



Shore (Durometer) hardness test

Shore hardness is a measure of the resistance of a material to penetration of a spring loaded needle-like indenter.

Hardness of Polymers (rubbers, plastics) is usually measured by Shore scales.

Shore A scale is used for testing soft Elastomers (rubbers) and other soft polymers. Hardness of hard elastomers and most other polymer materials (Thermoplastics, Thermosets) is measured by Shore D scale.

Shore hardness is tested with an instrument called Durometer. Durometer utilizes an indenter loaded by a calibrated spring. The measured hardness is determined by the penetration depth of the indenter under the load. Two different indenter shapes (see the picture below) and two different spring loads are used for two Shore scales (A and D). The loading forces of Shore A: 1.812 lb (822 g), Shore D: 10 lb (4536 g).

Shore hardness value may vary in the range from 0 to 100. Maximum penetration for each scale is 0.097-0.1 inch (2.5-2.54 mm). This value corresponds to minimum Shore hardness: 0. Maximum hardness value 100 corresponds to zero penetration.

Durometer hardness conversion

Shore A	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Shore D	6	7	8	10	12	14	16	19	22	25	29	33	39	46	58

Rubber hardness and applications

Hardness Application

30 Shore A	Art gum erasers
35 Shore A	Rubber bands
40 Shore A	Can tester pads
50 Shore A	Rubber stamps
55 Shore A	Pencil erasers
60 Shore A	Screen wiper blades
65 Shore A	Automotive tires
70 Shore A	Shoe heels
75 Shore A	Abrasive handling pads
80 Shore A	Shoe soles
85 Shore A	Tap washers
90 Shore A	Typewriter rollers
95 Shore A	Fork lift solid tires
60 Shore D	Golf ball
70 Shore D	Metal forming wiper dies
80 Shore D	Paper-making rolls

