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BS EN ISO 11358-1:2014



BSI Standards Publication

Plastics — Thermogravimetry (TG) of polymers

Part 1: General principles

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This British Standard is the UK implementation of EN ISO 11358-1:2014. It supersedes BS EN ISO 11358:1997 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/21, Testing of plastics.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

Plastics - Thermogravimetry (TG) of polymers - Part 1: General principles (ISO 11358-1:2014)

Plastiques - Thermogravimétrie (TG) des polymères - Partie
1: Principes généraux (ISO 11358-1:2014)

Kunststoffe - Thermogravimetrie (TG) von Polymeren - Teil
1: Allgemeine Grundsätze (ISO 11358-1:2014)

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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN ISO 11358-1:2014) has been prepared by Technical Committee ISO/TC 61 "Plastics" in collaboration with 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of an identical text or by endorsement, at the latest by January 2015, and conflicting national standards shall be withdrawn at the latest by January 2015.

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.

This document supersedes EN ISO 11358:1997.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 11358-1:2014 has been approved by CEN as EN ISO 11358-1:2014 without any modification.

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Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	2
5 Apparatus	2
6 Test specimen preparation	2
6.1 General.....	2
6.2 Test specimens from finished products.....	3
6.3 Test specimen conditioning.....	3
6.4 Test specimen mass.....	3
7 Calibration	3
7.1 Mass calibration.....	3
7.2 Temperature calibration.....	3
8 Procedure	4
8.1 General.....	4
8.2 Temperature scanning mode.....	4
8.3 Isothermal mode.....	5
9 Expression of results	5
9.1 Graphical representation.....	5
9.2 Determination of increase in mass.....	5
9.3 Determination of loss in mass.....	6
10 Test report	8

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).

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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 first edition of ISO 11358-1 cancels and replaces ISO 11358:1997, which has been technically revised.

The main changes are:

- a) addition of ISO 472 to the Normative references clause and removal of definitions specified therein;
- b) revision of apparatus specifications.

ISO 11358 consists of the following parts, under the general title *Plastics — Thermogravimetry (TG) of polymers*:

- *Part 1: General principles*
- *Part 2: Determination of activation energy*
- *Part 3: Determination of the activation energy using the Ozawa-Friedman plot and analysis of the reaction kinetics*

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Plastics — Thermogravimetry (TG) of polymers —

Part 1: General principles

1 Scope

This part of ISO 11358 specifies general conditions for the analysis of polymers using thermogravimetric techniques. It is applicable to liquids or solids. Solid materials may be in the form of pellets, granules or powders. Fabricated shapes reduced to appropriate specimen size may also be analysed by this method.

Thermogravimetry can be used to determine the temperature(s) and rate(s) of decomposition of polymers, and to measure at the same time the amounts of volatile matter, additives and/or fillers they contain.

The thermogravimetric measurements may be carried out in dynamic mode (mass change versus temperature or time under programmed conditions) or isothermal mode (mass change versus time at constant temperature).

Thermogravimetric measurements may also be carried out using different testing atmospheres, e.g. to separate decomposition in an inert atmosphere from oxidative degradation.

2 Normative references

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

ISO 291, *Plastics — Standard atmospheres for conditioning and testing*

ISO 472, *Plastics — Vocabulary*

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 472 and the following apply.

3.1

dynamic mass-change determination

technique for recording the variation of the mass of a test specimen with temperature T which is changing at a programmed rate

3.2

isothermal mass-change determination

technique for recording the variation of the mass of a test specimen with time t at constant temperature T

3.3

Curie temperature

temperature at which a ferromagnetic material passes from the ferromagnetic state to the paramagnetic state or vice versa