
International Standard



7267/2

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**Rubber-covered rollers — Determination of apparent hardness —
Part 2 : Shore-type durometer method**

Cylindres revêtus de caoutchouc — Détermination de la dureté apparente — Partie 2 : Méthode au duromètre type Shore

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7267/2 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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0 Introduction

The hardness of a roller covering has traditionally been determined on the finished roller, since it is this hardness that is critical to the correct functioning of the roller in its end application. Values of hardness determined by whichever method is chosen are therefore dependent not only on the method employed and on the rubber, but also on the diameter of the roller and on the thickness of the covering and in the case of thin coverings on the nature of the roller core. For this reason the term "apparent hardness" is used to distinguish between the values obtained by the methods described in the various parts of this International Standard and those that would be obtained for the rubber if it was possible to use the standard test methods for standard test pieces forming the subjects of other International Standards.

Since rollers vary considerably in size, construction and end use, and in view of the fact that hardness determinations are made for such different purposes as specification and factory process control, it has not been possible to standardize on one test method. Consequently three methods are described each capable of standing alone. Therefore this International Standard comprises the following parts :

Part 1 : IRHD method.

Part 2 : Shore-type durometer method.

Part 3 : Pusey and Jones method.

1 Scope and field of application

This part of ISO 7267 specifies a method for the determination of the apparent hardness of vulcanized rubber roller covers, expressed in Shore hardness, for measurement where only medium precision is required. The method and apparatus used are essentially those described in ISO 7619, the measurements in this case being made on the curved surface of the conditioned rubber covered roller rather than on a flat test piece. Shore-

type A and D instruments are specified, the latter being used for measurements on rollers of high hardness.

2 References

ISO 471, *Rubber — Standard temperatures, humidities and times for the conditioning and testing of test pieces.*

ISO 1826-5, *Rubber, vulcanized — Time-interval between vulcanization and testing — Specification.*

ISO 6123/1, *Rubber- or plastics-covered rollers — Specifications — Part 1 : Requirements for hardness.*

ISO 7619, *Rubber — Determination of indentation hardness by means of pocket hardness meters.*

3 Time interval between vulcanization and finished grinding, and testing

Tests shall not be carried out less than 16 h after vulcanization and/or finished grinding and, for arbitration purposes, not less than 72 h after vulcanization (see ISO 1826).

4 Conditioning and temperature of test

Where possible, the test shall be carried out at standard laboratory temperature in accordance with ISO 471. The product under test should be maintained under the test condition for sufficient time to reach temperature equilibrium with the test environment. Where this is impracticable, the period of time and the conditions shall be given in the product specification (see the note).

The same temperature shall be used throughout any one test or series of tests intended to be comparable.

NOTE — For large rollers having heavy metal cores, ambient conditions may not allow equilibrium temperatures to be obtained.

5 Apparatus

The apparatus used shall be either the Shore type A or the Shore type D instruments described in ISO 7619 calibrated in accordance with the method given.

Measurements shall be made with type D instruments when values above 90 are obtained with the type A durometer and with the type A instrument when values less than 20 are obtained with type D durometers.

6 Procedure

6.1 Firmly locate the roller to be tested, with its major axis horizontal and with the area in which the hardness is to be measured uppermost. Hold the hardness meter in position with the indenter immediately above the area which is to be measured. Apply the presser foot to the roller surface as rapidly as possible, without shock, ensuring that the indenter is normal to the rubber surface. Apply just sufficient force to obtain firm contact between the presser foot and the roller. Take the reading 1 s after the presser foot is in firm contact with the roller surface.

6.2 Make three measurements at different points at least 6 mm apart within the test area at which the hardness is to be determined.

NOTES

1 Better reproducibility may be obtained by using either a standard mass centred on the axis of the indenter, or both, to apply the presser

foot to the test piece. For Shore-type durometers, masses of 1 kg and 5 kg are recommended for type A and type D respectively.

2 Several test areas along the length and around the circumference of the roller may be required to determine the average hardness of the covering and the hardness variation over a single roller (see ISO 6123/1).

7 Expression of results

Express the apparent hardness as the median of the three measurements for each test area reported to the nearest whole number in Shore A or Shore D.

8 Test report

The test report shall include the following information :

- a) a reference to this part of ISO 7267;
- b) a complete identification of the roller tested;
- c) conditioning and temperature of test;
- d) the apparent hardness, expressed as Shore A or Shore D;

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