BRITISH STANDARD

BS EN ISO
10590:2005

Building construction — Sealants — Determination of tensile properties of sealants at maintained extension after immersion in water

The European Standard EN ISO 10590:2005 has the status of a British Standard

ICS 91.100.50

BSI
British Standards

National foreword

This British Standard is the official English language version of EN ISO 10590:2005. It is identical with ISO 10590:2005. It supersedes BS EN ISO 10590:1998 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/547, Sealants for building and construction, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled "International Standards Correspondence Index", or by using the "Search" facility of the *BSI Electronic Catalogue* or of British Standards Online.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN ISO title page, the EN ISO foreword page, the ISO title page, pages ii to iv, pages 1 to 5 and a back cover.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 10590

July 2005

ICS 91.100.50

Supersedes EN ISO 10590:1997

English Version

Building construction - Sealants - Determination of tensile properties of sealants at maintained extension after immersion in water (ISO 10590:2005)

Construction immobililère - Mastics - Détermination des propriétés de déformation des mastics sous traction maintenue après immersion dans l'eau (ISO 10590:2005)

Hochbau - Fugendichtstoffe - Bestimmung des Zugverhaltens unter Vorspannung nach dem Tauchen in Wasser (ISO 10590:2005)

This European Standard was approved by CEN on 20 June 2005.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN ISO 10590:2005: E

Foreword

This document (EN ISO 10590:2005) has been prepared by Technical Committee ISO/TC 59 "Building construction" in collaboration with CMC.

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 2006, and conflicting national standards shall be withdrawn at the latest by January 2006.

This document supersedes EN ISO 10590:1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 10590:2005 has been approved by CEN as EN ISO 10590:2005 without any modifications.

EN ISO 10590:2005

INTERNATIONAL STANDARD

ISO 10590

Second edition
2005-07-01

Building construction — Sealants — Determination of tensile properties of sealants at maintained extension after immersion in water

Construction immobilière — Mastics — Détermination des propriétés de déformation des mastics sous traction maintenue après immersion dans l'eau

Reference number
ISO 10590:2005(E)

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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 10590 was prepared by Technical Committee ISO/TC 59, *Building construction*, Subcommittee SC 8, *Jointing products*.

This second edition cancels and replaces the first edition (ISO 10590:1991), Clauses 6 and 8 and Table 1 of which have been technically revised.

Building construction — Sealants — Determination of tensile properties of sealants at maintained extension after immersion in water

1 Scope

This International Standard specifies a method for the determination of the influence of water immersion on the adhesion/cohesion properties at maintained extension of sealants used in joints in building construction.

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 6927, *Building construction — Jointing product — Sealants — Vocabulary*

ISO 13640, *Building construction — Jointing products — Specifications for test substrates*

3 Terms and definitions

For the purpose of this document, the definitions given in ISO 6927 apply.

4 Principle

Preparation of test specimens in which the sealant to be tested adheres to two parallel contact surfaces. Submission of the test specimens to water immersion under defined conditions. Extension of the test specimens to a defined width and maintaining this extension for a defined time. Record any breaks in adhesion or cohesion.

5 Apparatus

5.1 Substrate materials, used for the preparation of test specimens, are defined in ISO 13640. Select the substrate material(s) from mortar and/or anodized aluminium and/or glass. Other substrate materials may be used as agreed by the parties concerned.

For each test specimen, two substrate pieces of the same material are required with a cross-section of dimensions as shown in Figures 1 and 2. Test substrates of other dimensions may be used, but then the dimensions of the sealant bead and the area of adhesion shall be the same as those shown in Figures 1 and 2.

5.2 Spacers, of cross-section (12 mm × 12 mm), for the preparation of test specimens (see Figures 1 and 2), with anti-adherent surface.

5.3 Anti-adherent substrate, for the preparation of the test specimens, e.g. polyethylene (PE) film, preferably according to the advice of the sealant manufacturer.

