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Plastics — Differential scanning calorimetry (DSC) —

Part 5: Determination of characteristic reaction-curve temperatures and times, enthalpy of reaction and degree of conversion

Plastiques — Analyse calorimétrique différentielle (DSC) —

Partie 5: Détermination des températures et temps caractéristiques de la courbe de réaction, de l'enthalpie de réaction et du degré de transformation

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Foreword

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This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 5, *Physical-chemical properties*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 249, *Plastics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 11357-5:2013), which has been technically revised.

The main changes are as follows:

— the scope has been limited to conventional DSC;

— in case of reactions overlapping with decomposition, the user is referred to fast DSC.

A list of all parts in the ISO 11357 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Plastics — Differential scanning calorimetry (DSC) —

Part 5: Determination of characteristic reaction-curve temperatures and times, enthalpy of reaction and degree of conversion

WARNING — Caution should be observed when working with materials which can give a runaway reaction or exhibit other dangerous behaviour.

1 Scope

This document specifies a method for the determination of reaction temperatures and times, enthalpies of reaction, and degrees of conversion using conventional differential scanning calorimetry (DSC) as specified in ISO 11357-1.

The method applies to monomers, prepolymers, and polymers in the solid or liquid state. The material can contain fillers and/or initiators in the solid or liquid state.

This document is not applicable to fast DSC as specified in ISO 23976.[1]

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 11357-1, *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 11357-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
polymerization
process of converting a monomer or a mixture of monomers into a polymer

3.2
crosslinking
process of multiple intermolecular covalent or ionic bonding between polymer chains

3.3
degree of conversion
quantity of reacted product obtained during a reaction compared with the maximum possible quantity of the product

Note 1 to entry: The degree of conversion will depend on both time and temperature.

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