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Plastics – Determination of tensile properties

Part 1: General principles (ISO 527-1:2019)

bsi.

National foreword

This British Standard is the UK implementation of EN ISO 527-1:2019. It supersedes BS EN ISO 527-1:2012, which is withdrawn.

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A list of organizations represented on this committee can be obtained on request to its secretary.

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European foreword

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This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2020, and conflicting national standards shall be withdrawn at the latest by March 2020.

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Endorsement notice

The text of ISO 527-1:2019 has been approved by CEN as EN ISO 527-1:2019 without any modification.

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 2, *Mechanical properties.*

This third edition cancels and replaces the second edition (ISO 527-1:2012), which has been technically revised.

The main changes compared to the previous edition are as follows:

— an error in Figure 1 concerning ε_{tM} has been removed;

— the inconsistency concerning the accuracy of the elongation used in the calculation of the tensile modulus between 5.1.5.1, Figure 1 and Annex C has been removed. For gauge lengths $L_0 \leq 50$ mm, the accuracy is set to ±1 µm;

— the normative references (see Clause 2) have been updated;

— minor editorial changes have been applied;

— language has been clarified.

A list of all parts in the ISO 527 series can be found on the ISO website.

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INTERNATIONAL STANDARD **ISO 527-1:2019**

Plastics – Determination of tensile properties —

Part 1: General principles (ISO 527-1:2019)

1 Scope

1.1 This document 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 materials:

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

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

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

— thermotropic liquid crystal polymers.

The methods are not normally suitable for use with rigid cellular materials, for which ISO 1926 is used, or for sandwich structures containing cellular materials.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 291, *Plastics — Standard atmospheres for conditioning and testing*

ISO 2602, *Statistical interpretation of test results — Estimation of the mean — Confidence interval*

ISO 7500-1, *Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system*

ISO 9513:2012, *Metallic materials — Calibration of extensometer systems used in uniaxial testing*

ISO 16012, *Plastics — Determination of linear dimensions of test specimens*

ISO 23529, *Rubber — General procedures for preparing and conditioning test pieces for physical test methods*

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