Bridges |
| ARDL 8106 (Except Compression Set, ASTM D395 | Finite Element Analysis Support Test |
| ARDL 8107 | Life Prediction of Elastomeric Components or Materials |
| ARDL 8111 | Shelf Life Prediction for Rubber Products |

**DYNAMIC TESTING**

| **Test Method** | **Test** |
|---|---|
| ASTM D4065 | Plastics: Dynamic Mechanical Properties: Determination and Report of Procedures |
| ASTM D5992 | Dynamic Testing of Vulcanized Rubber and Rubber-Like Materials Using Vibratory Methods |
| ISO 4664-1 | Rubber, Vulcanized or Thermoplastic-Determination of Dynamic Properties |
| ASTM D5024 | Dynamic Mechanical Properties in Compression |
| ASTM D5026 | Dynamic Mechanical Properties in Tension |
| ASTM E1640 | Standard for Assignment of the Glass Transition Temperature by Dynamic Mechanical Analysis |

**IMPACT**

| **Test Method** | **Test** |
|---|---|
| ASTM D3763 | High Speed Puncture Properties of Plastics Using Load and Displacement Sensors |
| ASTM F1292 | Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment |

## SALT SPRAY CORROSION

| Test Method | Test |
|---|---|
| ASTM B117 | Operating Salt Spray (Fog) Apparatus |

## HOSE TESTING

| Test Method | Test |
|---|---|
| ASTM D380 (Section 14-17) | Rubber Hose for Automotive Air and Vacuum Brake Systems |

## CARBON ARC

| Test Method | Test |
|---|---|
| ASTM C793 | Effects of Laboratory Accelerated Weathering on Elastomeric Joint Sealants |
| ASTM D750 | Rubber Deterioration Using Artificial Weathering Apparatus |
| ASTM D822 | Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings |
| ASTM G152 | Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials |
| Honda HES D2500 -10 Rev 2 (3.12.2) | Weathering Resistance Test Resistance Test |
| ISO 4892-4 | Methods of Exposure to Laboratory Light Sources: Open-Flame Carbon-Arc Lamps |
| JIS B7753 | Sunshine Carbon Arc Lamp Type Weathering Test Machine and Light Resistance Tester |
| JIS D 0205 | Test Method of Weatherability for Automotive Parts |
| Nissan NES M0007 - 2006 (Methods A and B) | Test Method for Resistance Characteristics to Rubber Part |
| Nissan NES M0501 (Methods 4, 5 and 6) - 2007 | Testing Methods of Staining for Rubber, Vulcanized or Thermoplastic |
| Nissan NES M0135 - 2008 | Weatherability and Light Resistance Test Methods for Synthetic Resin Parts |
| Toyota TSM 1500G, 5.18 - 2012 | Staining Test (By Contact) |
| Toyota TSM 1501G, 8.9 - 2004 | Staining Test |
| Toyota TSK 6505G (Section 4.6) - 2011 | Paint Film Contamination Resistance |

**OIL AND GAS**

| | |
|---|---|
| ISO 23936-1 | Petroleum, Petrochemical and Natural Gas Industries – Non-Metallic Materials in Contact With Media Related Oil and Gas Production – Thermoplastics |
| ISO 23936-2 | Petroleum, Petrochemical and Natural Gas Industries – Non-Metallic Materials in Contact With Media Related Oil and Gas Production – Elastomers |
| NACE TM0192 | Evaluating Elastomeric Materials in Carbon Dioxide Decompression Environments |
| NORSOK M-710 | Qualification of Non-Metallic Materials and Manufacturers |

**RHEOLOGY**

| **Test Method** | **Test** |
|---|---|
| ASTM D2084 | Rubber Property – Vulcanization Using Oscillating Disk Cure Meter |
| ASTM D5289 | Rubber Property – Vulcanization Using Rotorless Cure Meters |

**VISCOSITY**

| **Test Method** | **Test** |
|---|---|
| ASTM D1646 | Rubber – Viscosity, Stress Relaxation, and Pre – Vulcanization Characteristics (Mooney Viscometer) |

**VOLATILE MATTER**

| **Test Method** | **Test** |
|---|---|
| ASTM D5668 Method A | Rubber from Synthetic Sources – Volatile Matter |

**DYNAMIC, STATIC & FATIGUE**

| Test | Frequency (max) | Load (max) | Amplitude (max) | Temperature |
|---|---|---|---|---|
| Dynamic Testing | 0.001 to 1000 Hz | 500 kN | ±127 mm | (-60 to 175) ºC |

Per: ASTM D5992*
SAE J1085*

| Test | Load (max) | Deflection (max) | Temperature |
|---|---|---|---|
| Static Testing | 500 kN | ±127 mm | (-60 to 175) ºC |

Per: ASTM D575*

| Test | Load (max) | Deflection (max) | Temperature |
|---|---|---|---|
| Fatigue Testing: Axial | 500 kN | ±127 mm | (-60 to 175) ºC |

Per: SAE J1183*

*Using customer generated test specifications based on the above parameters and testing technologies listed above.

