



SLOVENSKI STANDARD SIST EN ISO 11357-1:2010

01-januar-2010

Nadomešča:

SIST EN ISO 11357-1:1999

Polimerni materiali - Diferenčna dinamična kalorimetrija (DSC) - 1. del: Splošna načela (ISO 11357-1:2009)

Plastics - Differential scanning calorimetry (DSC) - Part 1: General principles (ISO 11357-1:2009)

Kunststoffe - Dynamische Differenz-Thermoanalyse (DSC) - Teil 1: Allgemeine Grundlagen (ISO 11357-1:2009)

Plastiques - Analyse calorimétrique différentielle (DSC) - Partie 1: Principes généraux (ISO 11357-1:2009) <https://standards.iteh.ai/catalog/standards/sist/af40cf89-a0ec-4b04-b78b-fc91ff9944bf/sist-en-iso-11357-1-2010>

Ta slovenski standard je istoveten z: EN ISO 11357-1:2009

ICS:

17.200.10	Toplota. Kalorimetrija	Heat. Calorimetry
83.080.01	Polimerni materiali na splošno	Plastics in general

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 11357-1

October 2009

ICS 83.080.01

Supersedes EN ISO 11357-1:1997

English Version

**Plastics - Differential scanning calorimetry (DSC) - Part 1:
General principles (ISO 11357-1:2009)**

Plastiques - Analyse calorimétrique différentielle (DSC) -
Partie 1: Principes généraux (ISO 11357-1:2009)

Kunststoffe - Dynamische Differenz-Thermoanalyse (DSC)
- Teil 1: Allgemeine Grundlagen (ISO 11357-1:2009)

This European Standard was approved by CEN on 17 September 2009.

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 CEN 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 CEN Management Centre has the same status as the official versions.

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Foreword

This document (EN ISO 11357-1:2009) 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 April 2010, and conflicting national standards shall be withdrawn at the latest by April 2010.

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

This document supersedes EN ISO 11357-1:1997.

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

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INTERNATIONAL
STANDARD

ISO
11357-1

Second edition
2009-10-15

**Plastics — Differential scanning
calorimetry (DSC) —**

**Part 1:
General principles**

Plastiques — Analyse calorimétrique différentielle (DSC) —

Partie 1: Principes généraux

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Reference number
ISO 11357-1:2009(E)

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Published in Switzerland

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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 11357-1 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 5, *Physical-chemical properties*.

This second edition cancels and replaces the first edition (ISO 11357-1:1997), which has been technically revised. The most important changes are the following:

- an indication has been given of the preferred graphical representation of DSC diagrams in accordance with thermodynamic requirements;
- an additional, more precise, method of temperature calibration, providing an accuracy of $\pm 0,3$ K over an extended temperature range, has been included;
- an additional, more precise, procedure for enthalpy calibration, providing an accuracy of $\pm 0,5$ %, has been included;
- a procedure for heat flow rate calibration has been included;
- information has been included on interactions between calibration materials and the crucibles.

ISO 11357 consists of the following parts, under the general title *Plastics — Differential scanning calorimetry (DSC)*:

- *Part 1: General principles*
- *Part 2: Determination of glass transition temperature*
- *Part 3: Determination of temperature and enthalpy of melting and crystallization*
- *Part 4: Determination of specific heat capacity*
- *Part 5: Determination of characteristic reaction-curve temperatures and times, enthalpy of reaction and degree of conversion*
- *Part 6: Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT)*
- *Part 7: Determination of crystallization kinetics*

Introduction

ISO 11357 describes thermoanalytical DSC test methods which can be used for quality assurance purposes, for routine checks of raw materials and finished products or for the determination of comparable data needed for data sheets or databases. The procedures given in ISO 11357 apply as long as product standards or standards describing special atmospheres for conditioning of specimens do not specify otherwise.

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Plastics — Differential scanning calorimetry (DSC) —

Part 1: General principles

SAFETY STATEMENT — Persons using this document should be familiar with normal laboratory practice, if applicable. This document does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any regulatory requirements.

1 Scope

ISO 11357 specifies several differential scanning calorimetry (DSC) methods for the thermal analysis of polymers and polymer blends, such as

- thermoplastics (polymers, moulding compounds and other moulding materials, with or without fillers, fibres or reinforcements);
- thermosets (uncured or cured materials, with or without fillers, fibres or reinforcements);
- elastomers (with or without fillers, fibres or reinforcements).

ISO 11357 is intended for the observation and measurement of various properties of, and phenomena associated with, the above-mentioned materials, such as

- physical transitions (glass transition, phase transitions such as melting and crystallization, polymorphic transitions, etc.);
- chemical reactions (polymerization, crosslinking and curing of elastomers and thermosets, etc.);
- the stability to oxidation;
- the heat capacity.

This part of ISO 11357 specifies a number of general aspects of differential scanning calorimetry, such as the principle and the apparatus, sampling, calibration and general aspects of the procedure and test report common to all following parts.

Details on performing specific methods are given in subsequent parts of ISO 11357 (see Foreword).

2 Normative references

The following referenced documents are indispensable for the application 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 291, *Plastics — Standard atmospheres for conditioning and testing*