



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

CHEMITOX, INC.
 YAMANASHI FACILITY
 18349 Egusa, Sutama-cho
 Hokuto-shi, Yamanashi-Ken, JAPAN
 Ms. Kuniko Ito (Authorized Representative) Phone: 81 551 42 5061 email: k-ito@chemitox.co.jp
 Mr. Kiyohiko Sakamoto (Deputy Authorized Representative) email: k-sakamoto@chemitox.co.jp
 Webpage: http://www.chemitox.co.jp

MECHANICAL

Valid To: September 30, 2016

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, K7162, K7164, K7165
Flexural Strength Test	ASTM D790; CAN/CSA C22.2 No.0.17 (Section 5.4); ISO 178; JIS K6911; 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); IPC-TM-650 (Section 2.4.18.3); ISO 8256
Ball Pressure Test	CAN/CSA C22.2 No.0.17 (Section 9.6); CAN/CSA C22.2 No.60950-1 (Section 4.5.5); EN 60950-1 (Section 4.5.5); IEC 60950-1 (Section 4.5.5); UL 60950-1 (Section 4.5.5); CAN/CSA C22.2 No.61010-1 (Section 10.5.3); EN 61010-1 (Section 10.5.3); IEC 61010-1 (Section 10.5.3); UL 61010-1 (Section 10.5.3); Electrical Appliance and Materials Safety Law (in Japan 3-31-86); IEC 60335-1, 60695-10-2; UL 746A (Section 30); JIS 60695-10-2
Izod Impact	ASTM D256; JIS K7110, K6911 (Section 5.21); ISO180; UL 746A (Section 13); CSA C22 No.17 (Section 5.3)

<u>Test:</u>	<u>Test Method(s) ^{1,2:}</u>
Charpy Impact Testing	ASTM D6110, K7111-1, K6911 (Section 5.20); ISO 179; 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
Vicat Softening Point/Temperature (VST)	UL746A, UL746C ; ASTM D1525; ISO 306; JIS K7206
Cord Guard Test	CAN/CSA C22.2 No.60950-1 (Section 3.2.8); EN 60950-1 (Section 3.2.8); IEC 60950-1 (Section 3.2.8); UL 60950-1 (Section 3.2.8)
Abrasion Resistance Test	CAN/CSA C22.2 No.60950-1 (Section 2.10.8.4); EN 60950-1 (Section 2.10.8.4); IEC 60950-1 (Section 2.10.8.4); UL 60950-1 (Section 2.10.8.4)
Durability of Marking Test	CAN/CSA C22.2 No.60950-1 (Section 1.7.11); EN 60950-1 (Section 1.7.11); IEC 60950-1 (Section 1.7.11); UL 60950-1 (Section 1.7.11); CAN/CSA C22.2 No.61010-1 (Section 5.3); EN 61010-1 (Section 5.3); IEC 61010-1 (Section 5.3); UL 61010-1 (Section 5.3)
Strain Relief Test	CAN/CSA C22.2 No.60950-1 (Section 3.2.6); EN 60950-1 (Section 3.2.6); IEC 60950-1 (Section 3.2.6); UL 60950-1 (Section 3.2.6); CAN/CSA C22.2 No.61010-1 (Section 6.10.2); EN 61010-1 (Section 6.10.2); IEC 61010-1 (Section 6.10.2); UL 61010-1 (Section 6.10.2)
Field-Wiring Test	CAN/CSA C22.2 No.60950-1 (Section 3.3.8); EN 60950-1 (Section 3.3.8); IEC 60950-1 (Section 3.3.8); UL 60950-1 (Section 3.3.8); CAN/CSA C22.2 No.61010-1 (Section 6.6.4); EN 61010-1 (Section 6.6.4); IEC 61010-1 (Section 6.6.4); UL 61010-1 (Section 6.6.4)
Stability Test	CAN/CSA C22.2 No.60950-1 (Section 4.1); EN 60950-1 (Section 4.1); IEC 60950-1 (Section 4.1); UL 60950-1 (Section 4.1); CAN/CSA C22.2 No.61010-1 (Section 7.3); EN 61010-1 (Section 7.3); IEC 61010-1 (Section 7.3); UL 61010-1 (Section 7.3)
Steady Force Test	CAN/CSA C22.2 No.60950-1 (Sections 4.2.1 - 4.2.4); EN 60950-1 (Sections 4.2.1 - 4.2.4); IEC 60950-1 (Sections 4.2.1 - 4.2.4); UL 60950-1 (Sections 4.2.1 - 4.2.4); CAN/CSA C22.2 No.61010-1 (Section 8.1.1); EN 61010-1 (Section 8.1.1); IEC 61010-1 (Section 8.1.1); UL 61010-1 (Section 8.1.1)

