

IRHD - MICRO IRHD (ISO 48) SHORE - For rubber, vulcanized or thermoplastics - Determination of hardness

This instrument includes four methods for the determination of the hardness of vulcanized or thermoplastic rubber on flat surfaces.

- Method N Normal test
- Method H High-hardness test
- Method L Low-hardness test
- Method M Microtest

and four methods for the determination of apparent hardness of curved surfaces using methods N, H, L and M, respectively:

Methods CN, CH, CL and CM

The methods differ primarily in the diameter of the indenting ball and the magnitude of the indenting force, these being chosen to suit the particular application. The range of applicability of each is indicated in figure 1.

Method N: the normal test for hardness is the appropriate method for pieces of thickness greater than or equal to 4 mm and is preferably used for rubbers in the range 35 IRHD to 85 IRHD but may be used for those in the range 30 IRHD to 95 IRHD

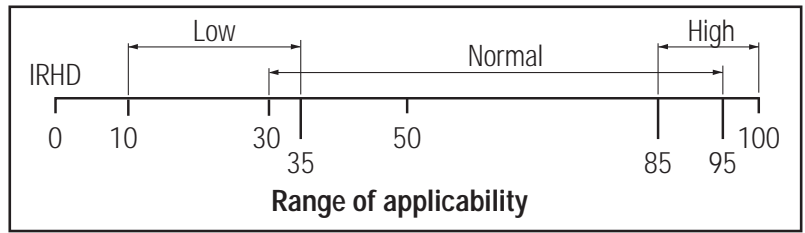
Method H: the appropriate method for test pieces of thickness greater than or equal to 4 mm and hardness in the range 85 IRHD to 100 IRHD

Method L: the appropriate method for test pieces of thickness greater than or equal to 6 mm and hardness in the range 10 IRHD to 35 IRHD

Note: The value of hardness obtained by method N within the ranges 85 IRHD to 95 IRHD and 30 IRHD to 35 IRHD may not agree precisely with that obtained using method H or method L respectively. The difference is not normally significant for technical purposes.

Method M: the microtest for hardness is essentially a downscaled version of the normal test method N, permitting the testing of thinner and smaller test pieces. It is the appropriate method for test pieces of thickness less than 4 mm and is preferably used for rubbers in the range 35 IRHD to 85 IRHD but may be used for those in the range 30 IRHD to 95 IRHD.

Shore: A - B - C - D



Principle

The hardness test consists in measuring the difference between the depths of indentation of a ball into the rubber under a small contact force and a large total force. From this difference, multiplied when using the microtest by the scale factor 6, the hardness in international rubber hardness degrees (IRHD) is obtained by using table or on graphs based on these tables or a scale. These tables and curves are derived from the empirical relationship between indentation depth and hardness.

Forces and dimensions of apparatus

TEST	Diameters (mm)	Contact (N)	Force on ball indenting (N)	Total (N)	Force on foot (N)
Method N (normal test)	Ball 2.50 ± 0.01 Foot 20 ± 1 Hole 6 ± 1	0.30 ± 0.02	5.40 ± 0.01	5.70 ± 0.03	8.3 ± 1.5
Method H (high hardness)	Ball 1.00 ± 0.01 Foot 20 ± 1 Hole 6 ± 1	0.30 ± 0.02	5.40 ± 0.01	5.70 ± 0.03	8.3 ± 1.5
Method L (low hardness)	Ball 5.00 ± 0.01 Foot 22 ± 1 Hole 10 ± 1	0.30 ± 0.02	5.40 ± 0.01	5.70 ± 0.03	8.3 ± 1.5
Method M (microtest)	Ball 0.395 ± 0.005 Foot 3.35 ± 0.15 Hole 1.00 ± 0.15	8.3 ± 0.5 (mN)	145 ± 0.5 (mN)	153.3 ± 1.0 (mN)	235 ± 30 (mN)

Technical characteristics

Working	motorised through load cell closed loop computer control 17" Colour LCD display
Conforms with the Standards	ISO 48 / 7318 / ASTM 1415
Stroke: 50 mm for autocontact with	sample surface to a max of 200 mm
Depth	170 mm
Base for sample	60 mm interchangeable
Dimension of machine	60 x 30 x 80h cm
Weight	60 Kg
Output data	USB
Power	220 /240 V 15V upon request
Packing measures	100x 100 x 100h cm
G.W.	90 Kg

Applicable accessories

- Art. 16 set of clamping parts to test sizes of O.RINGS from 1.41 TO 6.33 section diameter
 - Special vice 25 mm capacity for difficult pieces
 - Indenter for N
 - Indenter for H
 - Indenter for L
 - Indenter for M
 - Test block N-H-L-M
 - Model (A) IRHD
 - Model (B) IRHD+M
- Shore**
Digital Unit for Shore readout
- A078.A1.010 Probe SHORE A with tungsten carbide indenter
 - A078.A1.020 Probe SHORE B with tungsten carbide indenter
 - A078.A1.030 Probe SHORE C with tungsten carbide indenter
 - A078.A1.040 Probe SHORE D with tungsten carbide indenter

- *Motorised*
- *IRHD N-H-L-M*
- *Shore*



ART 16

Set of clamping holders for bench connection in compliance with ASTM 1414 for precisely testing O-Rings (section \varnothing 1.72 - 2.54 - 3.43 - 5.21 - 6.83 mm)