



NSAI
Standards

Irish Standard
I.S. EN ISO 11357-6:2013

Plastics - Differential scanning calorimetry (DSC) - Part 6: Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT) (ISO 11357-6:2008)

I.S. EN ISO 11357-6:2013

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English Version

**Plastics - Differential scanning calorimetry (DSC) - Part 6:
Determination of oxidation induction time (isothermal OIT) and
oxidation induction temperature (dynamic OIT) (ISO 11357-
6:2008)**

Plastiques - Analyse calorimétrique différentielle (DSC) -
Partie 6: Détermination du temps d'induction à l'oxydation
(OIT isotherme) et de la température d'induction à
l'oxydation (OIT dynamique) (ISO 11357-6:2008)

Kunststoffe - Dynamische Differenz-Thermoanalyse (DSC)
- Teil 6: Oxidations-Induktionszeit (isothermische OIT) oder
- Temperatur (isodynamische OIT) (ISO 11357-6:2008)

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Foreword

The text of ISO 11357-6:2008 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 11357-6:2013 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of an identical text or by endorsement, at the latest by July 2013, and conflicting national standards shall be withdrawn at the latest by July 2013.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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Endorsement notice

The text of ISO 11357-6:2008 has been approved by CEN as a EN ISO 11357-6:2013 without any modification.

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**INTERNATIONAL
STANDARD**

**ISO
11357-6**

Second edition
2008-06-15

Corrected version
2008-11-15

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

Part 6:

**Determination of oxidation induction time
(isothermal OIT) and oxidation induction
temperature (dynamic OIT)**

Plastiques — Analyse calorimétrique différentielle (DSC) —

*Partie 6: Détermination du temps d'induction à l'oxydation
(OIT isotherme) et de la température d'induction à l'oxydation
(OIT dynamique)*



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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 11357-6 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 11357-6:2002), which has been technically revised. The most important changes in the revision are the following:

- a dynamic OIT method, i.e. the measurement of oxidation induction temperature, has been included;
- it is now possible to perform measurements in air as well as in oxygen;
- the range of specimen sizes has been narrowed and specimen size has been redefined in terms of thickness instead of mass;
- the possibility of making single-point routine measurements with reduced accuracy has been included.

It also cancels and replaces ISO/TR 10837:1991.

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*

In this corrected version, the sixth paragraph in the Foreword has been modified to reflect the fact that the second edition replaces not only the first edition but also ISO/TR 10837:1991, *Determination of the thermal stability of polyethylene (PE) for use in gas pipes and fittings*.

Introduction

It should be noted that the measurement of oxidation induction time or temperature described in this part of ISO 11357 provides a tool to assess the conformity of the material tested to a given formulation of plastics compounds, but it is not intended to provide the concentration of antioxidant. Different antioxidants may have different oxidation induction times or temperatures. Due to interaction of the antioxidant with other substances in the formulation, different oxidation induction times or temperatures may result even with products having the same type and concentration of antioxidant.

I.S. EN ISO 11357-6:2013

Plastics — Differential scanning calorimetry (DSC) —

Part 6:

Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT)

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

This part of ISO 11357 specifies methods for the determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT) of polymeric materials by means of differential scanning calorimetry (DSC). It is applicable to polyolefin resins that are in a fully stabilized or compounded form, either as raw materials or finished products. It may be applicable to other 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 293, *Plastics — Compression moulding of test specimens of thermoplastic materials*

ISO 294-3, *Plastics — Injection moulding of test specimens of thermoplastic materials — Part 3: Small plates*

ISO 472, *Plastics — Vocabulary*

ISO 1872-2, *Plastics — Polyethylene (PE) moulding and extrusion materials — Part 2: Preparation of test specimens and determination of properties*

ISO 1873-2, *Plastics — Polypropylene (PP) moulding and extrusion materials — Part 2: Preparation of test specimens and determination of properties*

ISO 8986-2, *Plastics — Polybutene (PB) moulding and extrusion materials — Part 2: Preparation of test specimens and determination of properties*

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

1) To be published. (Revision of ISO 11357-1:1997)

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