twilight

INSTRUMENTOS DE MEDICIÓN INDUSTRIAL

# Durómetro Digital tipo Lápiz
# PC-212D

# Certified Digital Pencil Style Durometers ASTM Types A, B, C, D, DO, & O

Made In U.S.A.


Model 212 Digital ASTM Type D Durometer for plastics, hard rubber, epoxies, etc.

- ***A Certificate to N.I.S.T. Is Included with Each Digital durometer***
- ***1/2" Diameter Base -- The Smallest Base Permitted by ASTM D2240***
- ***Accuracy of ±1 Point***
- ***LCD Display with 0.1 Point Resolution***
- ***Max Reading Feature Standard***
- ***Comes Complete with Aluminum Test Block, Batteries, 115V AC Adaptor, and Carrying Case***
- ***Test Stands Available for All Models***

Each digital durometer comes with a calibration certificate to NIST. The durometer's 1/2" diameter base is the smallest base permitted by ASTM D2240 Specifications. This allows it to be used in confined or hard to reach areas other durometers cannot test. A knurled surface gives a more secure gripping area when making hand held readings. These durometers meet or exceed all aspects of ASTM D2240.

The instrument uses a digital readout indicator with bold, easy to read numbers. The unit has an RS232 data port for downloading information to a PC or printer. Features also include a Max Hold button, auto shutoff timer and low battery warning display.

All durometers come complete with certification traceable to NIST, test block, batteries, 115V AC adaptor, and carrying case. The test blocks are color coded to match the durometer type. The blocks will read within ±1 point of a properly functioning durometer.

Calibration Laboratory
ilac-MRA A2LA ACCREDITED
Certificate No. 1896.01

PTC Metrology™ is accredited by A2LA for durometer calibration to ISO/IEC 17025 & ANSI/NCSL Z540-1. NIST traceable certification is available for all durometer types covered by current ASTM D2240, ASTM F1957, ISO 868, ISO 7619, and DIN 53505 Standards.

The Calibration Report will include both "as received" and "as left" data. Complete durometer calibration includes: indenter geometry and extension, indicator linearity, and force curve.

Other durometer types, custom models, and durometers of any manufacture can also be certified by PTC Metrology™.

## SPECIFICATIONS

1. Model 211-Type A, Model 212C-Type C
   Model 211B-Type B, Model 212-Type D
   Model 212DO-Type DO, Model 211/O-Type O
2. Meets or exceeds current ASTM D2240 Specs.
3. Accuracy .....±1 point.
4. Dimensions:
   - Base Diameter .....0.5 in. (1.3 cm).
   - Height .....5.3 in. (13.5 cm).
   - Width.....2.25 in. (5.7 cm).
   - Depth (indicator head) .....1.5 in. (3.8 cm).
5. Weight..... 7.5 oz. (213 g).
6. Shipping weight.....4 lb. (1.8 kg).
7. Batteries (2-pack)..... P/N: CR2450.

Toll Free: 877-782-2329
Outside U.S.: 310-478-1134
Los Angeles, CA 90064-1482

web: http://www.ptc1.com
e-mail: sales@ptc1.com
FAX: 310-312-0826

## GENERAL OPERATING INSTRUCTIONS

The following procedures are based on ASTM Standard D2240. This standard is recognized as being definitive, however, not all applications require such stringent controls.

Readings below 10/A may be inexact and should not be reported. Readings above 90/A may be inexact and should be made on a Type D durometer. Readings below 10/D should be made on a Type A durometer.

The surface of the sample to be tested shall be clean and smooth. The sample should be at least 1/4" (6 mm) in thickness unless it is known that identical results are obtained with a thinner specimen. Thinner materials can be stacked to obtain the minimum thickness (DO NOT GLUE). Such results may not agree with those of a solid specimen. Most materials above 50/D can be tested with a 1/8" (3 mm) minimum thickness. The sample should be large enough so that the indenter is at least 1/2" (12 mm) from any edge unless it is known that identical results are obtained when measurements are made closer to the edge. The surface of the specimen shall be flat over a sufficient area to permit the presser foot to contact the specimen over an area having a radius of at least 1/4" from the indenter point. The temperature of the specimen should be 73.4°F ±3.5°F (23°C ±2°C). The specimen should be allowed to rest at this temperature for at least 1 hour prior to testing, as the properties of most materials change with temperature.

