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

*Plastiques — Détermination de l'indice de fluidité à chaud
des thermoplastiques, en masse (MFR) et en volume (MVR)*

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Reference number
ISO 1133:1997(E)

ISO 1133:1997(E)**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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 1133 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 5, *Physical-chemical properties*.

This third edition cancels and replaces the second edition (ISO 1133:1991), which has been technically revised to include the flow rate ratio (FRR). In addition the text has been revised to improve clarity.

Annex A forms an integral part of this International Standard. Annex B is for information only.

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

1 Scope

1.1 This International Standard specifies a method 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. Normally, the test conditions for measurement of melt flow rate are specified in the material standard with a reference to this International Standard. The test conditions normally used for thermoplastics are listed in annexes A and B. The melt volume-flow rate will normally be found useful when comparing filled and unfilled thermoplastics. The melt flow rate can now be determined by automatic measurement provided the melt density at the test temperature is known.

This method is not applicable to thermoplastics for which the rheological behaviour is affected by phenomena such as hydrolysis, condensation or crosslinking.

1.2 The melt mass-flow rate and melt volume-flow rate of thermoplastics are dependent on the rate of shear. The rates of shear in this test are much smaller than those used under normal conditions of fabrication, and therefore data obtained by this method for various thermoplastics may not always correlate with their behaviour in actual use. Both methods are useful in quality control.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 468:1982, *Surface roughness — Parameters, their values and general rules for specifying requirement.*

ISO 1622-1:1994, *Plastics — Polystyrene (PS) moulding and extrusion materials — Part 1: Designation system and basis for specifications.*

ISO 1872-1:1993, *Plastics — Polyethylene (PE) moulding and extrusion materials — Part 1: Designation system and basis for specifications.*

ISO 1873-1:1995, *Plastics — Polypropylene (PP) moulding and extrusion materials — Part 1: Designation system and basis for specifications.*

ISO 2580-1:1990, *Plastics — Acrylonitrile/butadiene/styrene (ABS) moulding and extrusion materials — Part 1: Designation.*