*The laboratory is accredited for the test methods listed above. The accredited test methods are used in determining compliance with the material specifications listed 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.*

ASTM: C923, C1115, C1173, D378, D1056, D1248, D1414, D2000, D6878 / D6878M, E308, D751

DaimlerChrysler: MS-AG-81, MS-AR-20, MS-AR-23, MS-AR-24, MS-AR-26, MS-AR-30, MS-AR-80, MS-DC-16

Ford: ESF-M4D101-A, ESF-M4D423-A, WSK-M4D695-A Withdrawn, WSS-M2D378-B1Withdrawn, WSS-M2D379-B1 Withdrawn, WSS-M2D380-B1 Withdrawn, WSS-M2D381-B1 Withdrawn, WSS-M2D382-B1Withdrawn

GM: GM6086M Withdrawn 2012, GM7001M Withdrawn 2011, GMP.ABS.018R Withdrawn 2012, GMP.E/P.003 Withdrawn 2011, GMP.E/P.029 Withdrawn 2010, GMP.E/P.071 Withdrawn 2011, GMP.TES.012 Withdrawn 2013, GMP.EP.001 Withdrawn 2011, GMP.PE.002 Withdrawn 2011, GMP.PE.003 Withdrawn 2011, GMP.PE.004 Withdrawn 2011, GMP.PE.005 Withdrawn 2011, GMP.PE.006 Withdrawn 2016, GMP.PE.007 Withdrawn 2011,

GM (*continued*): GMP.PE.009 Withdrawn 2011, GMN8423Withdrawn, GMN11106 Withdrawn 2010, GMW15473 Withdrawn 2015, GMW17408

ISO: 4074-1

JIS: K 6301:1995 (Withdrawn 1996)

Underwriters Laboratory: UL746B (UL 94 Only)

# Accredited Laboratory

A2LA has accredited

## AKRON RUBBER DEVELOPMENT LABORATORY, INC.

*Barberton, OH*

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 19th day of April 2022.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 0255.03
Valid to March 31, 2024
Revised February 26, 2024

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

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

AKRON RUBBER DEVELOPMENT LABORATORY, INC.
75 E. Robinson Avenue
Barberton, Ohio 44207
Rick Behne  Phone: 330 794 6600

CHEMICAL

Valid To: March 31, 2024  Certificate Number: 0255.04

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests in accordance with Good Laboratory Practices (GLP) Regulations per 21 CFR 58, 210, 211, and 820 on adhesives, plastics, thermoplastics, rubbers and elastomers:

**MICROBIOLOGICAL TESTING**

| Test Method | Test |
|---|---|
| ASTM D5712 | Analysis of Aqueous Extractable Protein in Latex, Natural Robber and Elastomeric Products Using the Modified Lowry Method |
| ASTM D6499 | Immunological Measurement of Antigenic Protein in Natural Rubber and Its Products |
| ASTM D7427 | Immunological Measurement of Four Principal Allergenic Proteins (Hev b 1, 3, 5 and 6.02) in Natural Rubber and Its Products Derived from Latex |
| BS EN 455-3 (Section 5.1) | Leachable Proteins in Medical Gloves for Single Use |
| ISO 10993-5 | Tests for in vitro cytotoxicity |
| ASTM F1671/F1671M | Viral Penetration |
| ISO 16604 | Viral Penetration Using Phi-X174 bacteriophage |
| AATCC TM 42 | Water Resistance: Impact Penetration |
| AATCC 127 | Water Resistance-Hydrostatic Pressure Test |
| ASTM F1670 | Resistance of Materials Used in Protective Clothing to Penetration by Synthetic Blood |
| ASTM D1331 A (du Noüy Ring Method) | Surface Tension of Solutions of Paints, Solvents, Solutions of Surface-Active Agents and Related Materials |



5202 Presidents Court, Suite 220 | Frederick, MD 21703-8515 | Phone: 301 644 3248 | Fax: 240 454 9449 | www.A2LA.org

# Accredited Laboratory

A2LA has accredited

## AKRON RUBBER DEVELOPMENT LABORATORY, INC.

*Barberton, OH*

for technical competence in the field of

## Chemical 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 19th day of April 2022.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 0255.04
Valid to March 31, 2024
Revised February 26, 2024

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