SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

AKRON RUBBER DEVELOPMENT LABORATORY, INC.
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CHEMICAL

Valid To: May 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Daimler Chrysler LP-461J-127[1] (Withdrawn)	Silicone Volatiles Determination in Silicone Rubber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GM 9009P[1] (Withdrawn)	Test for Volatiles in Silicone Rubber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

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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 May 31, 2024
Revised April 30, 2024

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