The American Association for Laboratory Accreditation

World Class Accreditation

Accredited Laboratory

A2LA has accredited

CORPORATE CONSULTING SERVICE INC.

Akron, OH

for technical competence in the field of

Calibration

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 laboratory also meets any additional program requirements in the field of calibration. 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 15th day of January 2010.

President & CEO
For the Accreditation Council
Certificate Number 1424.01
Valid to September 30, 2011

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

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

CORPORATE CONSULTING SERVICE, INC.
221 Beaver Street
Akron, OH 44304
Elizabeth Abbott Phone: 330 376 3600

CALIBRATION

Valid To: September 30, 2011 Certificate Number: 1424.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations[1]:

I. Dimensional

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Micrometers – Outside Diameter[3]	(0 to 4) in	(64 + 4*L*) µin	Direct comparison with grade 2 gage blocks
Calipers[3]	(0 to 12) in	0.6*R*	Direct comparison with grade 2 gage blocks
Thickness Gauge[3]	(0 to 3) in	330 µin	Direct comparison with grade 2 gage blocks
Cutting Dies[3]	(0 to 12) in	300 µin	Dimensional measurement

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II. Mechanical

Parameter/Equipment	Range	CMC[2] (±)	Comments
Durometer[3, 4]			
Type A Type B Type O Type T	(0 to 822) g	6.9 g (0.9 points)	ASTM D2240 with durocalibrator
Type D Type DO Type C	(0 to 4536) g	39 g (0.9 points)	
Shore Hardness Test Blocks[3]	All scales	3.2 points	With certified durometer
Resiliometer, Resilometer Spring[3]	(0 to 100) points	2.3 points 2.6 points	ASTM D2632
Mooney Viscometer[3]	(0 to 200) Mooney units	1.9 Mooney units	ASTM D1646
Rheometers[3] –			
Oscillating Disc Moving Die	(0 to 200) in·lb (0 to 200) in·lb	0.4 in·lbs 1.0 in·lbs	ASTM D2084 ASTM D5289
Force – Tensile[3]	(0 to 1000) lbs. (1000 to 2000) lbs. (2000 to 5000) lbs.	4.8 lbs 9.5 lbs 17 lbs	ASTM E4
Extensometer[3]			
Elongation	0 % to 1200 %	2 % of input value	ASTM E83
Plastometer[3]	(0 to 1) in	290 µin	ASTM D926
Brittlepoint[3] and Temperature Retraction[3]	-70 °C -70 °C	0.2 °C 0.3 °C	ASTM D2137 for brittlepoint ASTM D1329 for temperature retraction

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Scales[3] and Balances[3]	(0 to 11.3) kg	0.01 % of reading + 0.6*R*	Direct comparison with class F weights ASTM E898, Section 7.6
Taber Abrader[3] –			
RPM	72 rpm	0.13 rpm	Manufacturer's instructions to ASTM D3389
Vacuum	>137 mbar	1.5 mbar	
Table TIR	0.002"	320 µin	
Weights	250 g	44 mg	
	750 g	74 mg	
Mass	(1 to 10) mg	0.15 mg	Direct comparison with class F weights
	(20 to 200) mg	0.5 mg	
	500 mg to 2 g	0.9 mg	
	(5 to 10) g	2 mg	
	20 g	5 mg	
	(50 to 100) g	14 mg	
	(200 to 500) g	30 mg	
	1 kg	66 mg	
	2 kg	120 mg	
	3 kg	200 mg	
	4 kg	270 mg	
	5 kg	320 mg	
	6.2 kg	370 mg	
Durometer[4] –			
Type A	(0 to 822) g	4.7 g (0.6 points)	ASTM D2240 with triple beam balance
Type B			
Type O			
Type T			
Type FWC	(0 to 855) g	5.8 g (0.7 points)	
Type JIS			
Type OO			
Type OOO	(0 to 113) g	0.8 g (0.9 points)	
Type OOOS	(0 to 113) g	0.8 g (0.9 points)	
	(0 to 197) g	1.3 g (0.7 points)	
Microhardness	(0 to 78.5) g	0.8 g (1.8 points)	

Parameter/Equipment	Range	CMC[2] (±)	Comments
Shore Durocalibrator – A-Scale D-Scale	 (0 to 822) g (0 to 4536) g	 5 g (0.6 points) 28 g (0.6 points)	 NAVAIR 17-20MF-17

III. Thermodynamics

Parameter/Equipment	Range	CMC[2] (±)	Comments
Oven Calibration[3]	75 °C to 370 °C	0.38 °C	ASTM E145, Section 4.1
Ozone Monitors and Chambers[3]	(0 to 10) parts in 10^8 (10 to 100) parts in 10^8	0.16 parts in 10^8 1 parts in 10^8	ASTM D4575 on-site available for chamber only

[1] This laboratory offers commercial and field calibration services.

[2] Calibration and Measurement Capability (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. Calibration and Measurement Capabilities 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] Calibration is performed according to manufacturer specifications and measure in gram force.

[5] In the statement of the CMC, L is the numerical value of the nominal length of the device measured in inches and R is the resolution of the device under test.