5.4 **Tensile test machine**, capable of extending the test specimens at a rate of (5,5 ± 0,7) mm/min

5.5 **Separators**, of appropriate dimensions to hold the test specimens at an elongation of 60 % or 100 %.

5.6 **Ventilated convection-type oven**, capable of being maintained at (70 ± 2) °C (conditioning method B).

5.7 **Container**, for immersing test specimens in distilled water (conditioning method B).

5.8 **Container**, for immersing test specimens in water at (23 ± 2) °C.

5.9 **Measuring device**, scaled to 0,5 mm.

6 Preparation of test specimens

The sealant and substrate shall be brought to (23 ± 2) °C. For each substrate material, three test specimens shall be prepared. For each test specimen, two substrates (5.1) and two spacers (5.2) shall be assembled (see Figures 1 and 2) and set on the anti-adherent substrate (5.3).

The instructions of the sealant manufacturer shall be followed concerning, for instance, whether a primer is to be used and the mixing procedure for multi-component sealants. The hollow volume formed by the substrates shall be filled with the sealant.

The following precautions shall be taken;

a) the formation of air bubbles shall be avoided;

b) the sealant shall be pressed on the inner surfaces of the supports;

c) the sealant surface shall be trimmed so that it is flush with the faces of the supports and spacers.

The test specimens shall be set on the edge of one of the supports. The anti-adherent substrate shall be removed as soon as possible. The specimens shall be kept in this position to allow curing or optimum drying of the sealant.

The spacers shall be maintained in place during conditioning.

7 Conditioning of test specimens

7.1 General

The test specimens shall be conditioned either in accordance with method A (see 7.2) or method B (see 7.3).

7.2 Conditioning method A

The test specimens shall be conditioned for 28 days at (23 ± 2) °C and (50 ± 5) % relative humidity.

7.3 Conditioning method B

First, the test specimens shall be conditioned according to method A and subsequently subjected three times to the following storage cycle:

a) three days in the oven (5.6) at (70 ± 2) °C;

b) one day in distilled water (5.7) at (23 ± 2) °C;

c) two days in the oven (5.6) at (70 ± 2) °C;

d) one day in distilled water (5.7) at (23 ± 2) °C.

This cycle may be carried out alternatively in the sequence c), d), a), b).

After conditioning according to method B, the test specimens shall be stored for a further period of 24 h at (23 ± 2) °C and (50 ± 5) % relative humidity before testing.

NOTE Conditioning method B is a normal conditioning procedure using the influence of heat and water. It is not suitable for giving information on the durability of the sealant.

8 Test procedure

After conditioning according to method A or method B, the spacers (5.2) shall be removed, the test specimens shall be immersed in water at (23 ± 2) °C (5.8) for four days. After removal from the water, the test specimens shall be stored for 24 h in air at (23 ± 2) °C and (50 ± 5) % relative humidity. The test specimens shall be placed in the tensile test machine (5.4) and extended, at a rate of (5,5 ± 0,7) mm/min, by 60 % or 100 % (to 19,2 mm and 24 mm respectively) of the original width or by any other percentage as agreed between the parties concerned. This extension shall be maintained for 24 h using the separators (5.5).

The depth and the location of any loss of adhesion or cohesion shall be measured using a suitable measuring device capable of reading to 0,5 mm (5.9).

