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Plastics — Determination of Charpy impact properties —

Part 1: Non-instrumented impact test

Plastiques — Détermination des caractéristiques au choc Charpy —

Partie 1: Essai de choc non instrumenté

Reference number
ISO 179-1:2010(E)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 179-1 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 2, *Mechanical properties*.

This second edition cancels and replaces the first edition (ISO 179-1:2000), which has been technically revised. The main changes are as follows:

— a new subclause (6.5) has been added, defining the span between the specimen supports and indicating a convenient position at which it can be measured;

— a new annex, Annex C, has been added, giving a method of measuring the radius of the notch in a notched specimen.

This second edition also incorporates the Amendment ISO 179-1:2000/Amd.1:2005.

ISO 179 consists of the following parts, under the general title *Plastics — Determination of Charpy impact properties*:

— *Part 1: Non-instrumented impact test*

— *Part 2: Instrumented impact test*

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Plastics — Determination of Charpy impact properties —

Part 1: Non-instrumented impact test

1 Scope

1.1 This part of ISO 179 specifies a method for determining the Charpy impact strength of plastics under defined conditions. A number of different types of specimen and test configurations are defined. Different test parameters are specified according to the type of material, the type of test specimen and the type of notch.

1.2 The method can be used to investigate the behaviour of specified types of specimen under the impact conditions defined and for estimating the brittleness or toughness of specimens within the limitations inherent in the test conditions. It can also be used for the determination of comparative data from similar types of material.

1.3 The method has a greater range of applicability than that given in ISO 180[1] and is more suitable for the testing of materials showing interlaminar shear fracture or of materials exhibiting surface effects due to environmental factors.

1.4 The method is suitable for use with the following range of materials:

— rigid thermoplastic moulding and extrusion materials (including filled and reinforced compounds in addition to unfilled types) and rigid thermoplastics sheets;

— rigid thermosetting moulding materials (including filled and reinforced compounds) and rigid thermosetting sheets (including laminates);

— fibre-reinforced thermosetting and thermoplastic composites incorporating unidirectional or multi-directional reinforcements (such as mats, woven fabrics, woven rovings, chopped strands, combination and hybrid reinforcements, rovings and milled fibres) or incorporating sheets made from pre-impregnated materials (prepregs), including filled and reinforced compounds;

— thermotropic liquid-crystal polymers.

1.5 Notched samples are not normally suitable for use with rigid cellular materials, long-fibre-reinforced composites or thermotropic liquid-crystal polymers. In these cases, unnotched samples may be used.

1.6 The method is suited to the use of specimens moulded to the chosen dimensions, machined from the central portion of a standard multipurpose test specimen (see ISO 3167) or machined from finished or semifinished products such as mouldings, laminates and extruded or cast sheet.

1.7 The method specifies preferred dimensions for the test specimen. Tests which are carried out on specimens of different dimensions or with different notches, or specimens which are prepared under different conditions, might produce results which are not comparable. Other factors, such as the energy capacity of the apparatus, the impact velocity 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.

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