
Plastics — Test specimens

Plastiques — Éprouvettes



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2008

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	iv
Introduction	v
1 Scope	1
2 Normative references	2
3 Terms and definitions.....	2
4 Preparation of test specimens	3
4.1 General.....	3
4.2 Injection moulding of test specimens	3
4.3 Compression moulding of test specimens	4
4.4 Preparation of test specimens by machining	4
5 Types of test specimen and their dimensions.....	4
5.1 Types of test specimen	4
5.2 Tensile test specimens with parallel-sided central section	5
5.2.1 Multipurpose test specimens (type A1 and type A2)	5
5.2.2 Reduced-scale test specimens	6
5.3 Bar test specimens (type B)	7
5.4 Small tensile specimens (type C)	8
5.5 Plate specimens (type D)	9
6 Report on preparation of test specimens	9
Annex A (informative) Recommended applications for multipurpose test specimens or parts thereof	11
Annex B (normative) Designation system for test specimens	12
Bibliography	14

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 20753 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 2, *Mechanical properties*.

Introduction

Up to now, information on plastics test specimens has been specified in several different locations: in test method standards (e.g. ISO 527-2), in ISO 3167 (for multipurpose test specimens) and in ISO 294-1, ISO 294-2, ISO 294-3 and ISO 294-5 (for moulding conditions). The aim of this International Standard is to give the designations and dimensions of test specimens used for the acquisition of comparable data, and also other frequently used specimens, in one document for ease of reference. This will be followed by a revision of the ISO 294 series, which will define only the injection-moulding conditions and will refer to this International Standard for the dimensions of the specimens. Other International Standards that have hitherto used different designations for the same specimen type will also be revised to bring the designations into line with those in this International Standard.

This document is a preview generated by EVS

Plastics — Test specimens

1 Scope

1.1 This International Standard specifies dimensional requirements relating to test specimens prepared from plastics materials intended for processing by moulding, as well as to test specimens prepared by machining from sheets or shaped articles. It gives, in one document, the designations and dimensions of test specimens used for the acquisition of comparable data and also other frequently used specimens.

The following types of test specimen are specified:

- a) Type A1 and type A2 specimens (1 = injection moulded, 2 = machined from a sheet or shaped article)

These are tensile test specimens from which, with simple machining, specimens for a variety of other tests can be taken (see Annex A).

The type A1 specimen corresponds to the ISO 3167:2002 type A multipurpose test specimen. The principal advantage of a multipurpose test specimen is that it allows all the test methods mentioned in Annex A to be carried out by all test laboratories on the basis of comparable mouldings. Consequently, the properties measured are coherent as all are measured using similar specimens prepared in the same way. In other words, it can be expected that test results for a given set of specimens will not vary appreciably due to unintentionally different moulding conditions. On the other hand, if desired, the influence of moulding conditions and/or different states of the specimens can be assessed without difficulty for all of the properties measured.

Also described are reduced-scale test specimens designated type A_{xy}, where *x* is the number indicating the method of specimen preparation (1 = injection moulded, 2 = machined from a sheet or shaped article) and *y* is a number indicating the scale factor (1:y). These can be used e.g. when full-sized test specimens are not convenient or when sample material exists in small quantities only.

- b) Type B specimens

These are bar specimens which can be directly moulded or can be machined from the central section of type A1 specimens or from sheets or shaped articles.

- c) Type C specimens

These are small tensile test specimens which can be directly moulded or machined, e.g. from plates (Type D specimens), from the central section of type A1 specimens or from sheets or shaped articles.

- d) Type D1 and type D2 specimens

These are square plates of thickness 1 mm and 2 mm, respectively.

If a particular type of test specimen is not mentioned in this International Standard, this does not mean that there is any intention to exclude the use of the specimen. Additional specimen types may be added in future if they are commonly used.

2 Normative references

The following referenced documents are indispensable for the application 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 293, *Plastics — Compression moulding of test specimens of thermoplastic materials*

ISO 294-1, *Plastics — Injection moulding of test specimens of thermoplastic materials — Part 1: General principles, and moulding of multipurpose and bar test specimens*

ISO 295, *Plastics — Compression moulding of test specimens of thermosetting materials*

ISO 2818, *Plastics — Preparation of test specimens by machining*

ISO 10350-1, *Plastics — Acquisition and presentation of comparable single-point data — Part 1: Moulding materials*

ISO 10350-2, *Plastics — Acquisition and presentation of comparable single-point data — Part 2: Long-fibre-reinforced plastics*

ISO 10724-1, *Plastics — Injection moulding of test specimens of thermosetting powder moulding compounds (PMCs) — Part 1: General principles and moulding of multipurpose test specimens*

ISO 11403-1, *Plastics — Acquisition and presentation of comparable multipoint data — Part 1: Mechanical properties*

ISO 11403-2, *Plastics — Acquisition and presentation of comparable multipoint data — Part 2: Thermal and processing properties*

ISO 11403-3, *Plastics — Acquisition and presentation of comparable multipoint data — Part 3: Environmental influences on properties*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

multipurpose test specimen

type A1 or type A2 tensile test specimen as shown in Figure 1 and specified in Table 1 and Table 2, respectively

NOTE 1 Although ISO 3167:2002 refers to both the type A and type B specimens, defined in that International Standard, as multipurpose test specimens, for the purposes of this International Standard it is the type A1 specimen which is the preferred specimen for the acquisition of comparable data and hence the true multipurpose test specimen.

NOTE 2 The type A1 specimen can be made suitable for a variety of tests by simple cutting, because the length l_1 of the narrow parallel-sided section is $80 \text{ mm} \pm 2 \text{ mm}$.

3.2

l_1

length of the narrow parallel-sided section (central section) of the type A and type CP tensile test specimens, the length of the type B bar specimen and the length of the side of the type D plate specimen

3.3

l_2

distance between the broad parallel-sided sections (tabs) of the type A and type CP tensile test specimens