
**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*



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Foreword

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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 11357-3 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”.