AS 1145.1—2001
ISO 527-1:1993
ISO 527-1:1993/Cor.1:1994

Australian Standard™

Determination of tensile properties of plastics materials

Part 1: General principles

[ISO title: Plastics—Determination of tensile properties, Part 1: General principles]

Standards Australia

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CSIRO Building, Construction and Engineering

Plastics and Chemicals Industries Association

Royal Australian Chemical Institute

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Part 1: General principles

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PREFACE

This Standard was prepared by the Standards Australia Committee Pl-010, Methods of Testing Plastics.

This Standard is identical to and is reproduced from ISO 527-1:1993 *Plastics—Determination of tensile properties,* Part 1: *General principles* and ISO 527 1:1993/ Cor.1:1994.

The objective of this Standard is to provide testing agencies with a method for testing plastics to determine tensile properties.

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

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text ‘this International Standard’ should read ‘this Australian Standard’.

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Reference to International Standard		*Australian or Australian/New Zealand Standard*	
ISO/IEC		AS/NZS	
2602	Statistical interpretation of test results—Estimation of the mean-confidence interval		—
5893	Rubber and plastics test equipment—tensile, flexural and compression types (constant rate of traverse)—Description		—
291	Plastics—Standard atmospheres for conditioning and testing	1327	Standard environments for conditioning and testing plastics materials

STANDARDS AUSTRALIA

Determination of tensile properties of plastics materials

Part 1: General principles

1 Scope

1.1 This part of ISO 527 specifies the general principles for determining the tensile properties of plastics and plastic composites under defined conditions.

Several different types of test specimen are defined to suit different types of material which are detailed in subsequent parts of ISO 527.

1.2 The methods are used to investigate the tensile behaviour of the test specimens and for determining the tensile strength, tensile modulus and other aspects of the tensile stress/strain relationship under the conditions defined.

1.3 The methods are selectively suitable for use with the following range of materials:

— rigid and semirigid thermoplastics moulding and extrusion materials, including filled and reinforced compounds in addition to unfilled types; rigid and semirigid thermoplastics sheets and films;

— rigid and semirigid thermosetting moulding materials, including filled and reinforced compounds; rigid and semirigid thermosetting sheets, including laminates;

— fibre-reinforced thermoset and thermoplastics composites incorporating unidirectional or non-unidirectional reinforcements such as mat, woven fabrics, woven rovings, chopped strands, combination and hybrid reinforcements, rovings and milled fibres; sheets made from pre-impregnated materials (prepregs);

— thermotropic liquid crystal polymers.

The methods are not normally suitable for use with rigid cellular materials or sandwich structures containing cellular material.

1.4 The methods are applied using specimens which may be either moulded to the chosen dimensions or machined, cut or punched from finished and semifinished products such as mouldings, laminates, films and extruded or cast sheet. In some cases a multipurpose test specimen (see ISO 3167:1993, *Plastics — Preparation and use of multipurpose test specimens*), may be used.

1.5 The methods specify preferred dimensions for the test specimens. Tests which are carried out on specimens of different dimensions, or on specimens which are prepared under different conditions, may produce results which are not comparable. Other factors, such as the speed of testing and the conditioning of the specimens, can also influence the results. Consequently, when comparative data are required, these factors must be carefully controlled and recorded.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 527. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 527 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 291:1977, *Plastics — Standard atmospheres for conditioning and testing.*

ISO 2602:1980, *Statistical interpretation of test re-*