BS EN ISO 1133-1:2022

BSI Standards Publication

Plastics — Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics

Part 1: Standard method

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National foreword

This British Standard is the UK implementation of EN ISO 1133-1:2022. It is identical to ISO 1133-1:2022. It supersedes BS EN ISO 1133-1:2011, which is withdrawn.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 committee manager.

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Plastiques - Détermination de l'indice de fluidité à chaud des thermoplastiques, en masse (MFR) et en volume (MVR) - Partie 1: Méthode normale

Kunststoffe - Bestimmung der Schmelze-Massefließrate (MFR) und der Schmelze-Volumenfließrate (MVR) von Thermoplasten - Teil 1: Allgemeines Prüfverfahren

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Contents

Page

European foreword **3**

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European foreword

This document (EN ISO 1133-1:2022) 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of an identical text or by endorsement, at the latest by January 2023, and conflicting national standards shall be withdrawn at the latest by January 2023.

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.

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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.

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Part 1: Standard method

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Partie 1: Méthode normale

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Document Sharing Hub

Full document details: BS EN ISO 1133-1:2022

Contents

Page

Foreword ... **v**
Introduction ... **vi**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Principle ... **2**
5 Apparatus ... **3**
5.1 Extrusion plastometer ... 3
5.2 Accessory equipment ... 7
5.2.1 General ... 7
5.2.2 Equipment for procedure A (see Clause 8) ... 8
5.2.3 Equipment for procedure B (see Clause 9): Piston displacement transducer/timer ... 8
6 Test sample ... **8**
6.1 Sample form ... 8
6.2 Conditioning ... 9
7 Temperature verification, cleaning and maintenance of the apparatus ... **9**
7.1 Verification of the temperature control system ... 9
7.1.1 Verification procedure ... 9
7.1.2 Material used during temperature verification ... 10
7.2 Cleaning the apparatus ... 10
7.3 Vertical alignment of the instrument ... 10
8 Procedure A: mass-measurement method ... **10**
8.1 Selection of temperature and load ... 10
8.2 Cleaning ... 11
8.3 Selection of sample mass and charging the cylinder ... 11
8.4 Measurements ... 12
8.5 Expression of results ... 13
8.5.1 General ... 13
8.5.2 Expression of results: standard die ... 13
8.5.3 Expression of results: half size die ... 13
9 Procedure B: displacement-measurement method ... **14**
9.1 Selection of temperature and load ... 14
9.2 Cleaning ... 14
9.3 Minimum piston displacement distance ... 14
9.4 Selection of sample mass and charging the cylinder ... 14
9.5 Measurements ... 14
9.6 Expression of results ... 15
9.6.1 General ... 15
9.6.2 Expression of results: standard die ... 15
9.6.3 Expression of results: half size die ... 16
10 Flow rate ratio ... **16**
11 Precision ... **17**
12 Test report ... **17**
Annex A (normative) **Test conditions for MFR and MVR determinations** ... **19**
Annex B (informative) **Conditions specified in International Standards for the determination of the melt flow rate of thermoplastic materials** ... **21**

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Documents
Document Sharing Hub
Full document details: BS EN ISO 1133-1:2022

Annex C (informative) **Device and procedure for preforming a compacted charge of material by compression** **22**

Annex D (informative) **Precision data for polypropylene obtained from an intercomparison of MFR and MVR testing** **25**

Bibliography **26**

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Document Sharing Hub

Full document details: BS EN ISO 1133-1:2022

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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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 1133-1:2011), of which it constitutes a minor revision. The changes are as follows:

— references to withdrawn standards in Annex B (informative), Annex D (informative) and Bibliography have been updated;

— editorial corrections.

A list of all parts in the ISO 1133 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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Introduction

For stable materials that are not rheologically sensitive to the time-temperature history experienced during melt flow rate testing, this document is recommended.

For materials whose rheological behaviour is sensitive to the test's time-temperature history, e.g. materials which degrade during the test, ISO 1133-2 is recommended. Also, ISO 1133-2 is considered to be particularly relevant for moisture-sensitive plastics.

NOTE At the time of publication, there is no evidence to suggest that the use of ISO 1133-2 for stable materials results in better precision in comparison with the use of this document.

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Plastics — Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics —

Part 1: Standard method

WARNING — Persons using this document should be familiar with normal laboratory practice, if applicable. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any regulatory requirements.

1 Scope

This document specifies two procedures for the determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastic materials under specified conditions of temperature and load. Procedure A is a mass-measurement method. Procedure B is a displacement-measurement method. Normally, the test conditions for measurement of melt flow rate are specified in the material standard with a reference to this document. The test conditions normally used for thermoplastics are listed in Annex A.

The MVR is particularly useful when comparing materials of different filler content and when comparing filled with unfilled thermoplastics. The MFR can be determined from MVR measurements, or vice versa, provided the melt density at the test temperature is known.

This document is also possibly applicable to thermoplastics for which the rheological behaviour is affected during the measurement by phenomena such as hydrolysis (chain scission), condensation and cross-linking, but only if the effect is limited in extent and only if the repeatability and reproducibility are within an acceptable range. For materials which show significantly affected rheological behaviour during testing, this document is not appropriate. In such cases, ISO 1133-2 applies.

NOTE The rates of shear in these methods are much smaller than those used under normal conditions of processing, and therefore it is possible that data obtained by these methods for various thermoplastics will not always correlate with their behaviour during processing. Both methods are used primarily in quality control.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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/

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