



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

NTS Labs, LLC Anaheim  
1435 S. Allec Street  
Anaheim, CA 92805  
Russell Shepherd Phone: 714-999-1616  
[Russell.Shepherd@ntslabs.com](mailto:Russell.Shepherd@ntslabs.com)  
Audrey Harris Phone: 714-999-1616  
[Audrey.Harris@ntslabs.com](mailto:Audrey.Harris@ntslabs.com)

MECHANICAL

Valid To: September 30, 2024

Certificate Number: 0214.53

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following mechanical tests:

**Test Description/Capabilities:**

**Test Method(s) <sup>1</sup>:**

Adhesion Tape Test

IPC-A-600; IPC-6012; IPC-6013;  
IPC-TM-650 (Methods 2.4.1, 2.4.1.1, and 2.4.28.1);  
MIL-P-50884 <sup>2</sup>; MIL-PRF-50884 <sup>2</sup>;  
MIL-PRF-31032 <sup>2</sup>;  
MIL-PRF-55110 <sup>2</sup>

Ash Content

UL 746A (Section 44)

Ball Pressure

IEC-60695-10-2;  
UL 746A

Bow and Twist

IPC-A-600; IPC-6012; IPC-6013;  
IPC-TM-650 (Method 2.4.22);  
MIL-P-50884 <sup>2</sup>; MIL-PRF-50884 <sup>2</sup>;  
MIL-PRF-31032 <sup>2</sup>;  
MIL-PRF-55110 <sup>2</sup>

Bond Strength

IPC-6012; IPC-6018;  
IPC-TM-650 (Methods 2.4.20 and 2.4.21);  
MIL-P-50884 <sup>2</sup>; MIL-PRF-50884 <sup>2</sup>;  
MIL-PRF-31032 <sup>2</sup>;  
MIL-PRF-55110 <sup>2</sup>

Capacity (Reusable Bags)

ANA-0024-002

Chemical Resistance

IPC-4202;  
IPC-TM-650 (Methods 2.3.2 and 2.3.4);  
MIL-P-50884 <sup>2</sup>; MIL-PRF-50884 <sup>2</sup>;  
MIL-PRF-31032 <sup>2</sup>; MIL-PRF-55110 <sup>2</sup>

**Test Description/Capabilities:**

**Test Method(s) <sup>1</sup>:**

Coating Thickness	ASTM D1005; MIL-I-46058
Copper Purity	ASTM E53; IPC-6012; IPC-6013; IPC-TM-650 (Method 2.3.15)
Curing Time	FED-STD-141 (Method 4061.3); MIL-I-46058; ANA-0005-001
Density and Specific Gravity	ASTM D792; UL 746A
Dimensional Stability	IPC-4101; IPC-TM-650 (Method 2.4.39)
DSC – Differential Scanning Calorimetry	IPC-4101; IPC-TM-650 (Method 2.4.25); ASTM D3418
Ductility	IPC 6013; IPC TM 650 (Method 2.4.2.1); IPC-TM-650 (Method 2.4.3.1); MIL-P-50884 <sup>2</sup> ; MIL-PRF-50884 <sup>2</sup> ; MIL-PRF-31032 <sup>2</sup>
Durability (Reusable Bags)	ANA-0024-001
Flammability	UL 94 (Sections 7, 8, and 11)
Flexural Strength Range: (0 to 100) kN *	ASTM D790; IPC-4101; IPC-TM-650 (Method 2.4.4) <i>Ambient Flex</i> ; IPC-TM-650 (Method 2.4.4.1) <i>Elevated Flex</i> ; UL 746A
Flexibility and Folding	IPC-6013; IPC-CC-830; IPC-SM-840; IPC-TM-650 (Methods 2.4.3 and 2.4.5.1); MIL-P 50884 <sup>2</sup> ; MIL-PRF-50884 <sup>2</sup> ; MIL-PRF 31032 <sup>2</sup> ; MIL-I-46058; FED-STD-141 (Method 6221)
Glow Wire Ignitability (GWI)	IEC 60695-2-10; IEC 60695-2-11; IEC 60695-2-12; IEC 60695-2-13; UL 746A
Heat Deflection Temperature	ASTM D648; UL 746A
Hot Wire Ignition (HWI)	ASTM D3874; UL 746A

**Test Description/Capabilities:**

**Test Method(s) <sup>1</sup>:**

Impact (IZOD/Charpy)

ASTM D256;  
ASTM D6110

Ionic Cleanliness - Conductivity

IPC-A-600; IPC-4202; IPC-6012;  
IPC-TM-650 (Methods 2.3.25.1 and 2.3.25);  
MIL-P-50884 <sup>2</sup>; MIL-PRF-50884 <sup>2</sup>;  
MIL-PRF-31032 <sup>2</sup>;  
MIL-PRF-55110 <sup>2</sup>

Mass and Thickness (Reusable Bags)

ANA-0024-003;  
ASTM D6988 (Method A);  
ASTM D3776 (Option A)

Microsection Analysis

ASTM E3;  
IPC-A-600; IPC-6012; IPC-6013;  
IPC-TM-650 (Methods 2.1.1.2 and 2.1.1);  
MIL-P-50884 <sup>2</sup>; MIL-PRF-50884 <sup>2</sup>;  
MIL-PRF-31032 <sup>2</sup>;  
MIL-PRF-55110 <sup>2</sup>

