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Plastics — Compression-moulded sheets of polyethylene (PE-UHMW, PE-HD) — Requirements and test methods

Plastiques — Plaques moulées par compression en polyéthylène (PE-UHMW, PE-HD) — Exigences et méthodes d'essai

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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.

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 11, *Products*.

This third edition cancels and replaces the second edition (ISO 15527:2010), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

— Clause 2 has been revised (in 6.9.2, ISO 179-1, rather than ISO 11542-2, is now used to determine the Charpy impact strength);

— the requirements given in Table 2 for the abrasion properties have been modified;

— Clause 3, Terms and definitions, has been added and the succeding clauses have been renumbered;

— the document has been editorially revised.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Plastics — Compression-moulded sheets of polyethylene (PE-UHMW, PE-HD) — Requirements and test methods

1 Scope

This document specifies the requirements and test methods for solid flat compression-moulded sheets of polyethylene (PE-UHMW and PE-HD, see ISO 1043-1) without fillers or reinforcing materials. It applies only to thicknesses from 10 mm to 200 mm.

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 179-1, *Plastics — Determination of Charpy impact properties — Part 1: Non-instrumented impact test*

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

ISO 527-2, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics*

ISO 1133-1, *Plastics — Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics — Part 1: Standard method*

ISO 1183 (all parts), *Plastics — Methods for determining the density of non-cellular plastics*

ISO 11542-1, *Plastics — Ultra-high-molecular-weight polyethylene (PE-UHMW) moulding and extrusion materials — Part 1: Designation system and basis for specifications*

ISO 11542-2, *Plastics — Ultra-high-molecular-weight polyethylene (PE-UHMW) moulding and extrusion materials — Part 2: Preparation of test specimens and determination of properties*

ISO 17855-1, *Plastics — Polyethylene (PE) moulding and extrusion materials — Part 1: Designation system and basis for specifications*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Material

Sheets shall consist of PE-UHMW moulding materials as defined in ISO 11542-1 or PE-HD selected from polyethylene (PE) moulding materials as defined in ISO 17855-1, without fillers or reinforcing materials. Materials and additives of unknown identity shall not be used.

NOTE Legal conditions can necessitate a specific choice of moulding material (see 5.3.2).

5 Requirements

5.1 Appearance

Sheets shall have smooth surfaces. Small grooves and any resultant irregularities in the thicknesses of sheets are acceptable as long as the requirements specified in 6.2.1 are fulfilled. Sheets shall be examined in accordance with 6.3.

Where agreed between the interested parties, sheets with a smooth machined surface may be supplied.

Sheets shall be substantially free from bubbles, blowholes and other inhomogeneities which would make them unfit for the intended use. Specific requirements with respect to this internal integrity shall be agreed upon between the interested parties. Sheets shall be examined in accordance with 6.2.

5.2 Dimensional tolerances

5.2.1 Thickness

For any individual sheet, the thickness tolerance with reference to the nominal thickness shall be as specified in Table 1. Testing shall be in accordance with 6.4.1.

Table 1 — Tolerances on thickness of sheet

Values in millimetres

Nominal thickness h_n	Tolerance			
	PE-UHMW		PE-HD	
			High MW	Low MW
	Group 1.1	Group 1.2	Group 2.1	Group 3.1
$10 < h_n < 20$	$^{+3}_{0}$	$^{+3}_{0}$	$^{+3}_{0}$	$^{+3}_{0}$
$20 < h_n < 40$	$^{+5}_{0}$	$^{+5}_{0}$	$^{+5}_{0}$	$^{+5}_{0}$
$40 < h_n < 60$	$^{+6}_{0}$	$^{+6}_{0}$	$^{+6}_{0}$	$^{+6}_{0}$
$60 < h_n < 80$	$^{+8}_{0}$	$^{+8}_{0}$	$^{+8}_{0}$	$^{+8}_{0}$
$80 < h_n < 100$	$^{+10}_{0}$	$^{+10}_{0}$	$^{+10}_{0}$	$^{+10}_{0}$
$100 < h_n < 120$	$^{+12}_{0}$	$^{+12}_{0}$	$^{+12}_{0}$	$^{+12}_{0}$
$120 < h_n < 150$	$^{+14}_{0}$	$^{+14}_{0}$	$^{+14}_{0}$	$^{+14}_{0}$
$150 < h_n < 200$	$^{+16}_{0}$	$^{+16}_{0}$	$^{+16}_{0}$	$^{+16}_{0}$

5.2.2 Length and width

The nominal length, l_n, and nominal width, b_n, of sheets shall be as agreed between the interested parties.

5.2.3 Rectangularity

For any individual sheet, selected at random from any delivery, the rectangularity tolerance, expressed as the difference in length of the diagonals, $|d_1 - d_2|$ (see Figure 1), shall be in accordance with Table A.1.