

DMMS ISO 48-2:2018 Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)

### Scope

This document specifies four methods for the determination of the hardness of vulcanized or thermoplastic rubbers on flat surfaces (standard-hardness methods) and four methods for the determination of the apparent hardness of curved surfaces (apparent-hardness methods). The hardness is expressed in international rubber hardness degrees (IRHD). The methods cover the hardness range from 10 IRHD to 100 IRHD.

These 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 method is indicated in [Figure 1](#).

This document does not specify a method for the determination of hardness by a pocket hardness meter, which is described in ISO 48-5.

This document specifies the following four methods for the determination of standard hardness.

- — Method N (normal test) is appropriate for rubbers with a hardness in the range 35 IRHD to 85 IRHD, but can also be used for hardnesses in the range 30 IRHD to 95 IRHD.
- — Method H (high-hardness test) is appropriate for rubbers with a hardness in the range 85 IRHD to 100 IRHD.
- — Method L (low-hardness test) is appropriate for rubbers with a hardness in the range 10 IRHD to 35 IRHD.
- — Method M (microtest) is essentially a scaled-down version of the normal test method N, permitting the testing of thinner and smaller test pieces. It is appropriate for rubbers with a hardness in the range 35 IRHD to 85 IRHD, but can also be used for hardnesses in the range 30 IRHD to 95 IRHD.

NOTE 1 The value of the hardness obtained by method N within the ranges 85 IRHD to 95 IRHD and 30 IRHD to 35 IRHD might not agree precisely with that obtained using method H or method L, respectively. The difference is not normally significant for technical purposes.

NOTE 2 Because of various surface effects in the rubber and the possibility of slight surface roughness (produced, for example, by buffing), the microtest might not always give results agreeing with those obtained by the normal test.

This document also specifies four methods, CN, CH, CL and CM, for the determination of the apparent hardness of curved surfaces. These methods are modifications of methods N, H, L and M, respectively, and are used when the rubber surface tested is curved, in which case there are two possibilities:

- a) the test piece or product tested is large enough for the hardness instrument to rest upon it;

- b) the test piece or product tested is small enough for both the test piece and the instrument to rest upon a common support.

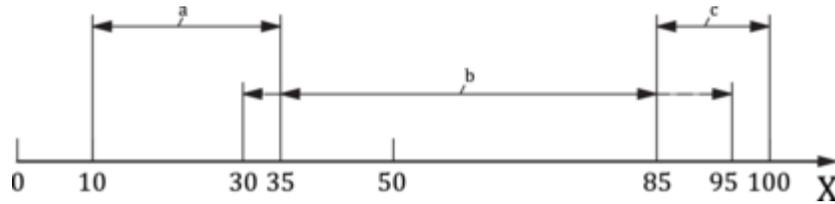
A variant of b) would be where the test piece rests upon the support surface of the instrument.

Apparent hardness can also be measured on non-standard flat test pieces using methods N, H, L and M.

The procedures described cannot provide for all possible shapes and dimensions of test piece, but cover some of the commonest types, such as O-rings.

This document does not specify the determination of the apparent hardness of rubber-covered rollers, which is specified in ISO 48-6, ISO 48-7 and ISO 48-8.

Figure 1 — Range of applicability



Key

- X hardness (IRHD)
- a Method L and method CL.
- b Methods N and M and methods CN and CM.
- c Method H and method CH.