Australian Standard®

Methods of test for elastomers

Method 15.1: International rubber hardness

PREFACE

The Standard was prepared by the Standards Australia Committee on Analysis and Testing of Elastomers under the direction of the Committee on Standards for the Rubber Industry to supersede, in part, AS 1683.15—1976, *Methods of Test for Rubber* Part 15: *Indentation Hardness of Rubber and Plastics by Means of a Durometer.*

The principal change from the previous edition is the incorporation of the International Rubber Hardness Degrees (IRHD) method thereby providing two methods for determining hardness.

In the preparation of this Standard, account was taken of the following Standard:

ASTM
D 1415—1983 *Test method for rubber property—International hardness.*

METHOD

1 SCOPE This method sets out the procedure for determining international hardness of elastomeric materials.

2 PRINCIPLE Depending on size, specimens are tested using either a 'standard' tester or a micro-tester. The 'standard' tester is intended to be used on specimens greater than 4 mm in thickness, usually 8 mm to 10 mm. The micro-tester is used on specimens 1.5 mm to 4 mm in thickness, on specimens thicker than 4 mm having lateral dimensions less than those specified for the 'standard' tester, or on elastomeric items that do not have flat surfaces suitable for using the 'standard' tester. In both testers, the hardness in international rubber hardness degrees (IRHD) is derived from the difference in penetrations of an indentor using a major and minor force and a table or graph constructed from Table 1.

3 APPARATUS

3.1 General The apparatus used shall be either a 'standard' tester or a micro-tester, essentially composed of the components given below. (See Table 2 for appropriate dimensions and loads for the components.)

NOTE: There are two configurations of 'standard' testers in use.

3.2 Vertical indentor—terminated in a rigid ball shape.

3.3 Sequential force applicator—which applies a minor force and major force to the vertical indentor assembly. Any fittings attachment and the force of any spring are determinants of the minor and major forces effectively applied to the rigid ball-shaped indentor as specified in Table 2.

3.4 Measuring device—a mechanical, optical or electrical device graduated either in standard units of length or in International Rubber Hardness Degrees for measuring the increase in depth of penetration of the plunger caused by the major load.

3.5 Foot—a flat annular-shaped foot pierced in the centre to allow contact between the sample and the indentor. It is rigidly fastened to the penetration measuring device and normal to the axis of the plunger and, during the test, is forced against the specimen in order to determine accurately the position of the upper surface.

3.6 Vibrating device (for 'standard' tester)—an electrically operated buzzer, gently vibrating the apparatus to overcome any slight friction; this should not exceed 5% of the minor load.

NOTE: This device may be omitted on apparatus without any appreciable friction.