



SCOPE OF ACCREDITATION TO ISO/IEC 17025: 2005

NATIONAL TECHNICAL SYSTEMS (NTS) BALTIMORE
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Hunt Valley, MD 21030
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CHEMICAL

Valid To: December 31, 2018

Certificate Number: 0214.37

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following types of tests on the following product types: Aerospace, Automotive, Avionics, Consumer Products, Electronics, Industrial, Medical, Military Telecommunication and Textiles.

Test Technology:

Test Method(s):

Cleanliness

Bellcore-GR-78-CORE;
IPC-TM-650 (Section 2.3.25);
MIL-STD-883, Method 5011

Copper Purity

IPC-TM-650 (Section 2.3.15)

Density/Specific Gravity

ASTM D792 (Method A)

Fourier Transform Infrared Spectroscopy (FTIR)
(*Qualitative Only*)

IPC-TM-650 (Section 2.3.39);
BAL O-19¹

Ion Chromatography

Delphi/Delco Q-1000, Methods 119 and 127;
IPC-TM-650 (Sections 2.3.28 and 2.3.28.1);
MIL-STD-883, Method 5011

pH

ASTM D1293 (Method B);
MIL-STD-883, Method 5011

Porosity – Vapor

IPC-TM-650 (Section 2.3.24.2)

Scanning Electron Microscopy/Energy Dispersive
X-Ray Spectroscopy (SEM/EDS)
(*Semi-Quantitative*)

BAL O-20¹

Solids Content

IPC-TM-650 (Section 2.3.34)

Solvent Immersion/Resistance to Solvents

Delphi/Delco Q-1000, Method 214;
IPC-TM-650 (Sections 2.3.1.1 and 2.3.4);
MIL-STD-202, Method 215

Test Technology:

Test Method(s):

Thermal Analysis

Melting Point (Tm), Glass Transition Temperature (Tg) and Degree of Cure (ΔT_g) by Differential Scanning Calorimetry (DSC)

ASTM D3418; ASTM E793; ASTM E794; ASTM E1356; ASTM D4591; ASTM E537; ASTM E1269; ASTM E2160; ASTM F2625; IPC-TM-650 (Section 2.4.25)

Filler Content, Thermal Stability, Weight Loss and Decomposition Temperature (Td) by Thermogravimetric Analysis (TGA)

ASTM E1131; MIL-STD-883, Method 5011; IPC-TM-650 2.4.25

Glass Transition Temperature (Tg) Coefficient of Thermal Expansion (CTE) and Time to Delamination by Thermomechanical Analysis (TMA)

ASTM E831; ASTM E228; ASTM E2347; ASTM E2092; ASTM E1824; ASTM E1545; IPC-TM-650 (Sections 2.4.41, 2.4.24, 2.4.24.1, 2.4.24.3, 2.4.24.5, 2.4.41.3, and 2.4.41.4); MIL-STD-883, Method 5011

Thermal Conductivity

ASTM C518; ASTM E1530

Viscosity

ASTM D1084; IPC-TM-650 (Sections 2.4.34, 2.4.34.1, and 2.4.34.4); MIL-STD-883, Method 5011

Supporting the following documents: IPC-4101, IPC-CC-830, IPC-J-STD-004, IPC-J-STD-005, IPC-SM-840, MIL-P-50884, MIL-PRF-31032, MIL-PRF-55110.

Facility studies performed according to IPC-QL-653 “Certification of Facilities that Inspect/Test Printed Boards, Components and Materials.”

¹In-house Test Method.



Accredited Laboratory

A2LA has accredited

NATIONAL TECHNICAL SYSTEMS (NTS) BALTIMORE

Hunt Valley, MD

for technical competence in the field of

Chemical 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 25th day of January 2017.

A handwritten signature in black ink, written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 0214.37
Valid to December 31, 2018

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