

This is a preview of "ISO 11443:2021". Click here to purchase the full version from the ANSI store.

Fourth edition
2021-02

Plastics — Determination of the fluidity of plastics using capillary and slit-die rheometers

Plastiques — Détermination de la fluidité au moyen de rhéomètres équipés d'une filière capillaire ou plate



Reference number
ISO 11443:2021(E)

This is a preview of "ISO 11443:2021". Click here to purchase the full version from the ANSI store.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, 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
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

This is a preview of "ISO 11443:2021". Click here to purchase the full version from the ANSI store.

Contents

	Page
Foreword	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 General principles	4
5 Apparatus	4
5.1 Test device	4
5.1.1 General	4
5.1.2 Rheometer barrel	5
5.1.3 Capillary dies (method A)	5
5.1.4 Slit dies (method B)	9
5.1.5 Piston	9
5.2 Temperature control	9
5.3 Measurement of temperature and calibration	10
5.3.1 Test temperature	10
5.3.2 Measurement of test temperature	10
5.3.3 Temperature calibration	10
5.4 Measurement of pressure and calibration	10
5.4.1 Test pressure	10
5.4.2 Pressure drop along the length of the slit die	11
5.4.3 Calibration	11
5.5 Measurement of the volume flow rate of the sample	11
6 Sampling	11
7 Procedure	11
7.1 Cleaning the test device	11
7.2 Selection of test temperatures	12
7.3 Preparation of samples	13
7.4 Preheating	13
7.5 Determination of the maximum permissible test duration	13
7.6 Determination of test pressure at constant volume flow rate: Method 2	14
7.7 Determination of volume flow rate at constant test pressure: Method 1	14
7.8 Waiting periods during measurement	14
7.9 Measurement of extrudate swelling	14
7.9.1 General	14
7.9.2 Measurement at room temperature	15
7.9.3 Measurement at the test temperature	15
8 Expression of results	15
8.1 Volume flow rate	15
8.2 Apparent shear rate	16
8.2.1 General	16
8.2.2 Method A: Capillary dies	16
8.2.3 Method B: Slit dies	16
8.3 Apparent shear stress	17
8.3.1 General	17
8.3.2 Method A: Capillary dies	17
8.3.3 Method B: Slit dies	17
8.4 True shear stress	17
8.4.1 General	17
8.4.2 Bagley correction for capillary dies (method A)	18
8.4.3 Bagley correction for slit dies (method B)	21
8.4.4 Direct determination using slit dies (method B)	22
8.5 True shear rate	22

This is a preview of "ISO 11443:2021". Click here to purchase the full version from the ANSI store.

8.5.1	General.....	22
8.5.2	Method A: Capillary dies.....	23
8.5.3	Method B: Slit dies.....	23
8.6	Viscosity.....	23
8.7	Determination of extrudate swelling.....	23
8.7.1	Measurement at room temperature.....	23
8.7.2	Measurement at the test temperature.....	24
9	Precision.....	24
10	Test report.....	25
10.1	General.....	25
10.2	Test conditions.....	25
10.3	Flow characteristics.....	26
10.3.1	General.....	26
10.3.2	Graphical representation.....	26
10.3.3	Individual values.....	27
10.4	Visual examination.....	27
Annex A (informative) Method of correcting for the influence of H/B on the apparent shear rate		28
Annex B (informative) Measurement errors		30
Annex C (informative) Uncertainties in the determination of shear viscosity by capillary extrusion rheometry testing		31
Bibliography		36

This is a preview of "ISO 11443:2021". Click here to purchase the full version from the ANSI store.

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*.

This fourth edition cancels and replaces the third edition (ISO 11443:2014), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the use of a zero length die has been added.

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.