SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ALPHA TECHNOLOGIES SERVICES, LLC
6279 Hudson Crossing Suite 200
Hudson, OH 44236
Jorge Tavitas Phone: 330 515 6718

CALIBRATION

Valid To: May 31, 2027 Certificate Number: 2017.01

In recognition of the successful completion of the A2LA evaluation process, (including an assessment of the organization's compliance with R205 – A2LA's Calibration Program Requirements) accreditation is granted to this laboratory to perform the following calibrations[1, 8]:

I. Dimensional

Parameter/Equipment	Range	CMC[2] (±)	Comments
Indicators[3] –			
Analog	Up to 30 mm	0.000 18 mm	ASTM D3767 with gage blocks
Digital	Up to 50.8 mm	0.000 18 mm	
Angle[3]	(0 to 60)°	0.0065°	Rotary encoder measuring device
Outside Diameter[3]	(0.1 to 25) mm (>25 to 40) mm	0.000 61 mm 0.0092 mm	ASTM D3767 with micrometer
Thickness Gauge	Up to 3 mm Up to 50 mm	0.000 31 mm 0.0015 mm	Certified gage blocks Indicator with stand

II. Mechanical

Parameter/Equipment	Range	CMC[2, 4, 5] (±)	Comments
Torque –			
Static (clockwise, counter- clockwise)	(7 to 20) lbf·in (>20 to 40) lbf·in (>40 to 100) lbf·in (>100 to 130) lbf·in	0.0059 lbf·in 0.0071 lbf·in 0.010 lbf·in 0.063 lbf·in	Dead weights & torque arm
Dynamic[3] (clockwise, counter- clockwise)	(7 to 20) lbf·in (>20 to 40) lbf·in (>40 to 100) lbf·in (>100 to 130) lbf·in	0.042 lbf·in 0.060 lbf·in 0.090 lbf·in 0.25 lbf·in	Torque standard
Torque Wrenches	(Up to 80) lbf·in	0.69 lbf·in	Torque wrench tester
Mass	(1 to 100) g (>100 to 300) g (>300 to 400) g (>400 to 500) g (>500 to 750) g (>750 to 1000) g (>1 to 10) kg	0.000 12 g 0.0058 g 0.0076 g 0.0094 g 0.0094 g 0.07 g 0.07 g	Modified substitution
Density	(1.04 to 1.44) g/cm^3 (>1.44 to 1.8) g/cm^3	0.0011 g/cm^3 0.000 81 g/cm^3	Precision balance in air & in water or ASTM D792, Method A
Specific Gravity	(1.04 to 1.44) (>1.44 to 1.8)	0.0012 0.000 81	Calculated
Density/Specific Gravity Testers[3]	(1.04 to 1.44) g/cm^3 (>1.44 to 1.8) g/cm^3 (1.04 to 1.44) (>1.44 to 1.8)	0.0011 g/cm^3 + 0.6R 0.000 81 g/cm^3 + 0.6R 0.0012 + 0.6R 0.000 81 + 0.6R	ASTM D297, Hydrostatic method Calculated
Force & Materials Testing Machines[3] –			
Force – Tension & Compression Transducers	(0 to 11) lbf (>11 to 22) lbf	0.0025 lbf 0.0038 lbf	ASTM E4 using deadweights

Parameter/Equipment	Range	CMC[2, 4, 5] (±)	Comments
Force & Materials Testing Machines[3] – (cont)			
Force – Tension & Compression Transducers	(0 to 25) lbf (>25 to 50) lbf (>50 to 100) lbf (>100 to 500) lbf (>500 to 5000) lbf	0.029 lbf 0.054 lbf 0.055 lbf 0.64 lbf 0.11 %	ASTM E4 using load cells
Extensometer	Up to 400 mm	0.31 mm	ASTM E83, calibrated bar
Gage Length	Up to 50.8 mm (>50.8 to 100) mm	0.37 mm 0.52 mm	ASTM E83 using caliper
Crosshead Distance	Up to 500 mm	0.72 mm	Digital position kit
Crosshead Rate	Up to 25 mm/min (>25 to 1000) mm/min	0.38 mm/min 0.24 %	Digital speed/position kit
Closing Force	Up to 11.1 kN (11.1 to 16) kN	0.055 kN 0.11 kN	Load cell & die
Closing Pressure	Up to 1200 psi (>1200 to 1732) psi	7.6 psi 0.23 %	Calculated from force to pressure
Scales & Balances[3]	(1 to 10) g (>10 to 220) g (>220 to 500) g (>500 to 1000) g (>1 to 10) kg	0.000 066 g 0.0057 g 0.0093 g 0.016 g 0.0057 kg	Standard masses

