



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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MECHANICAL

Valid To: December 31, 2020

Certificate Number: 1136.03

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following mechanical tests on the following materials/products: Photovoltaic Modules; Adhesives and Sealants; Varnish; Industrial Laminate; Ceramics; Films and Packaging; Leather; Packaging and Containers; Paper, Paperboard and Pulp; Plastics and Polymers; Rubber and Rubber Products; Textiles; Information Technology Equipment (ITE); Printed Wiring Board; Magnet Wire; and Wire Positioning Devices.

<u>Test:</u>	<u>Test Method(s)^{1,2:}</u>
Tensile Strength Test	ASTM D412, D638, D882; UL 746A (Sections 10-12); CAN/CSA C22.2 No.0.17 (Section 5.5); ISO 527-1, 527-2, 527-3, 527-4, 527-5; JIS K6911, K7127, K7161-1, K7161-2, K7164, K7165
Flexural Strength Test	ASTM D790; CAN/CSA C22.2 No.0.17 (Section 5.4); ISO 178; JIS K7171; UL 746A (Section 16)
Tensile Impact Test	ASTM D1822; JIS K7160; CAN/CSA C22.2 No.0.17 (Section 5.7); UL 746A (Section 14); ISO 8256
Ball Pressure Test	CAN/CSA C22.2 No.0.17 (Section 9.6); Electrical Appliance and Materials Safety Law (in Japan 3-31-86); UL 746C (Section 62); IEC 60695-10-2; JIS C 60695-10-2
Izod Impact	ASTM D256; JIS K7110, JIS K6911 (Section 5.21); ISO180; UL 746A (Section 13); CSA C22 No.17 (Section 5.3)
Charpy Impact Testing	ASTM D6110, JIS K7111-1, JIS K6911 (Section 5.20); ISO 179-1; UL746A (Section 15); CSA C22 No.17 (Section 5.2)
Heat Deflection Temperature (HDT)	UL746A; ASTM D648; ISO 75-1, 75-2; JIS K7191-1, K7191-2

<u>Test:</u>	<u>Test Method(s)^{1,2:}</u>
Vicat Softening Point/Temperature (VST)	UL746A, UL746C; ASTM D1525; ISO 306; JIS K7206
Specific Gravity/Density Determination	ASTM D792 Method A
Relative Thermal Endurance Index (RTE, RTI)	IEC 60216-5, 61730-1; UL 746B
Oxygen Index Measurement	ISO 4589-2; ASTM D2863; JIS K7101-2
20 mm Flame Confirmation Test	ASTM D5207; IEC 60695-11-4
Horizontal Burning Test	ASTM D635; CAN/CSA C22.2 No.0.17 (Section 4.2.3); CAN/CSA C22.2 No.60950-1 (Sections 4.7.3.1 - 4.7.3.6); EN 60950-1 (Sections 4.7.3.1 - 4.7.3.6); IEC 60950-1 (Sections 4.7.3.1 - 4.7.3.6); UL 60950-1 (Sections 4.7.3.1 - 4.7.3.6); IEC 60695-11-10; JIS K6911; UL 94 (Section 7); GB/T 5169.16; GB 4943.1, (Sections 4.7.3.1-4.7.3.6); BS EN 60695-11-10
Thin Material Vertical Burning Test	ASTM D4804; CAN/CSA C22.2 No.0.17 (Section 4.2.4); ISO 9773; UL 94 (Section 11)
125 mm Flame Confirmation Test	ASTM D5207; IEC 60695-11-3
12 mm Flame Confirmation Test	IEC 60695-11-5; GB/T 5169.5
Vertical Burning Test	ASTM D3801; CAN/CSA C22.2 No.0.17 (Section 4.2.2); CAN/CSA C22.2 No.60950-1 (Sections 4.7.3.1 - 4.7.3.6); EN 60950-1 (Sections 4.7.3.1 - 4.7.3.6); IEC 60950-1 (Sections 4.7.3.1 - 4.7.3.6); UL 60950-1 (Sections 4.7.3.1 - 4.7.3.6); IEC 60695-11-10; JIS K6911; UL 94 (Section 8); GB/T 5169.16; GB 4943.1, 4.7.3.1-4.7.3.6; BS EN 60695-11-10
Vertical Burning Test using a 125 mm Flame Source	UL 94 (Section 9); IEC 60695-11-20; CAN/CSA C22.2 No.0.17 (Section 4.2.1); ASTM D5048; EN 60950-1, (Sections 4.7.3.1-4.7.3.6); UL 60950-1, (Sections 4.7.3.1-4.7.3.6); CAN/CSA C22.2 60950-1, (Sections 4.7.3.1-4.7.3.6)
Vertical Burning Rate of Materials Test	UN ECE R118 (Annex 8)

