Australian Standard®

Methods of test for elastomers

Method 11: Tension testing of vulcanized rubber

PREFACE

This Standard was prepared by the Standards Australia Committee on Analysis and Testing of Elastomers under the direction of Committee RU/-, Standards for the Rubber Industry to supersede AS 1683.11 — 1976.

This method is technically similar to ISO 37 — 1977, *Rubber, vulcanized — Determination of tensile stress-strain properties.* Cognizance was also taken of ASTM D 412 — 1987, *Rubber properties in tension.*

The method differs from ISO 37 in that the ring method is excluded as this method is not generally used in Australia at present. In addition, details of sample preparation are included.

METHOD

1 SCOPE This Standard sets out the method for determining the tensile stress-strain properties of vulcanized rubber.

2 DOCUMENTS The following documents are referred to in this Standard:

AS
2193 Methods for calibration and grading of force-measuring systems of testing machines

ASTM
D 3182 Rubber — Materials, equipment and procedures for mixing standard compounds and preparing standard vulcanized sheets
D 3183 Rubber — Preparation of pieces for test purposes from products

3 PRINCIPLE Standard test pieces, in the shape of dumbbells are stretched to breakage or to a specified elongation in a tensile testing machine.

NOTE: Types 2 and 3 dumbbell test pieces give somewhat higher values for the stress-strain properties than Type 1 dumbbell test pieces.

4 APPARATUS A tensile test machine, capable of a constant rate of traverse of the moving grip or pulley of 500 + 50 mm/min and complying with (or exceeding) Grade B requirements of AS 2193 is required.

NOTE: Inertia (pendulum) type dynamometers tend to give results which differ from other types of dynamometers because of frictional and inertial effects. An inertialess dynamometer, e.g. electronic transducer type, gives results which are free from these effects, and is therefore to be preferred.

5 TEST SAMPLES

5.1 General Samples shall be prepared in accordance with ASTM D 3182 or D 3183, whichever is appropriate. Whenever possible, the sample shall be flat, not less than 1.5 mm nor more than 3 mm in thickness, and of a size which will permit the cutting of a dumbbell-test piece by means of one of the standard dies.

NOTE: For samples prepared in accordance with ASTM D 3182, the type of die used will depend on the thickness of the sample (see Clause 6.1).

5.2 Dumbbell test pieces

5.2.1 *Number of dumbbell test pieces* The test shall be carried out on at least three test pieces.

