BRITISH STANDARD

BS 3712-3: 1974

Incorporating Amendment Nos. 1 and 2

Building and construction sealants —

Part 3: Methods of test for application life, skinning properties and tack-free time

Confirmed December 2011

UDC 691.58:620.1

Co-operating organizations

The Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

British Association of Synthetic Rubber Manufacturers
British Rubber and Resin Adhesive Manufacturers' Association
British Rubber Manufacturer's Association
British Tar Industries Association
British Whiting Federation
Chemical Industries Association Limited
Confederation of British Industry
Department of the Environment
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Sealant Applicators' Association
Sealant Manufacturers' Conference
Society of Chemical Industry
Welwyn Hall Research Association
Whiting and Industrial Powders Research Council
Individual manufacturers

This British Standard, having been approved by the Building Divisional Council, was published under the authority of the Executive Board on 31 January 1974

The following BSI references relate to the work on this standard:
Committee references B/89, B/89/1
Draft for comment 68/26713

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Amendments issued since publication

Amd. No.	Date of issue	Comments
4860	August 1985	
6819	September 1991	Indicated by a sideline in the margin

Contents

Foreword

This British Standard was originally issued under the authority of the Building Divisional Council, B/-, in 1974 and has been amended and confirmed under the direction of the Elements and Components (of Diverse Materials) for Buildings Standards Committee in 1985.

For further information see the foreword in BS 3712-1:1991 and the following standards:

BS EN 27390, BS EN 28394, BS EN 29046, BS EN 29048 and ISO 9047.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 4, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 General

1.1 Scope

This Part of BS 3712 describes test methods for the following properties of building and construction sealants.

1) Application life.

2) Skinning properties.

3) Tack-free time.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

1.2 Definition

For the purposes of this Part of this British Standard the following definition applies:

building sealant

a joint sealant for buildings, applied by hand, gun, knife, or trowel, or in strip form, or by pouring, and intended to maintain a seal between the sides of a joint which is subject to some degree of movement. The strip form materials covered by this definition are plastic at the time of application, i.e. readily deformable but not capable of reverting to their original shape

1.3 Sampling

The samples of building sealants to be used in the following determinations and methods of test shall be taken as follows:

Select at random sufficient original unopened packages to provide material for the tests. Alternatively, select sufficient material at random from the bulk supply. Report any skin formation (which should be removed), any separation of components or foreign matter, and any variability between one sample and another. In special circumstances it may be appropriate to take single samples from a gun for specific tests. The method of sampling shall be reported.

2 Tests and methods

2.1 Application life

2.1.1 General. This test is applicable to multi-part sealants. The object of the test for application life is to provide an indication of the useful life of the sealant taken from freshly opened containers and mixed in accordance with the manufacturer's instructions.

2.1.2 Apparatus. The following apparatus is required:

1) A clean cylindrical container 65 mm diameter and 50 mm height (approx.).

2) Aluminium alloy surface mill finished, of grade 6063 **T6** or 6082 **T6** as specified in BS 1474 *or* grade 6082 **T6** as specified in BS 1470.

3) A flat bladed spatula or power stirrer.

4) Containers for storing components and sealant.

5) Enclosure maintained at 25 ± 2 °C and 50 ± 5 % r.h.

2.1.3 Preparation of specimen. The container shall be thoroughly cleaned.

Suitable quantities of the components in closed containers, together with clean cylindrical container, shall be conditioned for at least 16 h at in the enclosure. Appropriate amounts of the base component and of the curing component shall be mixed thoroughly in the cylindrical container at 25 ± 2 °C, either by hand for 10 min, using a spatula or by using a power stirrer until uniform mixing is achieved. It is essential that the curing component is evenly dispersed throughout the base component. Particular care shall be taken when mixing the parts to avoid or eliminate all air bubbles.

2.1.4 Cleaning of test surface. The aluminium test piece shall be cleaned with water, detergent solution or solvents to remove major contamination. The surface shall then be cleaned using butanone (ethyl methyl ketone) or similar solvent and washed with a dilute detergent solution. Finally the surface shall be rinsed in industrial methylated spirits and air dried.