<u>Test:</u>	<u>Test Method(s)^{1,2:}</u>
Horizontal Burning Foamed Material Test	UL 94 (Section 12); CAN/CSA C22.2 No.0.17 (Section 4.2.5); ASTM D4986; IEC 60950-1 (Sections 4.7.3.1 - 4.7.3.6); EN 60950-1 (Sections 4.7.3.1 - 4.7.3.6); UL 60950-1 (Sections 4.7.3.1 - 4.7.3.6); CAN/CSA C22.2 No.60950-1 (Sections 4.7.3.1 - 4.7.3.6); ISO 9772; GB 4943.1, (Sections 4.7.3.1-4.7.3.6)
Burning Test using a 20 mm Flame Source Used in Electrical Equipment Evaluations	UL 746C (Sections 16 and 51); IEC 60950-1 (Annex A2); EN 60950-1 (Annex A2); UL 60950-1 (Annex A2); CAN/CSA C22.2 No.60950-1 (Annex A2); GB 4943.1, Annex A2
Burning Test using a 127 mm Flame Source Used in Electrical Equipment Evaluations	UL 746C (Sections 17 and 52); IEC 60950-1 (Annex A1); EN 60950-1 (Annex A1); UL 60950-1 (Annex A1); CAN/CSA C22.2 No.60950-1 (Annex A1); GB 4943.1, Annex A1
Enclosure Burning Test used in Electrical Evaluations	UL 746C (Sections 18 and 53)
Burning Test using a Needle Flame Source	UL 746C (Section 15); UL 1694; IEC 60695-11-5; GB/T 5169.5; CAN/CSA C22.2 No.0.17 (Section 9.2.1); IEC 60335-1 (Section 30 and Annex E); IEC 60950-1, Annex A2.7; EN 60950-1, Annex A2.7; UL 60950-1, Annex A2.7; CAN/CSA C22.2 60950-1, Annex A2.7; GB 4943.1, Annex A2.7; IEC 62368-1 Annex S
Burning Test of Automotive Interior Materials	ASTM D5132; FMVSS 302; ISO 3795; JIS D1201; SAE J369; GB 8410
Ignitability Test	ISO 11925-2; IEC 61730-2 (MST 24); DIN 4102-1 (Class B2 only); GB 8626
VW-1 Flammability Test	UL224 (Section, 5.11); UL510 (Section 6); UL510a (Section 9, 20); UL1441 (Section 5.7); UL1581 (Section, 1080); UL2556 (Section, 9.4); ASTM D2671 (Section 72 Procedure C); IEC TS 60695-11-21

