

This is a preview of "BS EN ISO 175:2010". Click [here](#) to purchase the full version from the ANSI store.

BS EN ISO 175:2010



BSI Standards Publication

Plastics — Methods of test for the determination of the effects of immersion in liquid chemicals

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

raising standards worldwide™



This is a preview of "BS EN ISO 175:2010". [Click here to purchase the full version from the ANSI store.](#)

This British Standard is the UK implementation of EN ISO 175:2010. It supersedes BS EN ISO 175:2001 which is withdrawn.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 secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© BSI 2010

ISBN 978 0 580 69492 9

ICS 83.080.01

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2010.

Amendments issued since publication

Date	Text affected
------	---------------

This is a preview of "BS EN ISO 175:2010". [Click here to purchase the full version from the ANSI store.](#)

EUROPÄISCHE NORM

October 2010

ICS 83.080.01

Supersedes EN ISO 175:2000

English Version

Plastics - Methods of test for the determination of the effects of immersion in liquid chemicals (ISO 175:2010)

Plastiques - Méthodes d'essai pour la détermination des effets de l'immersion dans des produits chimiques liquides (ISO 175:2010)

Kunststoffe - Prüfverfahren zur Bestimmung des Verhaltens gegen flüssige Chemikalien (ISO 175:2010)

This European Standard was approved by CEN on 14 October 2010.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

This is a preview of "BS EN ISO 175:2010". [Click here to purchase the full version from the ANSI store.](#)

Foreword

This document (EN ISO 175:2010) 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 April 2011, and conflicting national standards shall be withdrawn at the latest by April 2011.

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

This document supersedes EN ISO 175:2000.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 175:2010 has been approved by CEN as a EN ISO 175:2010 without any modification.

This is a preview of "BS EN ISO 175:2010". Click here to purchase the full version from the ANSI store.

Contents

Page

Foreword	iv
Introduction.....	v
1 Scope	1
2 Normative references	1
3 Principle	2
4 General requirements and procedure	2
4.1 Test liquids.....	2
4.2 Test conditions	2
4.3 Immersion time	3
4.4 Test specimens.....	3
4.5 Conditioning	4
4.6 Procedure	4
4.7 Expression of results	5
5 Determination of changes in mass, dimensions and appearance	6
5.1 General	6
5.2 Apparatus	6
5.3 Test specimens.....	7
5.4 Determination of changes in mass.....	8
5.5 Determination of changes in dimensions.....	10
5.6 Determination of changes in colour or other appearance attributes.....	12
6 Determination of changes in other physical properties	13
6.1 General	13
6.2 Apparatus	13
6.3 Test specimens.....	13
6.4 Procedure	13
6.5 Calculation and expression of results	14
7 Precision	14
8 Test report.....	15
Annex A (normative) Types of test liquid.....	16
Annex B (informative) Notes on the absorption of moisture by plastic specimens in equilibrium with a conditioning atmosphere	19
Bibliography.....	20

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 175 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 6, *Ageing, chemical and environmental resistance*.

This third edition cancels and replaces the second edition (ISO 175:1999), of which it constitutes a minor revision.

This is a preview of "BS EN ISO 175:2010". [Click here to purchase the full version from the ANSI store.](#)

Introduction

Because of their varied applications, plastics are frequently brought into contact with liquids such as chemical products, motor fuels, lubricants, etc., and, possibly, with their vapours.

Under the action of a liquid, a plastic material may be subjected to several phenomena which may occur simultaneously. On the one hand, absorption of liquid and extraction of constituents soluble in the liquid may occur. On the other hand, a chemical reaction, often resulting in a significant change in the properties of the plastic, may occur. The equilibrium swelling ratio for a crosslinked polymer in a liquid that is a solvent for the same but non-crosslinked polymer is a measure of the degree of crosslinking.

The behaviour of plastics in the presence of liquids can be determined only under arbitrarily fixed conditions aimed at making comparisons between different materials. The choice of test conditions (nature of the liquid, immersion temperature and immersion time), as well as the choice of the properties in which changes are to be measured, depends on the eventual application of the plastic under test.

It is not possible, however, to establish any direct correlation between the experimental results and the behaviour of the plastic in service. These tests do, nevertheless, permit a comparison to be made of the behaviour of different plastic materials under specified conditions, thus allowing an initial evaluation of their behaviour in relation to certain groups of liquids.

NOTE In view of its special importance, the particular case of the determination of the quantity of water absorbed is dealt with in ISO 62. ISO 175 is concerned with the effects of water only where changes in the dimensions and physical properties of the plastic occur as a result of the action of the water.

This is a preview of "BS EN ISO 175:2010". [Click here to purchase the full version from the ANSI store.](#)

This is a preview of "BS EN ISO 175:2010". [Click here to purchase the full version from the ANSI store.](#)

Plastics — Methods of test for the determination of the effects of immersion in liquid chemicals

1 Scope

1.1 This International Standard specifies a method of exposing test specimens of plastic materials, free from all external restraint, to liquid chemicals, and methods for determining the changes in properties resulting from such immersion. It does not cover environmental stress cracking (ESC) which is dealt with by the various parts of ISO 22088.

1.2 It only considers testing by immersion of the entire surface of the test specimen¹⁾.

NOTE This method may not be appropriate for simulating partial or infrequent wetting of plastics.

1.3 It is applicable to all solid plastics that are available in the form of moulding or extrusion materials, plates, tubes, rods or sheets having a thickness greater than 0,1 mm. It is not applicable to cellular materials.

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 291:2008, *Plastics — Standard atmospheres for conditioning and testing*

ISO 294-3, *Plastics — Injection moulding of test specimens of thermoplastic materials — Part 3: Small plates*

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

ISO 3126, *Plastics piping systems — Plastics components — Determination of dimensions*

ISO 4582, *Plastics — Determination of changes in colour and variations in properties after exposure to daylight under glass, natural weathering or laboratory light sources*

IEC 60296, *Fluids for electrotechnical applications — Unused mineral insulating oils for transformers and switchgear*

1) Although it is not within the scope of this International Standard, it may also be of interest, when dealing with volatile liquids or those which give off vapours, to subject the specimen to only the gaseous phase above the liquid. In this event, it is advisable to proceed exactly as indicated, but to suspend the specimen above the liquid, seal the container and maintain it at the test temperature throughout.