2.1.5 Procedure. The mixed samples shall be stored uncovered at in the enclosure. Not less than ½h before the expected expiry time of the application life, and thereafter at 10 min intervals, tests shall be performed to check that the sample is capable of being applied by a spatula without difficulty on to the aluminium surface.

2.1.6 Reporting. The application life is reported as the total time between the completion of mixing and the last test in which the sealant is easily applied to and readily adheres to the aluminium surface.

2.2 Change in consistency (using the constant load penetrometer)

Clause 2.2 Text deleted

2.3 Skinning properties

2.3.1 General. This test is particularly applicable to sealants which are intended to form a skin but remain soft underneath. The object of the test is to establish the presence of a skin on the surface.

2.3.2 Apparatus. A shallow tin 50 mm diameter and 10 mm deep approximately.

2.3.3 Preparation of specimen. The tin shall be filled with the sealant and be exposed at room temperature. Other conditions of exposure may be specified.

2.3.4 Procedure. The surface of the sealant is gently drawn back at intervals with a probe or needle. The skin will be indicated as a rupture in the displaced surface.

2.3.5 Reporting. Report the time taken for the skin to form to the nearest 12 h and the conditions under which it was exposed. The specimen may be left for a period and the condition of the skin reported e.g. smooth, wrinkly, thick, thin, oily or readily detached.

2.4 Tack-free time

2.4.1 General. The object of this test is to determine the time required for the surface of the sealant to become tack-free. The test is applicable to sealants which are intended to develop tack-free surfaces within a limited period when exposed to normal atmospheric conditions.

2.4.2 Apparatus. A flat base plate (e.g. aluminium) with a non-absorbent surface 175 mm × 75 mm.

A flat sheet of metal 50 mm × 25 mm weighing approximately 15 g. Pieces of polyethylene sheet 85 mm × 30 mm × 0.025 mm.

A constant temperature enclosure unless otherwise agreed controlled at 25 ± 1 °C and 80 ± 5 % relative humidity. Care should be taken to provide ample volume when dealing with solvent release sealants.

2.4.3 Preparation of specimen. The metal base plate shall be clean and dry. The polyethylene shall be clean, dry and free from cuts or wrinkles. The sealant or its components shall be conditioned in closed containers at 25 ± 1 °C for not less than 16 h.

2.4.4 Procedure. Spread the sealant (after mixing for multi-part sealants) on to the non absorbent surface and draw a template across the sealant to produce a layer of sealant with a smooth surface measuring 150 mm × 65 mm × 3 mm. The sealant shall then be exposed in the constant temperature enclosure or under other conditions as specified. After a specified interval of time place a piece of polyethylene upon the surface of the sealant. Following this, place the metal plate (weight 15 g) upon the polyethylene for not less than 10 s, and not more than 20 s. (see Figure 5). Remove the plate and slowly peel back the polyethylene at 90° from the surface. The test is repeated at suitable intervals after further periods of exposure using fresh pieces of polyethylene on the undisturbed areas of the sealant.

2.4.5 Reporting. Report the tack-free time as the time between the application of the sealant to the non-absorbent surface and the time when there is no transfer of sealant to the polyethylene.

NOTE With pouring grade sealants a mask or frame to contain the sealant may be necessary.

