



World Class Accreditation

The American Association for Laboratory Accreditation

Accredited Laboratory

A2LA has accredited

PTC METROLOGY

Los Angeles, CA

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 the requirements of ANSI/NCSL Z540-1-1994 and 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 February 2012.



A handwritten signature in black ink, appearing to read "Peter Meyer", written over a horizontal line.

President & CEO
For the Accreditation Council
Certificate Number 1896.01
Valid to March 31, 2014

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
& ANSI/NCSL Z540-1-1994

PTC METROLOGY
2301 Federal Avenue
Los Angeles, CA 90064
John Marcus Ph.D. Phone: 310 478 1134

CALIBRATION

Valid To: March 31, 2014

Certificate Number: 1896.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations¹:

I. Mechanical

Parameter/Equipment	Range	CMC ² (±)	Comments
Durometer Calibration –			
Indenter Shape			
Diameter	(0.045 to 0.055) in (0.0897 to 0.0977) in (0.030 to 0.032) in	100 µin 100 µin 100 µin	ASTM D2240, comparator overlay
Radius	(0.248 to 0.252) radii (0.0466 to 0.0470) radii (0.0035 to 0.0045) radii	300 µin 300 µin 100 µin	
Angle	(34.75 to 35.25) degrees (29.5 to 30.5) degrees	0.04 degrees 0.04 degrees	
Indenter Extension	(0.096 to 0.1) in (0.048 to 0.05) in (0.298 to 0.302) in	50 µin 50 µin 50 µin	Gage blocks

Parameter/Equipment	Range	CMC ^{2,3} (±)	Comments
Durometer Calibration – (cont)			
Readout Linearity	(0.01 to 0.3) in	50 µin	Gage blocks
Spring Calibration – Force	(1 to 821) gf (1 to 4534) gf (1 to 9112) gf (1 to 142) gf	0.6 gf 3.1 gf 6 gf 0.3 gf	Durocalibrator, electronic scale, load cell
Pressure –	(0.2 to 12 140) psig (0.2 to 1000) psia (0.2 to 3000) psig (0.01 to 1) Torr Barometric	0.0050 % rdg + 0.6R 0.0010 % rdg + 0.6R 0.0025 % rdg + 0.6R 5 % rdg 0.3 mmHg	Ruska 2400 Ruska 2465 Ruska 2470 GP275 TC gage Druck DPI740
Transmitter Output	(0 to 100) mA dc (0 to 100) V dc	0.1 mA 0.008 V	Fluke 8845A

II. Thermodynamics

Parameter/Equipment	Range	CMC ² (±)	Comments
Temperature –			
Temperature Immersion	(77 to 196) K (-196 to -77) °C	16 mK 0.016 °C	Liquid Nitrogen comparator
	(196 to 273.2) K (-77 to 0) °C	11 mK 0.011 °C	Stirred bath ULT80
	(253.2 to 373.2) K (-20 to 100) °C	9 mK 0.009 °C	Stirred bath Hart 7030
	(323.2 to 551.2) K (50 to 278) °C	9 mK 0.009 °C	Stirred bath Hart 6022
	273.16 K 0.01 °C	0.2 mK 0.0002 °C	TPW Hart 5901A

Peter Mlynar

Parameter/Equipment	Range	CMC ² (±)	Comments
Temperature – (cont)			
Temperature Immersion	Ambient air temp	150 mK	PTC stirred air bath
	(323.2 to 953.2) K (50 to 680) °C	68 mK 0.068 °C	Comparator Hart 9260
	(573.2 to 1273.2) K (300 to 1000) °C	600 mK 0.6 °C	Comparator Hart 9112 deep well 16”
Surface	(423.2 to 1273.2) K (150 to 1000) °C	700 mK 0.7 °C	Comparator Hart 9150 deep well 7”
	(268.2 to 313.2) K (-5 to 40) °C	120 mK 0.12 °C	PTC cold calibrator
	(293.2 to 673.2) K (20 to 400) °C	125 mK 0.13 °C	Hart 3125 w/ Hart 1502A
Infrared Black Body	(673.2 to 798.2) K (400 to 525) °C	400 mK 0.4 °C	PTC hot calibrator
	(293.2 to 773.2) K (20 to 500) °C	850 mK 0.8 °C	Hart 9132 w/ Hart 1502A
Transmitter Output	(0 to 100) mA dc (0 to 100) V dc	0.1 mA 0.008 V	Fluke 8845A
Relative Humidity – Measure	(10 to 90) % RH	3 % RH	Assmann psychrometer

¹ This laboratory offers commercial calibration service.

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 In the statement of CMC, R is the numerical value of the resolution of the device.

Peter Mlynar