STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 1683.11–2001
Methods of test for elastomers
Method 11: Tension testing of vulcanized or thermoplastic rubber

RECONFIRMATION NOTICE

Major stakeholders of this publication have reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 29 August 2018.

NOTES

AS 1683.11—2001
ISO 37:1994
Reconfirmed 2018

Australian Standard™

Methods of test for elastomers

Method 11: Tension testing of vulcanized or thermoplastic rubber

PREFACE

This Standard was prepared by the Standards Australia Committee RU-003, Analysis and Testing of Elastomers to supersede AS 1683.11—1990, *Methods of test for elastomers,* Method 11: *Tension testing of vulcanized rubber*.

The objective of this Standard is to provide manufacturers and users of elastomeric materials with a method for the determination of the tensile stress-strain properties of the vulcanized or thermoplastic rubbers.

This Standard is identical with and has been reproduced from ISO 37:1994, *Rubber, vulcanized or thermoplastic—Determination of tensile stress-strain properties*.

The term 'normative' has been used in this Standard to define the application of the annex to which it applies. A 'normative' annex is an integral part of a Standard.

As this Standard is reproduced from an international Standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) In the source text, 'this International Standard' should read 'this Australian Standard'.

(c) A full point substitutes for a comma when referring to a decimal marker.

References to international Standards should be replaced by equivalent Australian Standards as follows:

Reference to International Standard		*Australian Standard*	
ISO		AS	
471	Rubber—Temperatures and humidities for conditioning and testing	1683 1683.20	Methods of test for elastomers Method 20: Standard temperatures, humidities and times for conditioning and testing
1826	Rubber, vulcanized—Time-interval between vulcanized and testing—Specification		—
1383	Rubber—General directions for achieving elevated or subnormal temperatures for test purposes		—
4648	Rubber, vulcanized or thermoplastic—Determination of dimensions of test pieces and products for test purposes		—

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ISO		AS
4661	Rubber, vulcanized or thermoplastic—Preparation of samples and test pieces	—
4661-1	Part 1: Physical tests	—
5893	Rubber and plastics test equipment—Tensile, flexural and compression types (constant rate of traverse)—Description	—

1 Scope

This International Standard describes a method for the determination of the tensile stress-strain properties of vulcanized and thermoplastic rubbers. The properties which may be determined are the tensile strength, the elongation at break, the stress at a given strain and the elongation at a given stress. Means of specifying or determining the yield point are also given.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 471:—[1], *Rubber — Times, temperatures and humidities for conditioning and testing.*

ISO 1826:1981, *Rubber, vulcanized — Time interval between vulcanization and testing — Specification.*

ISO 3383:1985, *Rubber — General directions for achieving elevated or subnormal temperatures for test purposes.*

ISO 4648:1991, *Rubber, vulcanized or thermoplastic — Determination of dimensions of test pieces and products for test purposes.*

ISO 4661-1:1993, *Rubber, vulcanized or thermoplastic — Preparation of samples and test pieces — Part 1: Physical tests.*

ISO 5893:1993, *Rubber and plastics test equipment — Tensile, flexural and compression types (constant rate of traverse) — Description.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 tensile stress, σ: A stress applied so as to extend the test piece. It is calculated as the applied force per unit area of the original cross-section of the test length.

3.2 elongation, E: The extension, expressed as a percentage of the test length, produced in the test piece by a tensile stress.

3.3 tensile strength, TS: The maximum tensile stress recorded in extending the test piece to breaking point. [See figures 1 a) to 1 c).]

3.4 tensile strength at break, TS_b: The tensile stress recorded at the moment of rupture. [See figures 1 a) to 1 c).]

NOTE 1 The values of TS and TS_b may be different if, after yield S_y, the elongation continues and is accompanied by a drop in stress, resulting in TS_b being lower than TS. [See figure 1 c).]

3.5 elongation at break, E_b: The tensile strain in the test length at breaking point. [See figures 1a) to 1c).]

1) To be published. (Revision of ISO 471:1983)