



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ZWICKROELL
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CALIBRATION

Valid To: January 31, 2021

Certificate Number: 1891.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations^{1, 5}:

I. Mechanical

Parameter/Equipment	Range	CMC ^{2, 4} (±)	Comments
Force ³ – Measure	>400 kN to 2 MN 40 N to 400 kN (0.01 to 200) N	0.25 % 0.17 % 0.1 %	ASTM E4, load cells, deadweights, ISO 7500-1
Extensometers ³ –			
Gage Length	(10 to 200) mm	0.03 mm	ASTM E83, glass scale, digital calipers, ISO 9513
Displacement (Travel)	(0.02 to 60) mm	0.15 %	Linear incremental scale
	(50 to 990) mm	0.15 %	Magnetic scale (Class C)
Melt Flow Index Machines Volume and Rate –			ASTM D1238; ISO 1133-1, ISO 1133 -2
Force	(3 to 250) N	0.17 %	Load cells
Time	Up to 240 s	0.016 s	Stopwatch
Displacement, (Travel)	(5 to 60) mm	0.019 mm	Linear incremental scale
	(0 to 60) mm	0.019 mm	Gage blocks
Temperature	Up to 350 °C	0.2 °C	Instralab/RTD

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Melt Flow Index Machines Volume and Rate (cont.) – Outside Diameter and Length	Up to 10 mm	0.023 mm	Micrometer, caliper
Displacement Verification on Measuring Systems and Devices Used in Materials Testing ³	(0.2 to 60) mm (50 to 990) mm	0.15 % 0.15 %	ASTM E2309; Linear magnetic scale
Durometer Calibration Type A, B, C, D – Indenter Extension and Shape – Diameter Radius Type A, Type B, Type C, Type D Angle Extension Indenter Display Spring Calibration Force – Type A Type D	1.27 mm 0.79 mm 0.1 mm 30 ° 2.5 mm (0 to 100) Duro Units (0 to 100) Duro Units (0 to 100) Duro Units	0.04 mm 0.03 mm 0.012 mm 0.02 ° 0.04 mm 0.1 Division of the Reading 0.70 Duro Units 1.2 Duro Units	ASTM D2240; ISO 868 (part 6) Optical inspection under 62.5 % magnification Gage ring The durometer spring is verified with lever arm with weights

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Pendulum Impact Testing Machines ³ – Charpy, Izod, Tensile Impact Testing			ISO 13802, ISO EN 10045-2, DIN 51222, ISO 8256, ASTM E23
Energy	Up to 10 J (10 to 100) J (100 to 300) J (300 to 450) J (450 to 750) J	0.0068 J 0.026 J 0.054 J 0.075 J 0.13 J	
Force	(0 to 50) N	0.011 N	
Impact Angle	(0 to 180) °	0.06 °	Digital protractor
Impact True Level –			
Impact	----	0.000 045 in/in	
Dimensional	Up to 1 m	0.003 mm	
Field Alignment of Material Test Machines	Up to 2500 microstrain	25 microstrain	ASTM E-1012
Crosshead Speed	Up to 1000 mm/min	0.15 %	ASTM E-2658, linear magnetic scale or magnetic scale position sensor

¹ Commercial calibration service and field calibration service is available from this laboratory.

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, percentages are percentage of reading, unless otherwise indicated.

⁵ This scope meets A2LA's *P112 Flexible Scope Policy*.





Accredited Laboratory

A2LA has accredited

ZWICKROELL

Kennesaw, GA

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 28th day of December 2018.

A blue ink signature of the Senior Director of Accreditation Services.

Senior Director, Accreditation Services
For the Accreditation Council
Certificate Number 1891.01
Valid to January 31, 2021

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