
Polimerni materiali - Ugotavljanje temperature ali območja taljenja kristalinih polimerov s kapilarno cevko in polarizacijskim mikroskopom (ISO 3146:2000)

Plastics - Determination of melting behaviour (melting temperature or melting range) of semi-crystalline polymers by capillary tube and polarizing-microscope methods (ISO 3146:2000)

Kunststoffe - Bestimmung des Schmelzverhaltens (Schmelztemperatur oder Schmelzbereich) von teilkristallinen Polymeren im Kapillarrohr- und Polarisationsmikroskop-Verfahren (ISO 3146:2000)

[SIST EN ISO 3146:2000](https://standards.iteh.ai/catalog/standards/sist/a0f482e1-992c-47bf-ae77-102000000000/iso-3146-2000)

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Plastiques - Détermination du comportement à la fusion (température de fusion ou plage de températures de fusion) des polymères semi-cristallins par méthodes du tube capillaire et du microscope polarisant (ISO 3146:2000)

Ta slovenski standard je istoveten z: EN ISO 3146:2000

ICS:

83.080.10

Duromeri

Thermosetting materials

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 3146

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Supersedes EN ISO 3146:1997

English version

Plastics - Determination of melting behaviour (melting temperature or melting range) of semi-crystalline polymers by capillary tube and polarizing-microscope methods (ISO 3146:2000)

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This European Standard was approved by CEN on 9 April 2000.

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.

This European Standard exists 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.

[SIST EN ISO 3146:2000](http://standards.iteh.ai/catalog/standards/sist/08182e1-992e-47bf-90f1-31462000)

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (ISO 3146:2000) has been prepared by Technical Committee ISO/TC 61 "Plastics" in collaboration with Technical Committee CEN/TC 249 "Plastics", the secretariat of which is held by IBN.

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 December 2000, and conflicting national standards shall be withdrawn at the latest by December 2000.

This document supersedes EN ISO 3146:1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Endorsement notice

The text of the International Standard ISO 3146:2000 has been approved by CEN as a European Standard without any modifications.

SIST EN ISO 3146:2000

NOTE Normative references to International Standards are listed in annex ZA (normative).

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Annex ZA
(normative)**Normative references to international publications
with their relevant European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN</u>	<u>Year</u>
ISO 291	1997	Plastics - Standard atmospheres for conditioning and testing	EN ISO 291	1997

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International Standard



3146

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Plastics — Determination of melting behaviour (melting temperature or melting range) of semi-crystalline polymers

Plastiques — Détermination du comportement à la fusion (température de fusion ou plage de température de fusion) des polymères semi-cristallins

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UDC 678.7 : 620.1 : 536.421.1

Ref. No. ISO 3146-1985 (E)

Descriptors : plastics, polymers, tests, determination, melting points, test equipment.

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 3146 was prepared by Technical Committee ISO/TC 61, *Plastics*.

This second edition cancels and replaces the first edition (ISO 3146:1974), of which it constitutes a minor revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Plastics — Determination of melting behaviour (melting temperature or melting range) of semi-crystalline polymers

iTeh STANDARD PREVIEW (standards.iteh.ai)

0 Introduction

The melting behaviour of a crystalline or partly crystalline polymer is a structure-sensitive property.

In polymers a sharp melting point, such as is observed for low molecular mass substances, usually does not occur; instead a melting temperature range is observed on heating, from the first change of shape of the solid particles to the transformation into a highly viscous or viscoelastic liquid, with accompanying disappearance of the crystalline phase, if present. The melting range depends upon a number of parameters, such as molecular mass, molecular mass distribution, per cent crystallinity, and thermodynamic properties.

It may also depend on the previous thermal history of the specimens. The lower or upper limit of the melting range, or its average value, is sometimes conventionally referred to as the "melting temperature".

1 Scope and field of application

This International Standard specifies three methods for evaluating the melting behaviour of semi-crystalline polymers.

Section one specifies a capillary tube method (method A), which is based on the changes in shape of the polymer. This method is applicable to all polymers and their compounds, even if there is no crystalline phase.

Section two specifies a polarizing microscope method (method B), which is based on changes in the optical properties of the polymer.

This method is applicable to polymers containing a birefringent crystalline phase; it may not be suitable for plastics compounds containing pigments and/or other additives which could interfere with the birefringence of the polymeric crystalline zone.

Section three specifies a thermal analytical method (method C), having two variants :

- method C1, which uses Differential Thermal Analysis (DTA);
- method C2, which uses Differential Scanning Calorimetry (DSC).

Both are applicable to all polymers containing a crystalline phase and their compounds.

The melting temperatures determined by the different methods usually differ by several kelvins for the reasons explained in the Introduction.

Of the methods given above, experiments have indicated DSC (Differential Scanning Calorimetry) to be the method of choice as having the best reproducibility of results.

2 Definitions

2.1 semi-crystalline polymers : Polymers containing a crystalline phase surrounded by amorphous materials.

2.2 melting range : The temperature range over which crystalline polymers lose their crystallinity when heated.

NOTE — The conventional "melting temperatures" determined by methods A and B are defined in clauses 3 and 8.