BRITISH STANDARD

BS EN ISO
10591:2005
Incorporating amendment no. 1

Building construction — Sealants — Determination of adhesion/cohesion properties of sealants after immersion in water

The European Standard EN ISO 10591:2005 has the status of a British Standard

ICS 91.100.50

BSI
British Standards

National foreword

This British Standard is the UK implementation of EN ISO 10591:2005. It is identical with ISO 10591:2005. It supersedes BS EN ISO 10591:1998 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/547, Sealants for building and construction.

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

Additional information

BS EN ISO 10591:2005 is a test method useful in the determination of adhesive/cohesive properties after immersion in water and one of the procedures used for classifying construction sealants within BS EN ISO 11600:2003. It is not suitable for testing sealants for water-retaining structures or for potable water systems. ISO 13638 is designed for the assessment of the long-term resistance of sealants to be permanently immersed in water.

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

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 18 November 2005

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Amendments issued since publication

Amd. No.	Date	Comments
17268	31 August 2007	"Additional information" in the national foreword revised

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 10591

July 2005

ICS 91.100.50

Supersedes EN ISO 10591:1997

English Version

Building construction - Sealants - Determination of adhesion/cohesion properties of sealants after immersion in water (ISO 10591:2005)

Construction immobilière - Produits pour joints - Détermination des propriétés d'adhésivité/cohésion des mastics après immersion dans l'eau (ISO 10591:2005)

Hochbau - Fugendichtstoffe - Bestimmung des Haft- und Dehnverhaltens nach dem Tauchen in Wasser (ISO 10591:2005)

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

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN ISO 10591:2005: E

Foreword

This document (EN ISO 10591:2005) 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 10591:1997.

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 10591:2005 has been approved by CEN as EN ISO 10591:2005 without any modifications.

INTERNATIONAL STANDARD

ISO 10591

Second edition
2005-07-01

Building construction — Sealants — Determination of adhesion/cohesion properties of sealants after immersion in water

Construction immobilière — Produits pour joints — Détermination des propriétés d'adhésivité/cohésion des mastics après immersion dans l'eau

Reference number
ISO 10591:2005(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 10591 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 10591:1991), Clauses 2, 5, 6, and 7 of which have been technically revised.

Building construction — Sealants — Determination of adhesion/cohesion properties of sealants after immersion in water

1 Scope

This International Standard specifies a method for the determination of the influence of water on the adhesion cohesion properties of sealants with predominantly plastic behaviour which are 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 products — Sealants — Vocabulary*

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

3 Terms and definitions

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

4 Principle

Test specimens are prepared in which the sealant to be tested adheres to two parallel contact surfaces. After submission of the test specimens to water immersion under defined conditions, the test specimens are extended to rupture and the elongation at break recorded.

5 Apparatus

5.1 Substrate materials, used for the preparation of test specimens, are defined in ISO 13640, *Specification for test substrates*. The substrate materials shall be selected 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, for the preparation of the test specimens, of cross-section (12 mm × 12 mm) with anti-adherent surface (see Figures 1 and 2).

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

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

5.5 **Container,** for distilled water immersion at (23 ± 2) °C (conditioning method B).

5.6 **Container,** for water immersion of test specimens at (23 ± 2) °C.

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

6 Preparation of test specimens

The sealant and the 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 to the contact surfaces of the substrates;

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

The specimens shall be set on the edge of one of the substrates. 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 (7.2) or method B (7.3), as agreed between the parties concerned.

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

The test specimens shall be conditioned according to method A and shall then be subjected three times to the following storage cycle:

a) three days in the oven (5.4) at (70 ± 2) °C;

b) one day in distilled water (5.5) at (23 ± 2) °C;

c) two days in the oven (5.4) at (70 ± 2) °C;

d) one day in distilled water (5.5) at (23 ± 2) °C.

Alternatively, this cycle may be carried out in the order c), d), a), b).

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

NOTE 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 shall be removed. The test specimens shall be immersed for four days in water at a temperature of (23 ± 2) °C (5.6) and stored one day in air at (23 ± 2) °C and (50 ± 5) % relative humidity. The test specimens shall be placed in the tensile test machine (5.7) and extended at a rate of (5,5 ± 0,7) mm/min until break. The force/extension diagram shall be recorded.

