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

**Part 4:
Determination of specific heat
capacity**

*Plastiques — Analyse calorimétrique différentielle (DSC) —
Partie 4: Détermination de la capacité thermique massique*



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Contents

	Page
Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	2
4.1 General	2
4.2 Continuous-scanning method	3
4.3 Stepwise-scanning method	4
5 Apparatus	4
6 Test specimen	4
7 Test conditions and specimen conditioning	4
8 Procedure	4
8.1 Selection of crucibles	4
8.2 Setting up the apparatus and adjustment of isothermal baselines	5
8.3 Measurement of specific heat capacity of calibration material	6
8.4 Specimen run	7
9 Determination of specific heat capacities	7
9.1 Calculation of specific heat capacities	7
9.2 Numerical rounding of the results	7
10 Precision and bias	8
11 Test report	8
Annex A (informative) An approximate expression of the specific heat capacity of pure α-alumina [3] to [5]	9
Bibliography	12

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. www.iso.org/directives

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. www.iso.org/patents

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 61, *Plastics*, Subcommittee SC 5, *Physical and chemical properties*.

This second edition cancels and replaces the first edition (ISO 11357-4:2005). This minor revision contains the following changes:

- a) all normative reference were changed into undated ones;
- b) the term “pan” was replaced by “crucible” within the whole text;
- c) the endothermic direction, a, was added in all figures and key.

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 and glass transition step height*
- *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*

Plastics — Differential scanning calorimetry (DSC) —

Part 4:

Determination of specific heat capacity

1 Scope

This part of ISO 11357 specifies methods for determining the specific heat capacity of plastics by differential scanning calorimetry.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for the application of this document. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 472, *Plastics — Vocabulary*

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

ISO 80000-1, *Quantities and units — Part 1: General*

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

calibration material

material of known specific heat capacity

Note 1 to entry: Usually, α -alumina (such as synthetic sapphire) of 99,9 % or higher purity is used as the calibration material.

3.2

specific heat capacity (at constant pressure)

c_p

quantity of heat necessary to raise the temperature of unit mass of material by 1 K at constant pressure

Note 1 to entry: It is given by the following formula:

$$c_p = m^{-1}C_p = m^{-1}(dQ/dT)_p \quad (1)$$

where