ICS 83.080.01 SLOVENSKÁ TECHNICKÁ NORMA August 2022

STN	**Plasty Termogravimetria (TG) polymérov Časť 1: Všeobecné princípy (ISO 11358-1: 2022)**	**STN EN ISO 11358-1 64 0747**

Plastics - Thermogravimetry (TG) of polymers - Part 1: General principles (ISO 11358-1:2022)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 07/22

Obsahuje: EN ISO 11358-1:2022, ISO 11358-1:2022

Oznámením tejto normy sa ruší
STN EN ISO 11358-1 (64 0747) z apríla 2015

135174

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 11358-1

April 2022

ICS 83.080.01

Supersedes EN ISO 11358-1:2014

English Version

Plastics - Thermogravimetry (TG) of polymers - Part 1: General principles (ISO 11358-1:2022)

Plastiques - Thermogravimétrie (TG) des polymères - Partie 1: Principes généraux (ISO 11358-1:2022)

Kunststoffe - Thermogravimetrie (TG) von Polymeren - Teil 1: Allgemeine Grundsätze (ISO 11358-1:2022)

This European Standard was approved by CEN on 6 January 2022.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN ISO 11358-1:2022 E

Contents

Page

European foreword..... 3

European foreword

This document (EN ISO 11358-1:2022) 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 October 2022, and conflicting national standards shall be withdrawn at the latest by October 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 11358-1:2014.

Any feedback and questions on this document should be directed to the users’ national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 11358-1:2022 has been approved by CEN as EN ISO 11358-1:2022 without any modification.

INTERNATIONAL STANDARD

ISO 11358-1

Second edition
2022-03

Plastics — Thermogravimetry (TG) of polymers —

Part 1: General principles

Plastiques — Thermogravimétrie (TG) des polymères —

Partie 1: Principes généraux

Reference number
ISO 11358-1:2022(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

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 ... **3**
6.1 General ... 3
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 ... **5**
8.1 General ... 5
8.2 Temperature scanning mode ... 5
8.3 Isothermal mode ... 6
8.4 Buoyancy correction ... 6

9 Expression of results ... **6**
9.1 Graphical representation ... 6
9.2 Determination of increase in mass ... 6
9.3 Determination of loss in mass ... 7
9.3.1 Single-stage decrease in mass ... 7
9.3.2 Multi-stage decrease in mass ... 8
9.3.3 Determination of residue ... 11

10 Test report ... **11**

Annex A (informative) **Calibration materials for Curie-point temperature calibration** ... **12**

Bibliography ... **13**

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 of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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 second edition cancels and replaces the first edition (ISO 11358-1:2014), which has been technically revised. The main changes compared to the previous edition are as follows:

— a normative reference to ISO 472 has been added;

— definitions specified in ISO 472 have been removed;

— measurement under reactive atmosphere has been added;

— the apparatus specifications have been changed;

— the calibration procedures have been revised;

— buoyancy correction has been added;

— use of a differential thermogravimetric curve has been added.

A list of all parts in the ISO 11358 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.

INTERNATIONAL STANDARD **ISO 11358-1:2022(E)**

Plastics — Thermogravimetry (TG) of polymers —

Part 1: General principles

1 Scope

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

This document establishes methods for the investigation of physical effects and chemical reactions that are associated with changes of mass.

This document 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.

This document is applicable to measurements in dynamic mode (mass change versus temperature or time under programmed temperature conditions) or isothermal mode (mass change versus time at constant temperature).

This document is applicable to measurements at different testing atmospheres, such as separation of decomposition in an inert atmosphere from oxidative degradation.

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

ISO 472, *Plastics — Vocabulary*