Place the specimen on a hard, horizontal surface. With the durometer held vertically, press and hold release the 'ON/clr' button to turn on the digital indicator. If desired, press and release the 'HOLD' buton to enable max-hold. Hold the durometer vertically with the point of the indenter at least 1/2 " from any edge. Apply the presser foot to the specimen as rapidly as possible, without shock, keeping the foot parallel to the surface of the specimen. Apply just sufficient force to obtain firm contact between the presser foot and the specimen. Hold for 1 or 2 seconds, the maximum reading can be obtained by a setting on the indicator (see above). When max-hold is enabled the maximum value reached will automatically be displaced and held until reset. To disengage the maximum feature, press and release 'HOLD' button again. If other than a maximum reading is needed, hold the durometer in place without motion and obtain the reading after the required time interval. Make 5 tests at least 1/4" apart and use the average value.

## LIMITED LIABILITY WARRANTY

*PTC® products are covered by a limited liability warranty from defects in material and workmanship for one year from date of purchase. This warranty does not apply if, in the judgement of PTC®, the product fails due to damage from shipment, handling, storage, accident, abuse or misuse, or if it has been used or maintained in a manner not conforming to product's instructions, has been modified in any way, or has a defaced or removed serial number. Repair by anyone other than PTC® or an approved agent voids this warranty. The maximum liability of PTC® is the product purchase price.*

### Power On
Press and hold ON/CLR until indicator turns on.

### Power Off
Press OFF/MODE

### Auto-Off Toggle
Press the 2ND button until 2ND appears on the display. Press the OFF/MODE.

An hour glass appears at left side of display if AUTO OFF is active. If AUTO OFF is active the indicator will power off in 10 minutes with no activity (button press or spindle movement).

### Hold Mode
Allows you to hold the value on the display according to the specified mode.
Press HOLD to toggle hold mode on and off.
MAX - Holds and displays the highest reading attained.
MIN - Holds and displays the lowest reading attained.
FRZ - Holds and displays the reading displayed when HOLD is engaged.
Note: Pressing ON/CLR button resets indicator to spindle position except in FRZ; resets to zero.

### Reset to Factory Default
This will set all features and functions back to the factory default settings.
Press the 2ND button (2ND icon should appear on the display), followed by ON/CLR, then press IN/MM.
Note: Factory defaults cannot be reset if the LOCK feature is on.


## CALIBRATION CHECK

For a complete calibration check of mainspring, and visual and mechanical check of indenter, the instrument should be returned to PTC® (see Guarantee & Calibration Service) or refer to ASTM D2240 Specifications. PTC® recommends the unit be returned at least every 12 months for this check. For a quick field check, follow the guideline below. Under no circumstance should a test block be used as a standard to calibrate a durometer.

1. The pointer should read zero when no force is applied to the indenter of the durometer.
2. Hand hold the durometer and insert the indenter into the hole of the calibrated test block. Apply enough force to make firm contact between the top surface of the test block and the presser foot. The dial reading should agree with the value stamped on the check block (±1). Several tests should be made and the results averaged.
3. The indenter must protrude 0.098 to 0.100 inches below the presser foot.
4. When the indenter is fully displaced, the durometer should read 100 points. Use care as to not damage the tip of the indenter.


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INSTRUMENTOS DE MEDICIÓN INDUSTRIAL


LLÁMANOS

**+52(81) 8115-1400 / +52 (81) 8173-4300**

LADA Sin Costo:
**01 800 087 43 75**

E-mail:
**ventas@twilight.mx**


**www.twilight.mx**

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