9 Test report

The test report shall contain the following information:

a) test laboratory's name and date of test;

b) reference to this International Standard;

c) name, type (chemical family) and colour of sealant;

d) batch of sealant from which the test specimens were produced;

e) substrate materials used (see 5.1);

f) primer used, if applicable;

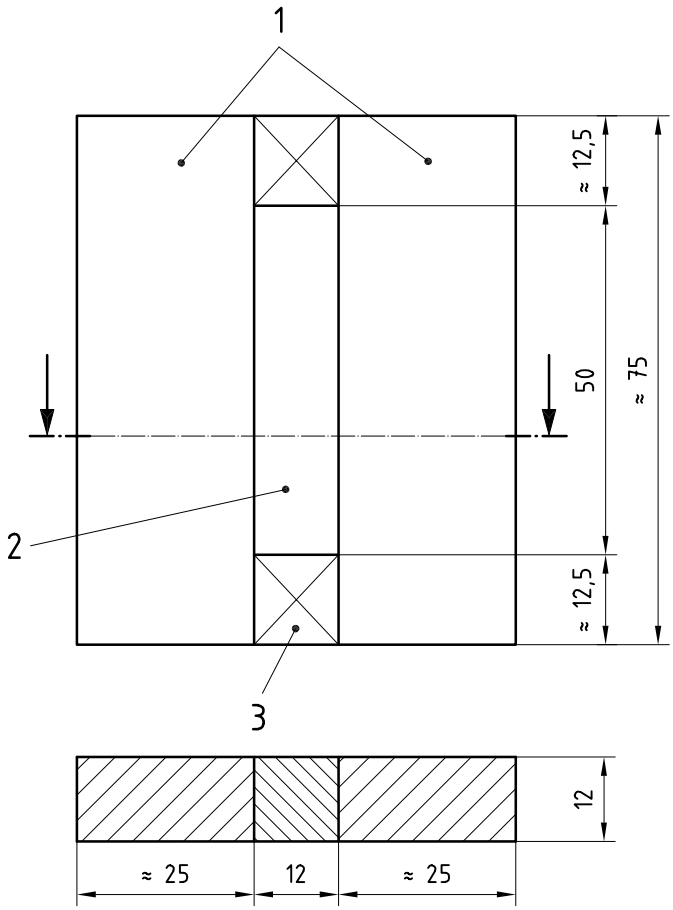
g) method of conditioning used (see Clause 7);

h) elongation used;

i) depth and the location of any loss of adhesion and/or cohesion break in mm for each test specimen;

j) deviations from this International Standard.

Dimensions in millimetres

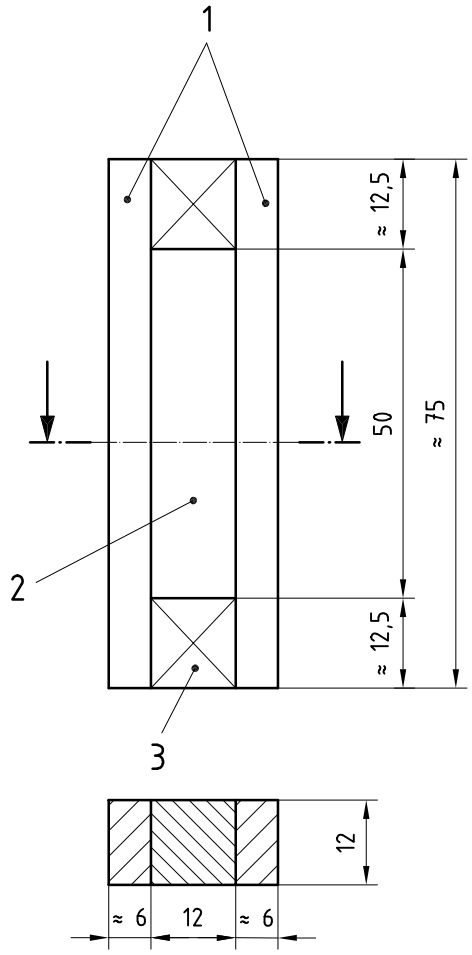


Key

1 mortar substrates
2 sealant
3 spacers (5.2)

Figure 1 — Test specimens with mortar substrates

Dimensions in millimetres



Key

1 anodized aluminium or glass substrates
2 sealant
3 spacers (5.2)

Figure 2 — Test specimens with anodized aluminium or glass substrates

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