# SLOVENSKI STANDARD
# SIST EN ISO 3146:2022

**01-maj-2022**

**Nadomešča:**
**SIST EN ISO 3146:2000**
**SIST EN ISO 3146:2000/AC:2003**
**SIST EN ISO 3146:2000/AC:2005**

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**Polimerni materiali - Ugotavljanje temperature ali območja taljenja kristaliničnih polimerov s kapilarno cevko in polarizacijskim mikroskopom (ISO 3146:2021)**

Plastics - Determination of melting behaviour (melting temperature or melting range) of semi-crystalline polymers by capillary tube and polarizing-microscope methods (ISO 3146:2022)



Kunststoffe - Bestimmung des Schmelzverhaltens (Schmelztemperatur oder Schmelzbereich) von teilkristallinen Polymeren im Kapillarrohr- und Polarisationsmikroskop-Verfahren (ISO 3146:2022)



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 3146:2022)

**Ta slovenski standard je istoveten z:** **EN ISO 3146:2022**

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**ICS:**

| | | |
|---|---|---|
| 83.080.01 | Polimerni materiali na splošno | Plastics in general |

**SIST EN ISO 3146:2022** **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN ISO 3146

March 2022

ICS 83.080.01

Supersedes EN ISO 3146:2000, EN ISO 3146:2000/AC:2003

English Version

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This European Standard was approved by CEN on 12 February 2022.



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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (EN ISO 3146:2022) 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 NBN.

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of an identical text or by endorsement, at the latest by September 2022, and conflicting national standards shall be withdrawn at the latest by September 2022.

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

This document supersedes EN ISO 3146:2000, EN ISO 3146:2000/AC:2003.

Any feedback and questions on this document should be directed to the users’ national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



## Endorsement notice

The text of ISO 3146:2022 has been approved by CEN as EN ISO 3146:2022 without any modification.

INTERNATIONAL STANDARD

**ISO 3146**

Fourth edition
2022-03

# Plastics — Determination of melting behaviour (melting temperature or melting range) of semi-crystalline polymers by capillary tube and polarizing-microscope methods

*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*



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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).

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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 5, *Physical-chemical properties,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 249, *Plastics,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).



This fourth edition cancels and replaces the third edition (ISO 3146:2000), which has been technically revised. It also incorporates the Technical Corrigendum ISO 3146:2000/Cor 1:2002.

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

— the specifications of the apparatus and measurement procedure have been revised;

— the table of calibration standards has been revised by adding further entries, synonyms and CAS numbers of organic chemicals, correcting errors and modifying melting temperatures according to added references.

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.

# Introduction

The melting behaviour of a crystalline or semi-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. The melting range depends upon a number of parameters, such as molecular mass, molecular mass distribution, per cent crystallinity, and thermodynamic properties.

The melting range can also depend on experimental parameters such as previous thermal history of the specimen, heating or cooling rate, etc. The lower or upper limit of the melting range, or its average value, is sometimes conventionally referred to as the “melting temperature”.

The melting temperatures determined by different methods can differ by several kelvins for above reasons.