<u>Test:</u>	<u>Test Method(s)^{1,2:}</u>
1kw Flame Confirmation Test	IEC 60695-11-2
Test for Vertical Flame Propagation for a Single Insulated Wire or Cable	IEC60332-1-1; IEC60332-1-2
Test Methods for Rubber or Plastic Insulated Wires and Cables	JIS C3005 (Section 4.26)
Folding Endurance	JIS C5016 (Section 8.7); JIS C6471 (Section 8.2)
Thermal Shock by Air	JIS C5012 (Section 9.2); JIS C5016 (Section 9.2)
Hot Oil	JIS C5012 (Section 9.3); JIS C5016 (Section 9.3)
Reflow Solder	JIS C5012 (Section 10.4.2)
Cross-Sectional Observation Test	JIS C5012 (Section 6.2); JIS C5016 (Section 6.2); IEC 61730-2 (MST 04)
Vibration	JIS C5402-6-4; JIS C60068-2-6; JIS C60068-2-53; JIS C60068-2-64; JIS C60068-2-80; JIS D1601; JIS C60068-2-57; IEC 60068-2-6; IEC 60068-2-53; IEC 60068-2-57; IEC 60068-2-64; IEC 60068-2-80; ISO 19453-3 (Section 4.1); ISO 16750-3 (Section 4.1); JASO D014-3 (Section 4.1); JASO D902 (Section 6.4); JASO M312 (Section 5.6)
Shock	JIS C60068-2-27; JIS C60068-2-53; IEC 60068-2-27; IEC 60068-2-53; ISO 19453-3 (Section 4.2); ISO 16750-3 (Section 4.2); JASO D014-3 (Section 4.2)

Testing Performed on Photovoltaic Modules

T-Peel	UL 746C, 746A, Subject 5703; ASTM D1876
Shear Lap	ASTM D1002; UL 746A, 746C
Cross-Hatch Tape Adhesion	UL 746C (Sections 46 and 71); ASTM D3359
U Bend	ASTM D903; UL 746A, 746C
Adhesives-Specialized Applications	UL 746C (Section 69)
Visual Inspection	IEC 61730-2 (MST 01); IEC 61215 (Section 10.1); IEC 61646 (Section 10.1); IEC 61215-2 (Section 4.1, MQT 01)
Thermal Cycling (TC50 or TC200)	IEC 61730-2 (MST 51); IEC 61215 (Section 10.11); IEC 61646 (Section 10.11); UL 1703 (Section 35); IEC 61215-2 (Section 4.11, MQT 11)
Humidity Freeze (HF10)	IEC 61730-2 (MST 52); IEC 61215 (Section 10.12); IEC 61646 (Section 10.12); UL 1703 (Section 36); IEC 61215-2 (Section 4.12, MQT 12)
Damp Heat (DH1000)	IEC 61730-2 (MST 53); IEC 61215 (Section 10.13); IEC 61646 (Section 10.13); IEC 61215-2 (Section 4.13, MQT 13)
Salt Mist Corrosion	IEC 61701; IEC 60068-2-52; JASO D014-4 (Section 5.5); JASO D616 (Section 6.20); JASO M609-91
UV Preconditioning Test	IEC 61730-2 (MST 54); IEC 61215 (Section 10.10); IEC 61646 (Section 10.10); IEC 61215-2(Section 4.10, MQT 10)
Accessibility Test	IEC 61730-2 (MST 11)
Cut Susceptibility Test	IEC 61730-2 (MST 12); UL 1703 (Section 24)
Robustness of Terminations Test	IEC 61730-2 (MST 42); IEC 61215 (Section 10.14); IEC 61646 (Section 10.14); IEC 61215-2 (Section 4.14, MQT 14)