9 Expression of results

For each test specimen, the arithmetic mean of the three elongations to break shall be calculated and rounded to 5 %.

$$\text{Elongation (\%)} = [(\text{final width} - \text{original width}) / \text{original width}] \times 100$$

10 Test report

The test report shall contain the following information

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

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) the substrate materials used (see 5.1);

f) the primer(s) used, if applicable;

g) the conditioning method used;

h) force/extension diagrams of the test specimens,

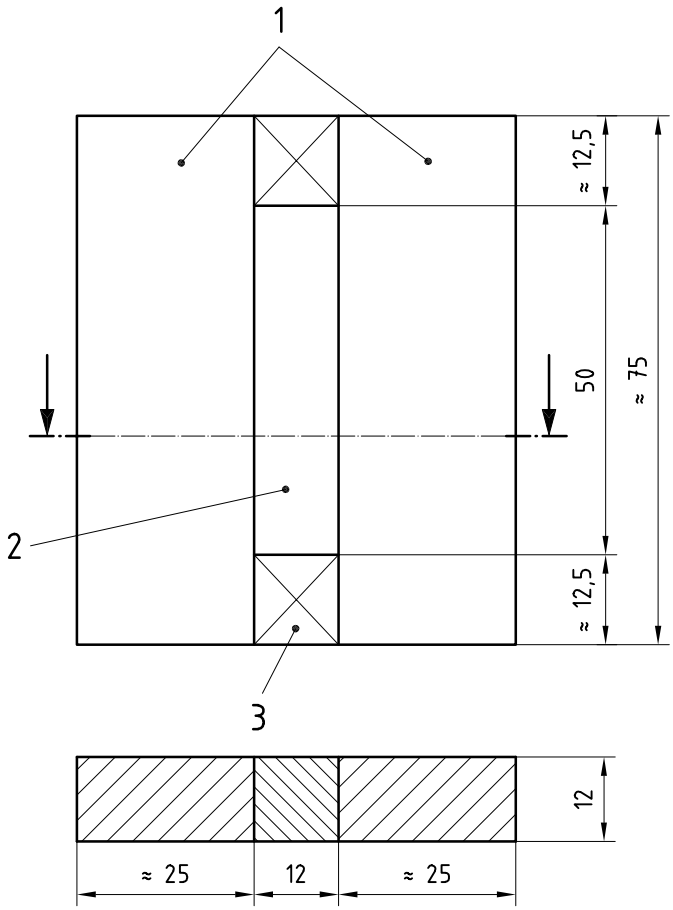
i) the percentage elongation at break of each test specimen;

j) the arithmetic mean of the three elongations at break;

k) type of failure (adhesive or cohesive or mixed);

l) any deviation from this International Standard.

Dimensions in millimetres

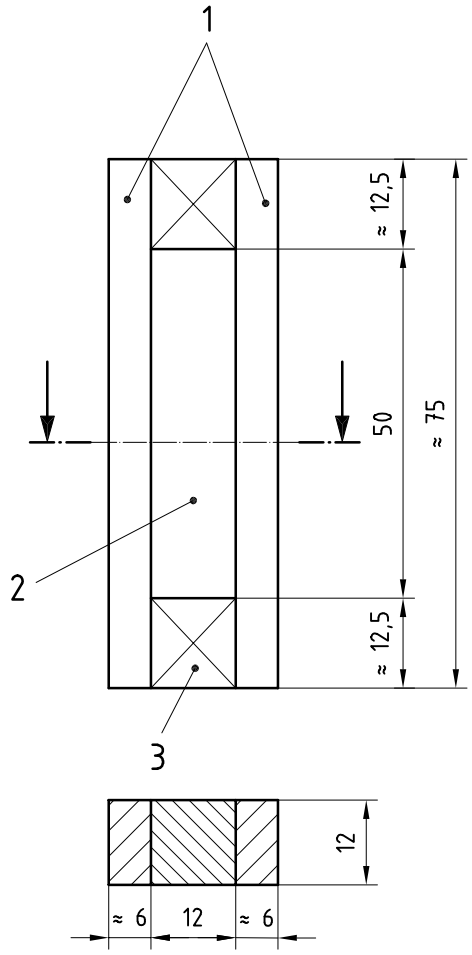


Key

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

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

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