



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
& ANSI/NCSL Z540-1-1994

POLYMER TESTING INSTRUMENTS, INC.
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Fletcher, NC 28732
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CALIBRATION

Valid To: June 30, 2021

Certificate Number: 1504.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations^{1, 6}:

I. Dimensional

Parameter/Equipment	Range	CMC ² (±)	Comments
Cutting Dies	Up to 8 in	310 µin	Caliper, optical
Dial and Electronic Indicators ³	Up to 1 in	120 µin	Gage blocks
Calipers ³	Up to 8 in	310 µin	Caliper master
Micrometers ³	Up to 1 in	140 µin	Gage blocks

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ² (±)	Comments
Electrical Calibration of Thermocouple Indicators ³ – Generate and Measure Type J Type K Type T	 (-210 to 1200) °C (-200 to 1372) °C (-250 to 400) °C	 0.22 °C 0.23 °C 0.23 °C	 Omega / Martel CL3001
Electrical Calibration of RTD Indicators ³ – Generate and Measure Pt 385, 100 Ω Pt 385, 1 kΩ Pt 3902, 100 Ω Pt 3926, 100 Ω Cu 427, 10 Ω	 (-200 to 800) °C (-190 to 630) °C (-200 to 630) °C (-200 to 630) °C (-100 to 260) °C	 0.18 °C 0.18 °C 0.18 °C 0.18 °C 0.18 °C	 Omega / Martel CL3001

III. Mechanical

Parameter/Equipment	Range	CMC ^{2,5} (±)	Comments
Force – Measure ³ Force Gages and Tensile Testers Crosshead Speed	 (0 to 500) lbf (200 to 2000) lbf (2000 to 5000) lbf (0 to 20) in/min	 0.062 % of full scale 0.14 % of full scale 0.14 % of full scale 0.037 in/min	 ASTM E4 w/ load cells Load cell comparison Calibrated scale and stop watch
Pressure – Measuring Equipment ³	(0 to 2000) psi	0.11 % of full scale	Deadweight tester

Parameter/Equipment	Range	CMC ² (±)	Comments
Rotational Speed ³ , Non-Contact	(0 to 2000) rpm	2.4 rpm	Tachometer
Verification of Scales and Balances ³ – Resolution (R): R = 0.1 g R = 0.01 g R = 0.0005 g R = 0.1 g R = 0.01 g R = 0.1 g R = 0.01 g	Up to 200 g Up to 200 g Up to 200 g Up to 1000 g Up to 1000 g Up to 4000 g Up to 4000 g	58 mg 5.9 mg 0.89 mg 58 mg 6.7 mg 62 mg 23 mg	Class 1 weights

IV. Rubber Industry-Specific Measurements

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Extensometer ³ – Gage Length	Class D	0.007 in	ASTM E83 w/ calibrated scale
Rubber Hardness – Block Standardization Shore A Shore C Shore D Shore M IRHD M	(0 to 100) units (0 to 100) units (0 to 100) units (0 to 100) units (0 to 100) units	0.71 “A” units 0.71 “C” units 0.71 “D” units 0.71 “M” units 0.61 units	Durometer

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Direct Verification of Durometers – Indentor Extension and Shape – Diameter Radius Angle Extension Indentor Display Spring Calibration – Force Types Shore A Type Shore C Types Shore D Types JIS A Types IRHD Types Shore M Types Shore 0,00	 (0 to 25) mm (0 to 25) mm (0 to 90)° (0 to 25) mm (0 to 100) Duro (0 to 100) Duro (0 to 100) Duro (0 to 100) Duro (0 to 100) Duro (0 to 100) Duro (0 to 100) Duro	 100 μin 100 μin 0.04° 100 μin 0.58R + 12 μDuro 0.6 Shore A units 0.61 Shore C units 0.61 Shore D units 0.58 JIS A units 0.61 IRHD units 0.85 Shore M units 0.59 Shore 0,00 units	ASTM D2240 Optical inspection under magnification or video comparator Gage blocks
Rheometer ³ – Torque @ (0.5, 1, 3) degrees arc	(0 to 200) in·lbf	0.12 in·lbf	Torque standard ASTM D2084 ASTM D5289
Mooney Viscometer ³	(0 to 200) Mooney	0.12 Mooney	ASTM D1646

VI. Thermodynamics

Parameter/Equipment	Range	CMC ^{2,5} (\pm)	Comments
Temperature – Measure ³	(-200 to 350) °C	0.35 °C	RTD/Thermocouple; calibration of various temperature devices such as oil baths and ovens
Relative Humidity – Measure ³	(10 to 75) % RH	1.3 % RH	Vaisala HMI41 and HMP46

VII. Time and Frequency

Parameter/Equipment	Range	CMC ^{2,5} (\pm)	Comments
Time Interval – Measure ³	(0 to 100) hr	3 s/day	Digital stop watch

¹ This laboratory offers commercial calibration service and field calibration service.

² Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMCs represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

³ Field calibration service is available for this calibration and this laboratory meets A2LA R104 – *General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the actual uncertainty introduced by the item being calibrated, (e.g. resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.

⁴ In the statement of CMC, R is defined as the resolution of the device.

⁵ The type of instrument or material being calibrated is defined by the parameter. This indicates the laboratory is capable of calibrating instruments that measure or generate the values in the ranges indicated for the listed measurement parameter.

⁶ This scope meets A2LA's *P112 Flexible Scope Policy*.





Accredited Laboratory

A2LA has accredited

POLYMER TESTING INSTRUMENTS, INC.

Fletcher, NC

for technical competence in the field of

Calibration

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 laboratory also meets R205 – Specific Requirements: Calibration Laboratory Accreditation Program. 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 25th day of July 2019.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1504.01
Valid to June 30, 2021

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