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Irish Standard
I.S. EN ISO 11357-3:2013

Plastics - Differential scanning calorimetry (DSC) - Part 3: Determination of temperature and enthalpy of melting and crystallization (ISO 11357-3:2011)

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This document replaces:

This document is based on:
EN ISO 11357-3:2013

Published:
11 February, 2013

This document was published
under the authority of the NSAI
and comes into effect on:
11 February, 2013

ICS number:
83.080.01

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 11357-3

January 2013

ICS 83.080.01

English Version

Plastics - Differential scanning calorimetry (DSC) - Part 3: Determination of temperature and enthalpy of melting and crystallization (ISO 11357-3:2011)

Plastiques - Analyse calorimétrique différentielle (DSC) - Partie 3: Détermination de la température et de l'enthalpie de fusion et de cristallisation (ISO 11357-3:2011)

Kunststoffe - Dynamische Differenz-Thermoanalyse (DSC) - Teil 3: Bestimmung der Schmelz- und Kristallisationstemperatur und der Schmelz- und Kristallisationsenthalpie (ISO 11357-3:2011)

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Contents

Page

Foreword **3**

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Foreword

The text of ISO 11357-3:2011 has been prepared by Technical Committee ISO/TC 61 “Plastics” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 11357-3:2013 by 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of an identical text or by endorsement, at the latest by July 2013, and conflicting national standards shall be withdrawn at the latest by July 2013.

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.

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INTERNATIONAL STANDARD

ISO 11357-3

Second edition
2011-05-01

Plastics — Differential scanning calorimetry (DSC) —

Part 3: Determination of temperature and enthalpy of melting and crystallization

Plastiques — Analyse calorimétrique différentielle (DSC) —

Partie 3: Détermination de la température et de l'enthalpie de fusion et de cristallisation

Reference number
ISO 11357-3:2011(E)

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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.

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ISO 11357-3 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 11357-3:1999), which has been technically revised. It also incorporates the Amendment, ISO 11357-3:1999/Amd 1:2005. The most important changes are the following:

— a specification of the preferred scanning rates of 10 K/min or 20 K/min has been given;

— Figure 1 has been updated to better reflect the profile of a real melting peak and y-axis directions specified in ISO 11357-1.

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*

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Plastics — Differential scanning calorimetry (DSC) —

Part 3: Determination of temperature and enthalpy of melting and crystallization

WARNING — The use of this part of ISO 11357 may involve hazardous materials, operations or equipment. This part of ISO 11357 does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this part of ISO 11357 to establish appropriate health and safety practices and to determine the applicability of regulatory limitations prior to use.

1 Scope

This part of ISO 11357 specifies a method for the determination of the temperatures and enthalpies of melting and crystallization of crystalline or partially crystalline plastics.

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 472, *Plastics — Vocabulary*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 472 and ISO 11357-1 and the following apply.

3.1
melting
transition stage between a fully crystalline or partially crystalline solid state and an amorphous liquid of variable viscosity

NOTE The transition, also referred to as “fusion”, is characterised by an endothermic peak in the DSC curve.

3.2
crystallization
transition stage between an amorphous liquid state and a fully crystalline or partially crystalline solid state

NOTE The transition is characterised by an exothermic peak in the DSC curve. An exception to this definition is the case of liquid crystals, where the term “amorphous liquid” should be replaced by “ordered liquid”.

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