## A2LA Accredited for Durometer Calibration

*PTC METROLOGY® Uses NIST Traceable Standards and Meets the Requirements of:*

- *ISO/IEC Guide 17025*
- *ANSI/NCSL Z540-1*

We are a member of ASTM. Our Technical Director holds a Ph.D. in Physics and serves on ASTM technical committees:

- D11.10, Physical Properties of Rubber
- E20.7, Fundamentals of Thermometry

PTC® is also a member of A2LA, NCSLI (National Conference of Standards Laboratories International), and ASQ (American Society for Quality).

Durometer calibrations include, as a minimum, these aspects:

- Mainspring force curve
- Indenter geometry and finish
- Indenter extension
- Dial indicator travel

A written calibration report for any durometer covered by current ASTM D2240 or F1957 Specifications is available from PTC Metrology. Each certification provides both “as received” and “as left” data. The points calibrated are normally every 10 points over the durometer’s scale. Certification reports are also available for DIN, JIS, ISO, and proprietary standards. Other types and custom durometers can also be certified.

ilac-MRA

The American Association for Laboratory Accreditation

World Class 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 22nd day of February 2010.

President & CEO
For the Accreditation Council
Certificate Number 1896.01
Valid to March 31, 2012

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

Above is a copy of our laboratory accreditation. See the reverse of this sheet to view a copy of our scope of accreditation to ISO/IEC Guide 17025 and ANSI/NCSL Z540-1

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American Association for Laboratory Accreditation
World Class 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, 2012  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 calibrations[1]:**

I. Mechanical

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

| Parameter/Equipment | Range | CMC[2, 3] (∂) | Comments |
|---|---|---|---|
| Readout Linearity – | (0.01 to 0.3) in | 50 σin | Gage blocks |
| Force<br>(spring calibration) | (1 to 821) gf<br>(1 to 4534) gf<br>(1 to 9112) gf<br>(1 to 142) gf | 0.6 gf<br>3.1 gf<br>6 gf<br>0.3 gf | Durocalibrator,<br>electronic scale,<br>load cell |
| Pressure – | (0.2 to 12 140) psig<br>(0.2 to 1000) psia<br>(0.2 to 3000) psig<br>(0.01 to 1) Torr<br>Barometric | 0.0050 % rdg + 0.6*R*<br>0.0010 % rdg + 0.6*R*<br>0.0025 % rdg + 0.6*R*<br>5 % rdg<br>5 mmHg | Ruska 2400<br>Ruska 2465<br>Ruska 2470<br>GP275 TC gage<br>WT 600 |
| Transmitter Output | (0 to 100) mA dc<br>(0 to 100) V dc | 0.1 mA<br>0.008 V | Fluke 8845A |

II. Thermodynamics

| Parameter/Equipment | Range | CMC[2] (∂) | Comments |
|---|---|---|---|
| Temperature – | | | |
| Temperature<br>Immersion | (61.2 to 196) K<br>(-196 to -77) °C | 16 mK<br>0.016 °C | Liquid Nitrogen<br>comparator |
| | (-196 to 273.2) K<br>(-77 to 0) °C | 11 mK<br>0.011 °C | Stirred bath ULT80 |
| | (253.2 to 373.2) K<br>(-20 to 100) °C | 9 mK<br>0.009° C | Stirred bath Hart 7030 |
| | (323.2 to 551.2) K<br>(50 to 278) °C | 9 mK<br>0.009 °C | Stirred bath Hart 6022 |
| | 273.16 K<br>0.01 °C | 0.2 mK<br>0.0002 °C | TPW Hart 5901A |
| | Ambient air temp | 150 mK | PTC stirred air bath |
| | (548.2 to 953.2) K<br>(275 to 680) °C | 68 mK<br>0.068 °C | Comparator Hart 9260 |
| | (873.2 to 1273.2) K<br>(600 to 1000) °C | 600 mK<br>0.6 °C | Comparator Hart 9112<br>deep well 16” |
| | (873.2 to 1273.2) K<br>(600 to 1000) °C | 700 mK<br>0.7 °C | Comparator Hart 9150<br>deep well 7” |
| Surface | (268.2 to 313.2) K<br>(-5 to 40) °C | 120 mK<br>0.12 °C | PTC cold calibrator |
| | (293.2 to 463.2) K<br>(20 to 190) °C | 500 mK<br>0.5 °C | Hart 3125 surface<br>calibrator |
| | (464.2 to 673.2) K<br>(191 to 400) °C | 1 K<br>1.0 °C | Hart 3125 surface<br>calibrator |
| | (673.2 to 798.2) K<br>(400 to 525) °C | 400 mK<br>0.4 °C | PTC hot calibrator |
| Infrared Black Body | (293.2 to 1273.2) K<br>(20 to 1000) °C | 1.5 K<br>1.5 °C | Wahl black body BB-<br>1100 |
| Transmitter Output | (0 to 100) mA dc<br>(0 to 100) V dc | 0.1 mA<br>0.008 V | Fluke 8845A |
| Relative Humidity –<br>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.