

**Plastid. Ülikõrge molekulmassiga  
polüetüleenist (ultra-high-molecularweight  
polyethylene) (PE-UHMW) vormitavad  
materjalid ja ekstrusioonimaterjalid. Osa 1:  
Tähistussüsteem ja alus tehniliste andmete  
jaoks**

Plastics - Ultra-high-molecular-weight polyethylen  
(PE-UHMW) moulding and extrusion materials -  
Part 1: Designation system and basis for  
specifications

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 11542-1:2001 sisaldab Euroopa standardi EN ISO 11542-1:2001 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 19.10.2001 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 11542-1:2001 consists of the English text of the European standard EN ISO 11542-1:2001.</p> <p>This document is endorsed on 19.10.2001 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p><b>Käsitlusala:</b></p> <p>This part of EN ISO 11542 establishes a system of designation for PE-UHMW thermoplastic materials which may be used as the basis for specifications. For the purpose of this part of EN ISO 11542, PE-UHMW materials are polyethylene materials having a melt mass-flow rate (MFR), measured at 190 °C and 21,6 kg load, of less than 0,1 g/10 min.</p>	<p><b>Scope:</b></p> <p>This part of EN ISO 11542 establishes a system of designation for PE-UHMW thermoplastic materials which may be used as the basis for specifications. For the purpose of this part of EN ISO 11542, PE-UHMW materials are polyethylene materials having a melt mass-flow rate (MFR), measured at 190 °C and 21,6 kg load, of less than 0,1 g/10 min.</p>
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**ICS** 83.080.20

**Võtmesõnad:** castings, designation systems, extrusion, injection moulding, mouldings (shaped section), pe-uhmw, plastics, polyethylene, specification, ultra high molecular

**English version**

Plastics

**Ultra-high-molecular-weight polyethylene  
(PE-UHMW) moulding and extrusion materials**

**Part 1: Designation system and basis for specifications  
(ISO 11542-1 : 2001)**

Plastiques – Matériaux à base de polyéthylène à très haute masse moléculaire (PE-UHMW) pour moulage et extrusion – Partie 1: Système de désignation et base de spécifications (ISO 11542-1 : 2001)

Kunststoffe – Ultrahochmolekulare Polyethylen (PE-UHMW)-Formmassen – Teil 1: Bezeichnungssystem und Basis für Spezifikationen (ISO 11542-1 : 2001)

This European Standard was approved by CEN on 2001-02-15.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

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**CEN**

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

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## Foreword

International Standard

ISO 11542-1 : 2001 Plastics – Ultra-high-molecular-weight polyethylene (PE-UHMW) moulding and extrusion materials – Part 1: Designation system and basis for specifications,

which was prepared by ISO/TC 61 'Plastics' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 249 'Plastics', the Secretariat of which is held by IBN, as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by August 2002 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

## Endorsement notice

The text of the International Standard ISO 11542-1 : 2001 was approved by CEN as a European Standard without any modification.

## 1 Scope

**1.1** This part of ISO 11542 establishes a system of designation for PE-UHMW thermoplastic materials which may be used as the basis for specifications.

For the purposes of this part of ISO 11542, PE-UHMW materials are polyethylene materials having a melt mass-flow rate (MFR), measured at 190 °C and 21,6 kg load, of less than 0,1 g/10 min.

**1.2** The types of PE-UHMW are differentiated from each other by a classification system based on appropriate levels of the designatory properties

- a) viscosity number
- b) elongational stress
- c) Charpy notched impact strength

and on information about intended application and/or method of processing, important properties, additives, colorants, fillers and reinforcing materials.

**1.3** This part of ISO 11542 is applicable to all PE-UHMW homopolymers and to ultra-high-molecular-weight copolymers of ethylene having a content of other 1-olefinic monomers of less than 50 % by mass and a content of non-olefinic monomers with functional groups up to a maximum of 3 % by mass.

It applies to materials ready for normal use in the form of powder, granules or pellets and to materials unmodified or modified by colorants, additives, fillers, etc.

**1.4** It is not intended to imply that materials having the same designation give necessarily the same performance. This part of ISO 11542 does not provide engineering data, performance data or data on processing conditions which may be required to specify a material for a particular application and/or method of processing.

If such additional properties are required, they shall be determined in accordance with the test methods specified in part 2 of this International Standard, if suitable.

**1.5** In order to specify a thermoplastic material for a particular application or to ensure reproducible processing, additional requirements may be given in data block 5 (see 3.1).

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 11542. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 11542 are encouraged to investigate the

possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1043-1:—<sup>1)</sup>, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics*.

ISO 1628-3:1991, *Plastics — Determination of viscosity number and limiting viscosity number — Part 3: Polyethylenes and polypropylenes*.

ISO 5834-1:1998, *Implants for surgery — Ultra-high molecular weight polyethylene — Part 1: Powder form*.

ISO 11542-2:1998, *Plastics — Ultra-high-molecular-weight polyethylene (PE-UHMW) moulding and extrusion materials — Part 2: Preparation of test specimens and determination of properties*.

### 3 Designation system

#### 3.1 General

The designation system for thermoplastics is based on the following standardized pattern:

Designation						
Description block (optional)	Identity block					
	International Standard number block	Individual-item block				
		Data block 1	Data block 2	Data block 3	Data block 4	Data block 5

The designation consists of an optional description block, reading "Thermoplastics", and an identity block comprising the International Standard number and an individual-item block. For unambiguous coding, the individual-item block is subdivided into five data blocks comprising the following information:

- Data block 1: Identification of the plastic by its symbol PE-UHMW in accordance with ISO 1043-1 (see 3.2).
- Data block 2: Position 1: Intended application or method of processing (see 3.3).

Positions 2 to 8: Important properties, additives and supplementary information (see 3.3).

- Data block 3: Designatory properties (see 3.4).
- Data block 4: Fillers or reinforcing materials and their nominal content (see 3.5).
- Data block 5: For the purpose of specifications, a fifth data block may be added containing additional information (see 3.6).

The first character of the individual-item block shall be a hyphen. The data blocks shall be separated from each other by commas.

If a data block is not used, this shall be indicated by doubling the separation sign, i.e. by two commas (,,).

1) To be published. (Revision of ISO 1043-1:1997)