BRITISH STANDARD

BS ISO
13640:1999

Building construction — Jointing products — Specifications for test substrates

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National foreword

This British Standard reproduces verbatim ISO 13640:1999 and implements it as the UK national standard.

The UK participation in its preparation was entrusted to Technical Committee B/547, Sealants, 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 the 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.

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Summary of pages

This document comprises a front cover, an inside front cover, the ISO title page, pages ii and iii, a blank page, pages 1 to 3 and a back cover.

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Building construction — Jointing products — Specifications for test substrates

Construction immobilière — Matériaux pour joints — Prescriptions relatives aux supports d'essais

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Foreword

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Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 13640 was prepared by Technical Committee ISO/TC 59, *Building construction*, Subcommittee SC 8, *Jointing products*.

Building construction — Jointing products — Specifications for test substrates

1 Scope

This International Standard specifies the procedures for producing substrates of mortar, glass and anodized aluminium used for testing sealants.

The purpose of these requirements is to ensure the reproducibility of the standardized tests conducted on sealants through the precise definition of both the composition and the method of preparation of the test substrates.

The substrates defined in this International Standard are indicators of the sealant's performance and not substrates which reproduce the characteristics of the construction materials.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 209-1:1989, *Wrought aluminium and aluminium alloys — Chemical composition and forms of products — Part 1: Chemical composition*.

ISO 2143:1981, *Anodizing of aluminium and its alloys — Estimation of loss of absorptive power of anodic oxide coatings after sealing — Dye spot test with prior acid treatment.*

ISO 6707-1:1989, *Building and civil engineering — Vocabulary — Part 1: General terms.*

ISO 6927:1981, *Building construction — Jointing products — Sealants — Vocabulary*.

ISO 7599:1983, *Anodizing of aluminium and its alloys — General specifications for anodic oxide coatings on aluminium.*

EN 196-1:1994, *Methods of testing cement — Part 1: Determination of strength.*

EN 197-1:—[1)], *Cement — Composition, specifications and conformity criteria — Part 1: Common cements*.

EN 515:1993, *Aluminium and aluminium alloys — Wrought products — Temper designations*

EN 572-1:1994, *Glass in building — Basic soda lime silicate glass products — Part 1: Definitions and general physical and mechanical properties.*

EN 572-2:1994, *Glass in building — Basic soda lime silicate glass products — Part 2: Float glass.*

3 Terms and definitions

For the purposes of this International Standard, the terms and definitions for sealants given in ISO 6927 and the general construction terms and definitions given in ISO 6701-1 apply.

1) To be published.

4 Test substrates

4.1 Mortar substrates

4.1.1 Dimensions

The substrate dimensions shall be 75 mm × 12 mm × 25 mm.

NOTE The preparation of mortar substrates can be influenced directly by the geometry of the substrate.

4.1.2 Mortar composition

The mortar used for the preparation of the substrates shall be as defined in Table 1.

Table 1 — Mortar composition

Components	Cement (C)	Sand (S)	Water (W)
Nature of components	Cement - EN 197-1CEM I-42,5[a]	Sand CEN - EN 196-1	Distilled water
Ratio by mass	1	3	W/C = 0,5
[a] ENV Portland cement according to EN 197-1 belonging to strength class 42.5, having a high strength in green concrete. ACP or Z45 cements may also be used.			

4.1.3 Preparation of substrates

4.1.3.1 General

The surface of the mortar substrates shall have a sufficient cohesive strength in order to be able to withstand the stresses induced during the tests on the sealants.

The surface in contact with the sealant shall be free from laitance, free from loosely bound sand grains and free from release agent.

Method M1 (see 4.1.3.3) leads to smooth-surface substrates whereas M2 (see 4.1.3.4) leads to rough-surface substrates.

4.1.3.2 Mixing of mortar

The mortar shall be mixed using equipment described in 4.4 of EN 196-1:1994, following the method described in 6.3 of EN 196-1:1994.

4.1.3.3 Preparation of substrates according to method M1

Fill the mould in two layers within 2 min with a vibration frequency of about 3 KHz for each layer. Level and smooth the surface using a trowel.

Condition the substrates at (20 ± 1) °C and (90 ± 5) % relative humidity.

Remove the substrates from their moulds 24 h after filling the moulds, and store the substrates for 28 days under distilled water at (20 ± 1) °C. Then wet grind the mortar blocks or saw them with a diamond saw under water. Dry them until constant mass.

The resulting surface shall be smooth but may contain a few holes.

4.1.3.4 Preparation of substrates according to method M2

Fill the mould, in one layer, with a small surplus of mortar and shake the mortar using the jolting apparatus (30 jolts) according to EN 196-1.

Store the substrates at (20 ± 1) °C and (90 ± 5) % relative humidity.

Level the mortar 2 h to 3 h after filling the mould to eliminate the laitence and smooth with a trowel. Condition the substrates at (20 ± 1) °C and (90 ± 5) % relative humidity.

About 20 h after filling the mould, brush the surfaces vigorously with a metal brush with repeated backward and forward movements, in the direction of the longest dimension, until the sand grains are exposed.

Remove the substrates from their moulds and store them for 28 days in distilled water at (20 ± 1) °C. Dry until constant mass.

The resulting surface shall be rough and shall not contain any holes.

4.2 Glass substrates

Make glass substrates from clear float glass having a transmission factor of 0,85 for a nominal thickness of (6,0 ± 0,1) mm in accordance with EN 572-1 and EN 572-2.

For sealants of high modulus, provide adequate reinforcement of the flat glass substrates.

If optical transmission is not a factor in the test standard, then the nominal thickness of the glass may be higher, for example 8 mm.

4.3 Anodized aluminium substrates

4.3.1 Dimensions

Substrate dimensions shall be 75 mm × 12 mm × 5 mm.

4.3.2 Aluminium alloys

The alloys shall have one of the following compositions, in accordance with ISO 209-1:

Al MgSi (number 6060); or

Al Mg0,7Si (number 6063).

Use finishing method T5 or T6 in accordance with EN 515.

4.3.3 Anodization

Carry out anodization in accordance with ISO 7599, with the following details:

— clear anodized aluminium;

— class AA 15 or AA 20;

— sealing index ⩽ 2 according to ISO 2143;

— sealing bath additives shall be checked, in accordance with 10.2.1 of ISO 7599:1983.

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