<u>Test:</u>	<u>Test Method(s) ^{1,2:}</u>
Impact Test	CAN/CSA C22.2 No.60950-1 (Section 4.2.5); EN 60950-1 (Section 4.2.5); IEC 60950-1 (Section 4.2.5); UL 60950-1 (Section 4.2.5); CAN/CSA C22.2 No.61010-1 (Section 8.1.2); EN 61010-1 (Section 8.1.2); IEC 61010-1 (Section 8.1.2); UL 61010-1 (Section 8.1.2)
Drop Test (Using 21 mm Plywood Boards)	CAN/CSA C22.2 No.60950-1 (Section 4.2.6); EN 60950-1 (Section 4.2.6); IEC 60950-1 (Section 4.2.6); UL 60950-1 (Section 4.2.6); CAN/CSA C22.2 No.61010-1 (Section 8.2); EN 61010-1 (Section 8.2); IEC 61010-1 (Section 8.2); UL 61010-1 (Section 8.2)
Stress Relief Test	CAN/CSA C22.2 No.60950-1 (Sections 4.2.1 and 4.2.7); EN 60950-1 (Sections 4.2.1 and 4.2.7); IEC 60950-1 (Sections 4.2.1 and 4.2.7); UL 60950-1 (Sections 4.2.1 and 4.2.7); CAN/CSA C22.2 No.61010-1 (Section 10.5.2); EN 61010-1 (Section 10.5.2); IEC 61010-1 (Section 10.5.2); UL 61010-1 (Section 10.5.2)
Wall or Ceiling Mounted Equipment Test	CAN/CSA C22.2 No.60950-1 (Sections 4.2.10 - 4.2.11.3); EN 60950-1 (Section 4.2.10); IEC 60950-1 (Section 4.2.10); UL 60950-1 (Sections 4.2.10 - 4.2.11.3); CAN/CSA C22.2 No.61010-1 (Section 7.5); EN 61010-1 (Section 7.5); IEC 61010-1 (Section 7.5); UL 61010-1 (Section 7.5)
Sharp Edge Test	CAN/CSA C22.2 No.60950-1 (Section 4.3.1); EN 60950-1 (Section 4.3.1); IEC 60950-1 (Section 4.3.1); UL 60950-1 (Section 4.3.1); CAN/CSA C22.2 No.61010-1 (Section 7.1); EN 61010-1 (Section 7.1); IEC 61010-1 (Section 7.1); UL 61010-1 (Section 7.1)
Knob Pull/Handle Loading Test	CAN/CSA C22.2 No.60950-1 (Section 4.3.2); EN 60950-1 (Section 4.3.2); IEC 60950-1 (Section 4.3.2); UL 60950-1 (Section 4.3.2); CAN/CSA C22.2 No.61010-1 (Section 7.4); EN 61010-1 (Section 7.4); IEC 61010-1 (Section 7.4); UL 61010-1 (Section 7.4)
Hazardous Moving Parts Test	CAN/CSA C22.2 No.60950-1 (Sections 4.4.2 and 4.4.4); EN 60950-1 (Sections 4.4.2 and 4.4.4); IEC 60950-1 (Sections 4.4.2 and 4.4.4); UL 60950-1 (Sections 4.4.2 and 4.4.4); CAN/CSA C22.2 No.61010-1 (Section 7.2); EN 61010-1 (Section 7.2); IEC 61010-1 (Section 7.2); UL 61010-1 (Section 7.2)

<u>Test:</u>	<u>Test Method(s) ^{1,2:}</u>
Barrier Adhesive Test	CAN/CSA C22.2 No.60950-1 (Section 4.6.5); EN 60950-1 (Section 4.6.5); IEC 60950-1 (Section 4.6.5); UL 60950-1 (Section 4.6.5)
Relative Thermal Endurance Index (RTE, RTI)	IEC 60216-5, 61730-1; UL 746B
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)
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
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)
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
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
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)
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)
Enclosure Burning Test used in Electrical Evaluations	UL 746C (Sections 18 and 53)

<u>Test:</u>	<u>Test Method(s) ^{1,2}:</u>
Candle Flame Testing	IEC TS 62441
Burning Test of Automotive Interior Materials	ASTM D5132; FMVSS 302; ISO 3795; JIS D1201; SAE J369
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)

Testing Performed on Photovoltaic Modules

T-Peel	UL 746C, 746A, Subject 5703; ASTM D1878
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)
Thermal Cycling (TC50 or TC200)	IEC 61730-2 (MST 51); IEC 61215 (Section 10.11); IEC 61646 (Section 10.11); UL 1703 (Section 35)
Humidity Freeze (HF10)	IEC 61730-2 (MST 52); IEC 61215 (Section 10.12); IEC 61646 (Section 10.12); UL 1703 (Section 36)
Damp Heat (DH1000)	IEC 61730-2 (MST 53); IEC 61215 (Section 10.13); IEC 61646 (Section 10.13)
Salt Mist Corrosion	IEC 61701; IEC 60068-2-52

Test: **Test Method(s) ^{1,2}:**

Testing Performed on Photovoltaic Modules (Cont.)

UV Preconditioning Test	IEC 61730-2 (MST 54); IEC 61215 (Section 10.10); IEC 61646 (Section 10.10)
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)
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)
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)
Module Breakage	IEC 61730-2 (MST 32); ANSI Z97.1
Mechanical Load	IEC 61730-2 (MST 34); IEC 61215 (Section 10.16); IEC 61646 (Section 10.16); IEC 62782CD
Light Soaking	IEC 61646 (Section 10.19)
Water Exposure/Immersion	UL 746C (Sections 26 and 58)
Maximum Operating Temperature Rating of Backsheets	UL 746A (Section 25), 746C (Section 13); UL SUBJECT 5703
Radiant Heat Energy Source Test	ASTM E162; IEC 61730-1 (Section 5.4.2)

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.





Accredited Laboratory

A2LA has accredited

CHEMITOX, INC., YAMANASHI FACILITY *Yamanashi-ken, 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 8 January 2009).



Presented this 23rd day of September 2014.

A handwritten signature in blue ink, appearing to read "A. C. Burt".

Senior Director of Quality and Communications
For the Accreditation Council
Certificate Number 1136.03
Valid to September 30, 2016
Revised August 30, 2016

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