Moisture Absorption

ASTM D570;  
IPC-4101; IPC-4202;  
IPC-TM-650 (Methods 2.6.2.1 and 2.6.2);  
UL 746A

Peel Strength

IPC-4101; IPC-4103; IPC-4202;  
IPC-4204; IPC-6013;  
IPC-TM-650 (Methods 2.4.8.3 and 2.4.8);  
MIL-P-50884 <sup>2</sup>; MIL-PRF-50884 <sup>2</sup>;  
MIL-PRF-31032 <sup>2</sup>;  
MIL-PRF-55110 <sup>2</sup>

Rework Simulation

IPC-6012; IPC-6013;  
IPC-TM-650 (Method 2.4.36);  
MIL-P-50884 <sup>2</sup>; MIL-PRF-50884 <sup>2</sup>;  
MIL-PRF-31032 <sup>2</sup>;  
MIL-PRF-55110 <sup>2</sup>

Solderability

IPC-A-600; IPC-4101;  
IPC-6012; IPC-6013;  
J-STD-003;  
MIL-P-50884 <sup>2</sup>; MIL-PRF-50884 <sup>2</sup>;  
MIL-PRF-31032 <sup>2</sup>;  
MIL-PRF-55110 <sup>2</sup>

Tensile Strength of Plastics  
Range: (0 to100) kN \*

ASTM D638; ASTM D882;  
ASTM E345;  
UL 746A

**Test Description/Capabilities:**

**Test Method(s) <sup>1</sup>:**

Tensile Strength, Elongation of Copper

ASTM E345;  
IPC-6012; IPC-6013;  
IPC-TM-650 (Method 2.4.18.1 and 2.4.18);  
MIL-PRF-31032 <sup>2</sup>

Thermal Shock

Range: (-70 to 180) °C \*

IPC-6012; IPC-6013;  
IPC-TM-650 (Methods 2.6.7.1, 2.6.7.2, and 2.6.7.3);  
IPC-CC-830;  
IPC-SM-840;  
J-STD-004;  
MIL-I-46058;  
MIL-P-50884 <sup>2</sup>; MIL-PRF-50884 <sup>2</sup>;  
MIL-PRF-31032 <sup>2</sup>;  
MIL-PRF-55110 <sup>2</sup>;  
MIL-STD-202 (Method 107) Section 4.2.1  
Test Conditions A, B, & F

Thermal Stress

Range: (-70 to 343) °C \*

IPC-4101; IPC-6012; IPC-6013;  
IPC-TM-650 (Method 2.6.8E);  
MIL-P-50884 <sup>2</sup>; MIL-PRF-50884 <sup>2</sup>;  
MIL-PRF-31032 <sup>2</sup>;  
MIL-PRF-55110 <sup>2</sup>

Thermal Stress, Convection Reflow

Range: (100 to 300) °C \*

IPC-6012;  
IPC-TM-650 (Method 2.6.27);  
MIL-PRF-31032 <sup>2</sup>

Temperature and Humidity

IPC-4101; IPC-6012; IPC-6013;  
IPC-A-600;  
IPC-TM-650 (Method 2.6.25);  
IPC-TM-650 (Method 2.6.3);  
MIL-P-50884 <sup>2</sup>; MIL-PRF-50884 <sup>2</sup>;  
MIL-PRF-31032 <sup>2</sup>;  
MIL-PRF-55110 <sup>2</sup>

TMA – Thermal Mechanical Analysis

IPC-4101;  
IPC-TM-650 (Methods 2.4.24.1 and 2.4.24);  
MIL-PRF-31032 <sup>2</sup>

Vicat Softening

ASTM D1525;  
UL 746A

Visual Inspection

IPC-A-600;  
IPC-A-610;  
IPC-TM-650 (Methods, 2.1.8, 2.2.1, 2.2.2, and 2.2.5);  
IPC-SM-840;  
MIL-I-46058;  
MIL-P 50884 <sup>2</sup>; MIL-PRF-50884 <sup>2</sup>;  
MIL-PRF 31032 <sup>2</sup>;  
MIL-PRF 55110 <sup>2</sup>;  
ANA-0024-006

**Test Description/Capabilities:**

**Test Method(s) <sup>1</sup>:**

Viscosity

ASTM D1084;  
IPC-SM-840; IPC-CC-830

Washability (Reusable Bags)

ANA-0024-005

\*Including Customer Specifications directly related to the test technologies and within the parameters listed above.

**On the following materials/products**

Circuit Boards and Circuit Board Components; Electronics; Adhesives; Aircraft Components; Automotive Components; Plastic and Rubber Insulating Materials.

Laboratory performs tests according to IPC-QL-653 “Certification of Facilities that Inspect/Test Printed Boards, Components and Materials.”

<sup>1</sup> When the date, edition, version, etc. is not identified in the scope of accreditation, laboratories may use the version that immediately precedes the current version for a period of one year from the date of publication of the standard measurement method, per part C., Section 1 of A2LA R101 - *General Requirements- Accreditation of ISO-IEC 17025 Laboratories*.

<sup>2</sup>These methods are Performance Specifications which make reference to test methods identified on the scope of accreditation. The laboratory is not accredited to these Performance Specifications.



# Accredited Laboratory

A2LA has accredited

## NTS LABS, LLC ANAHEIM

Anaheim, California

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 20<sup>th</sup> day of October 2022.

A blue ink signature of Mr. Trace McInturff, written in a cursive style.

Mr. Trace McInturff, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 0214.53  
Valid to September 30, 2024

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