V. Rubber Industry-Specific Equipment

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Capillary Rheometers[3] –			ASTM D5099, D1238, D3835 for parameters below
Cylinder Barrel Bore Diameter	Up to 12.7 mm	0.0030 mm	Borescope & master ring

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Capillary Rheometers[3] –			ASTM D5099, D1238, D3835 for parameters below
Barrel Temperature	(15 to 425) °C	0.081 °C	Borescope & master ring
Piston Tip – Outside Diameter	(9.4742 to 19) mm	0.0024 mm	PRT
Linear Length	6.35 mm	0.034 mm	Micrometers
Capillary Die - Orifice Diameter	(1.048 to 2.095) mm	0.0012 mm	Pin gage
Length	(Up to 22.5) mm (>22.5 to 50.8) mm	0.0017 mm 0.0059 mm	Micrometer
Mooney Viscometers[3], Stress Relaxation –			ISO 289-1, ASTM D1646 for parameters below
Rotor rpm	0.02 rpm 0.2 rpm 2 rpm 15 rpm	2.6×10^{-7} rpm 1.2×10^{-5} rpm 0.0013 rpm 0.069 rpm	Benchtop timer
Die Temperature	(0 to 250) °C	0.088 °C	PRT
Closing Force	(0 to 11.1) kN (11.1 to 16) kN	0.055 kN 0.11 kN	Load cell & die
Rotor Diameter	Up to 40 mm	0.0092 mm	Caliper
Rotor Thickness	5.54 mm	0.000 61 mm	Micrometer
Time	Up to 4 min (4 to 15) min >15 min to 24 hours	0.059 % 0.019 % 0.011 %	Digital stopwatch
Oscillating Disk Rheometers[3] –			ASTM D2084, ISO 3417 for parameters below
Torque	(7 to 20) lbf·in	0.042 lbf·in	Torque standard

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Oscillating Disk Rheometers[3] – (cont)			ASTM D2084, ISO 3417 for parameters below
Torque	(>20 to 40) lbf·in (>40 to 100) lbf·in (>100 to 130) lbf·in	0.060 lbf·in 0.090 lbf·in 0.25 lbf·in	Torque standard
Die Temperature	(0 to 250) °C	0.088 °C	PRT
Die Closing Force	(0 to 11.1) kN (11.1 to 16) kN	0.055 kN 0.11 kN	Load cell & die
Time	Up to 4 min (4 to 15) min >15 min to 24 hours	0.059 % 0.019 % 0.011 %	Digital stopwatch
Rotorless Cure Meters, Moving Die Rheometers, Rubber Process Analyzers[3] –			ASTM D5289, ISO 6502-3 for parameters below
Torque	(7 to 20) lbf·in (>20 to 40) lbf·in (>40 to 100) lbf·in (>100 to 130) lbf·in	0.042 lbf·in 0.060 lbf·in 0.090 lbf·in 0.25 lbf·in	Torque standard
Die Temperature	(0 to 250) °C	0.088 °C	PRT
Die Closing Force	(0 to 11.1) kN (11.1 to 16) kN	0.055 kN 0.11 kN	Load cell & die
Closing Pressure	Up to 1200 psi (>1200 to 1732) psi	7.6 psi 0.23 %	Calculated from force to pressure
Time	Up to 4 min (4 to 15) min >15 min to 24 hours	0.059 % 0.019 % 0.011 %	Digital stopwatch

IV. Thermodynamics

Parameter/Equipment	Range	CMC[2, 7] (±)	Comments
Temperature –			
Temperature Measure[3]	(-55 to 0) °C (0 to 250) °C	0.28 °C 0.088 °C	ASTM D1646, D2084, D5289, D6204, D6601 with temperature probe & meter
Temperature Meters	(0 to 200) °C	0.060 °C	ITS 90, oil bath with SPRT & digital readout

V. Time & Frequency

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Dwell Time	Up to 4 min (4 to 15) min >15 min to 24 hours	0.059 % 0.019 % 0.011 %	ASTM D1646, D2084, D5289, D6204, D6601 with digital stopwatch

[1] This laboratory offers commercial calibration and dimensional testing services and field calibration and dimensional testing services where noted.

[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. 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 the numerical value of the resolution of the device.

[5] In the statement of CMC, percentages are percentages of reading, unless otherwise indicated.

[6] This test is not equivalent to a calibration.

[7] 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.

[8] This scope meets A2LA's *P112 Flexible Scope Policy*.

Accredited Laboratory

A2LA has accredited

ALPHA TECHNOLOGIES SERVICES, LLC

Hudson, OH

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 9th day of June 2025.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2017.01
Valid to May 31, 2027

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