



SLOVENSKI STANDARD
kSIST FprEN ISO 11357-1:2016
01-junij-2016

Polimerni materiali - Diferenčna dinamična kalorimetrija (DSC) - 1. del: Splošna načela (ISO/FDIS 11357-1:2016)

Plastics - Differential scanning calorimetry (DSC) - Part 1: General principles (ISO/FDIS 11357-1:2016)

Kunststoffe - Dynamische Differenz-Thermoanalyse (DSC) - Teil 1: Allgemeine Grundlagen (ISO/FDIS 11357-1:2016)

Plastiques - Analyse calorimétrique différentielle (DSC) - Partie 1: Principes généraux (ISO/FDIS 11357-1:2016)

Ta slovenski standard je istoveten z: FprEN ISO 11357-1

ICS:

17.200.10	Toplota. Kalorimetrija	Heat. Calorimetry
83.080.01	Polimerni materiali na splošno	Plastics in general

kSIST FprEN ISO 11357-1:2016 **en,fr,de**

FINAL
DRAFT

INTERNATIONAL
STANDARD

ISO/FDIS
11357-1

ISO/TC 61/SC 5

Secretariat: DIN

Voting begins on:
2016-05-12

Voting terminates on:
2016-08-04

Plastics — Differential scanning calorimetry (DSC) —

Part 1: General principles

*Plastiques — Analyse calorimétrique différentielle (DSC) —
Partie 1: Principes généraux*

Please see the administrative notes on page ii

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.



Reference number
ISO/FDIS 11357-1:2016(E)

© ISO 2016

ISO/CEN PARALLEL PROCESSING

This final draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO-lead** mode of collaboration as defined in the Vienna Agreement. The final draft was established on the basis of comments received during a parallel enquiry on the draft.

This final draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel two-month approval vote in ISO and formal vote in CEN.

Positive votes shall not be accompanied by comments.

Negative votes shall be accompanied by the relevant technical reasons.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Basic principles	8
4.1 General.....	8
4.2 Heat-flux DSC.....	8
4.3 Power-compensation DSC.....	9
5 Apparatus and materials	10
6 Specimen	11
7 Test conditions and specimen conditioning	12
7.1 Test conditions.....	12
7.2 Conditioning of specimens.....	12
8 Calibration	12
8.1 General.....	12
8.2 Calibration materials.....	13
8.3 Temperature calibration.....	13
8.3.1 General.....	13
8.3.2 Procedure.....	13
8.3.3 Accuracy of calibration.....	14
8.4 Heat calibration.....	14
8.4.1 General.....	14
8.4.2 Procedure.....	15
8.4.3 Accuracy of calibration.....	15
8.5 Heat flow rate calibration.....	16
8.5.1 General.....	16
8.5.2 Procedure.....	16
9 Procedure	18
9.1 Setting up the apparatus.....	18
9.1.1 Switching on.....	18
9.1.2 Purge gas.....	18
9.1.3 Experimental conditions.....	18
9.1.4 Baseline determination.....	18
9.2 Loading the specimen into the crucible.....	18
9.2.1 General.....	18
9.2.2 Selection of crucibles.....	19
9.2.3 Weighing the specimen crucible.....	19
9.2.4 Loading the specimen.....	19
9.2.5 Determination of the mass of the specimen.....	19
9.3 Insertion of crucibles into the instrument.....	19
9.4 Performing measurements.....	19
9.4.1 General.....	19
9.4.2 Scanning mode.....	19
9.4.3 Isothermal mode.....	20
9.5 Post-run checks.....	21
9.5.1 Check for loss in mass.....	21
9.5.2 Inspection of specimens.....	21
9.5.3 Checking of crucibles and crucible holder.....	21
10 Test report	21

ISO/FDIS 11357-1:2016(E)

Annex A (normative) Extended, high-precision, temperature calibration ^[12]	23
Annex B (normative) Extended, high-precision, heat calibration	25
Annex C (informative) Recommended calibration materials	27
Annex D (informative) Interaction of calibration materials with different crucible materials	30
Annex E (informative) General recommendations	32
Bibliography	34

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 (see 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 (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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-chemical properties*

This third edition cancels and replaces the second edition (ISO 11357-1:2009), [3.7.2](#) of which has been technically revised.

ISO 11357 *Plastics* — *Differential scanning calorimetry (DSC)* consists of the following parts.

- *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 crystallisation*
- *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*

ISO/FDIS 11357-1:2016(E)**Introduction**

This International Standard describes thermoanalytical DSC test methods which can be used for quality assurance purposes, for routine checks of raw materials and finished products or for the determination of comparable data needed for data sheets or databases. The procedures given in this International Standard apply as long as product standards or standards describing special atmospheres for conditioning of specimens do not specify otherwise.