2.5 *Text deleted*

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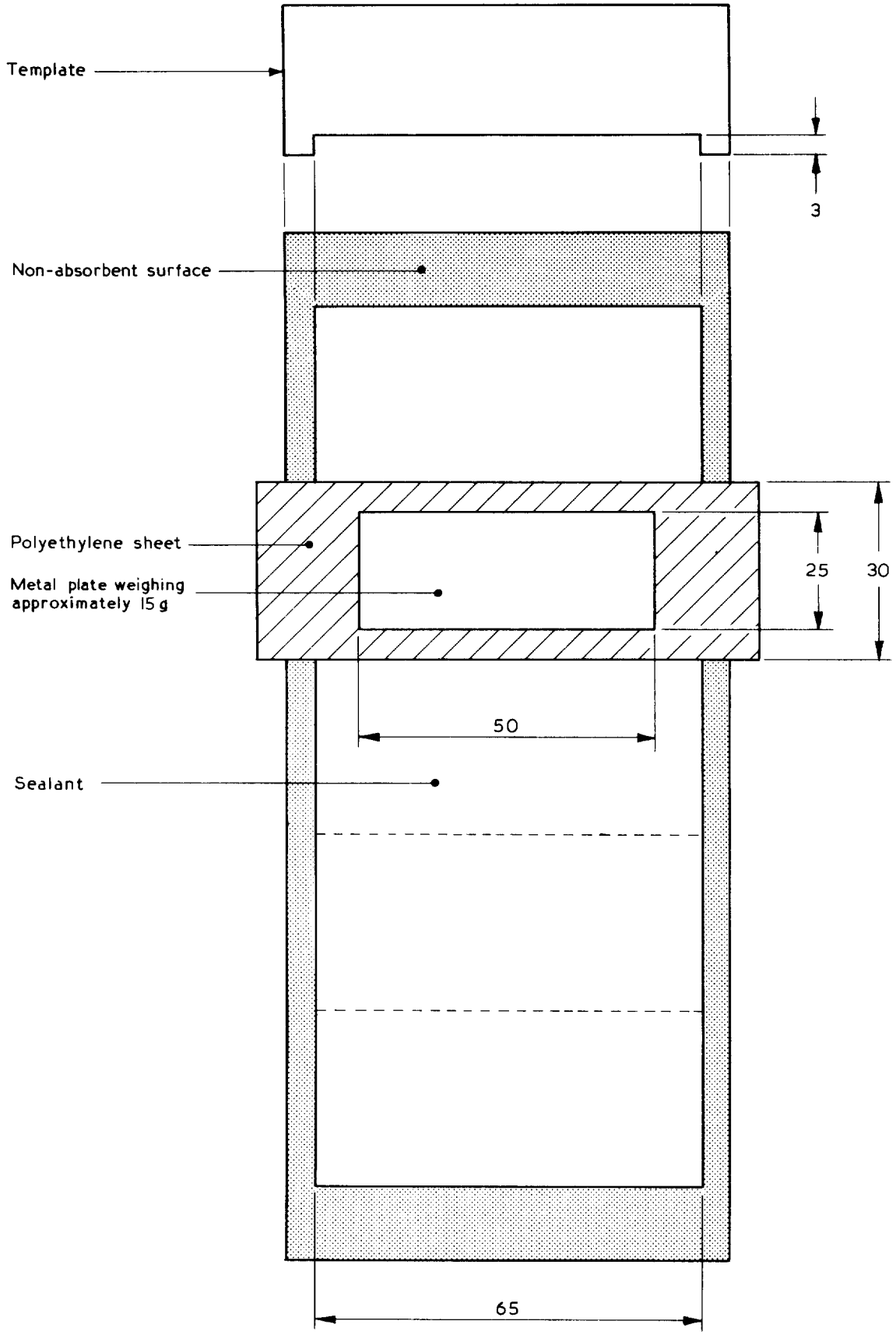
Figure 2 — Figure deleted

Figure 3 — Figure deleted

Figure 4 — Figure deleted

Figure 6 — Figure deleted

Figure 7 — Figure deleted



All dimensions are in millimetres.

Figure 5 — Tack-free time test specimen

Appendix A. Text deleted

Publications referred to

BS 1470, *Wrought aluminium and aluminium alloys for general engineering purposes. Plate, sheet and strip.*

BS 3712, *Building and construction sealants.*

BS 3712-1, *Methods of test for homogeneity, relative density and penetration.*

BS EN 27390, *Building construction — Jointing products — Determination of resistance to flow*[1)].

BS EN 28394, *Building construction — Jointing products — Determination of extrudability of one-component sealants*[1)].

BS EN 29046, *Building construction — Sealants — Determination of adhesion/cohesion properties at constant temperature*[1)].

BS EN 29048, *Building construction — Jointing products — Determination of extrudability of sealants using standardized apparatus*[1)].

ISO 9047, *Building construction — Sealants — Determination of adhesion/cohesion properties at variable temperature*[1)].

[1)] Referred to in the foreword only.

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