<u>Test:</u>	<u>Test Method(s)^{1,2:}</u>
Temperature Test	IEC 61730-2 (MST 21); UL 1703 (Section 19)
Hot Spot Endurance Test	IEC 61730-2 (MST 22); IEC 61215 (Section 10.9); IEC 61646 (Section 10.9); UL 1703 (Section 39); IEC 61215-2 (Section 4.9, MQT 09)
Fire Test	IEC 61730-2 (MST 23); UL 790 (Sections 7 and 8); UL 1703 (Section 31)
Bypass Diode Thermal Test	IEC 61730-2 (MST 25); IEC 61215 (Section 10.18); IEC 61646 (Section 10.18); IEC 61215-2 (Section 4.18.1, MQT 18.1)
Bypass Diode Functionality Test	IEC 61215-2 (Section 4.18.2, MQT 18.2)
Bypass Diode – Thermal Runaway Test	IEC 62979
Module Breakage	IEC 61730-2 (MST 32)
Mechanical Load	IEC 61730-2 (MST 34); IEC 61215 (Section 10.16); IEC 61646 (Section 10.16); IEC 62782
Static Mechanical Load Test	IEC 61215-2 (Section 4.16, MQT 16)
Stabilization	IEC 61215-2 (Section 4.19, MQT 19)
Light Soaking	IEC 61646 (Section 10.19)
Water Exposure/Immersion	UL 746C (Sections 26 and 58)
Surface Flame Spread Test	ASTM E162; IEC 61730-1 ³ (Edition 1, 2004, Section 5.4.2); ISO 5658-2; IMO Resolution MSC 307(88) – 2010 FTP Code Annex 1: Part 5; ASTM E1321
Environmental Test	
Visual Inspection	EN50155 (Section 13.4.1); IEC 60571 (Section 12.2.2)
Performance Test	EN50155 (Section 13.4.2); IEC 60571 (Section 12.2.3)
Low Temperature Start-up Test	EN50155 (Section 13.4.4); IEC 60571 (Section 12.2.4)
Dry Heat Test	EN50155 (Section 13.4.5); IEC 60571 (Section 12.2.5)
Low Temperature Storage Test	EN50155 (Section 13.4.6)
Cyclic Damp Heat Test	EN50155 (Section 13.4.7); IEC 60571 (Section 12.2.6)
Insulation Test	EN50155 (Section 13.4.9); IEC 60571 (Section 12.2.10)
Salt Mist Test	EN50155 (Section 13.4.10); IEC 60571 (Section 12.2.11)

Smoke Density Measurement	ASTM E662, ASTM F814; ISO 5659-2; 14 CFR Appendix F to Part 25, Part V; FAA Aircraft Materials Fire Test Handbook, Chapter 6
Toxicity	BSS 7239; DIN 5510-2 Appendix D.4 (Colorimetric Measurements)
Flammability Testing for Aircraft Interior Materials (Vertical, Horizontal, 45-Degree, 60 Degree, Flammability Test)	14 CFR 25 (Appendix F, Part 1); CS 25 (Appendix F, Part 1); JAR 25 (Appendix F, Part 1); JCAB AIM Part III (Appendix F, Part 1); RTCA/DO-160G (Section 26); FAA Aircraft Materials Fire Test Handbook Chapter 1; FAA Aircraft Materials Fire Test Handbook Chapter 2; FAA Aircraft Materials Fire Test Handbook Chapter 3; FAA Aircraft Materials Fire Test Handbook Chapter 4
Flame Propagation Test	ASTM C1166; ASTM C542; NFPA 130; Title 49 CFR Part 238 Appendix B; FTA Recommended Fire Safety; Practices for Rail Transit Materials Selection

¹ When the date, revision or edition of a test method standard is not identified on the scope of accreditation, the laboratory is required to be using the current version within one year of the date of publication, per part C., Section 1 of A2LA R101 - *General Requirements - Accreditation of ISO-IEC 17025 Laboratories*.

² UL 60950-1, IEC 60950-1, CAN/CSA C22.2 No.60950-1, and EN60950-1 base requirements are nearly identical. Section numbers relate to all four editions, unless otherwise indicated.

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



Accredited Laboratory

A2LA has accredited

CHEMITOX, INC., YAMANASHI FACILITY

Yamanashi, Japan

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 April 2017).



Presented this 7th day of January 2019.

A blue ink signature of the Senior Director of Accreditation Services.

Senior Director, Accreditation Services
For the Accreditation Council
Certificate Number 1136.03
Valid to December 31, 2020

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