

Specification for

Two-part polysulphide-based sealants

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The preparation of this British Standard was entrusted by the Elements and Components (of Diverse Materials) for Buildings Standards Committee (ECB/-) to Technical Committee ECB/3 upon which the following bodies were represented:

- Aluminium Window Association
- British Adhesive Manufacturers' Association
- British Association of Synthetic Rubber Manufacturers
- British Rubber Manufacturers' Association
- British Tar Industry Association
- British Woodworking Federation
- Canadian Government Specifications Board
- Department of the Environment (Building Research Establishment, Princes Risborough Laboratory)
- Flat Glass Manufacturers' Association
- Glass and Glazing Federation
- Greater London Council
- Institute of Housing
- Institution of Civil Engineers
- Refined Bitumen Association Ltd
- Royal Institute of British Architects
- Sealant Manufacturers Conference
- Society of Architectural and Associated Technicians
- Society of Chemical Industry

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- British Board of Agrément
- National Federation of Building Trades Employers
- Coopted members

This British Standard, having been prepared under the direction of the Elements and Components (of Diverse Materials) for Buildings Standards Committee was published under the authority of the Board of BSI and comes into effect on 30 September 1983

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Foreword

This revision of this British Standard has been prepared under the direction of the Elements and Components (of Diverse Materials) for Building Standards Committee. It covers products intended for use in normal atmospheric environments in buildings in the UK. This standard supersedes BS 4254:1967, which is withdrawn.

If it is desired to use a two-part polysulphide-based sealant in situations other than those specified in clause 1, products complying with this standard may still be suitable but in each case the manufacturer will need to be consulted to verify this fact. Such verification may necessitate testing in accordance with this standard but using the actual intended building material in place of the substrate materials specified in C.2. It may also necessitate special performance considerations and tests; for instance, if it is intended to use the product in the walls of a reservoir, both the ability of the product to perform in such a sub-aqueous situation and the effect on the contained liquid (e.g. the potability of drinking water) will need to be ascertained.

The following are the principal changes made in this revision of this standard.

- a) In the rheological test the maximum permissible slump for gun grade sealants has been increased to 1 mm.
- b) In the adhesion and tensile modulus test the preparation of the test assemblies has been brought into line with other sealant standards. The size of the cement mortar blocks has been changed and stainless steel has been deleted from the list of test surfaces.
- c) The test for loss of mass after heat ageing has been brought into line with other sealant standards.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12, 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 Scope

This British Standard specifies the requirements for two grades of two-part polysulphide-based sealant for use in general building applications, namely pouring grade (see 2.2.1) and gun grade (see 2.2.2). Pouring grade sealants are intended for use in horizontal joints whilst gun grade sealants are intended for use in vertical and inclined joints, e.g. glazing applications. Both grades of sealant are intended to perform satisfactorily in the normal range of atmospheric temperature and humidity levels found in the UK and with the types of substrate represented by the test surfaces specified in C.2.

NOTE 1 Primer systems are recommended for use with certain two-part polysulphide-based sealants. The test requirements in this standard take account of such systems (see 3.3).

NOTE 2 The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard the following definitions apply.

2.1

two-part polysulphide-based sealant

a sealant consisting of two components, essentially a component containing polysulphide polymer and a separate component containing the curing agent, which are mixed together before application and cure at ambient temperature to form a rubber-like solid

2.2 Grades of sealant

2.2.1

pouring grade

a sealant which flows sufficiently to give a reasonably smooth level surface when applied in a horizontal upward-facing joint at ambient temperatures

2.2.2

gun grade

a sealant which permits application in a suitable joint of any aspect or inclination without appreciable slumping at ambient temperatures

NOTE Gun grade sealants may be applied by various means, e.g. trowel.

2.3

application life

the time after mixing during which the sealant may be easily applied and readily adheres to a substrate

3 General

3.1 Type tests shall be carried out, as given in Table 1, to prove the composition and properties of sealants and shall be repeated whenever there is a change in the composition of the sealant or a change in the manufacturing process.

3.2 All tests shall be carried out on sealant mixed from components obtained from previously unopened containers. The components shall be capable of being readily mixed to form a sealant complying with this standard at any time up to the expiry date [see clause 11 e)], when stored under the conditions stated on the package.

NOTE For the purpose of laboratory testing the proportion by mass of the curing component to be mixed with the base component should be specified by the manufacturer on request. The permissible deviation from this proportion by mass should also be specified by the manufacturer and under no circumstances should this deviation be exceeded.

3.3 Where a particular primer is recommended by a manufacturer for a specific surface, that test surface shall be treated with the primer following the manufacturer's instructions.

NOTE Attention is drawn to the expiry date on any primer that is used.

4 Rheological properties

4.1 **Pouring grade sealants.** When tested as described in Appendix A the sealant shall exhibit a smooth, level surface.

4.2 **Gun grade sealants.** When tested as described in Appendix A the sealant shall not slump in vertical displacement by more than 1.0 mm when tested in a vertical position and shall not protrude in front of the original profile when tested in a horizontal position.

Table 1 — Tests for sealants

Test	Clause reference for requirement	Appendix reference for tests
Rheological properties	4	Appendix A
Plastic deformation (recovery)	5	Appendix B
Adhesion and tensile modulus	6	Appendix C
Application life	7	Appendix D
Adhesion in peel	8	Appendix E
Loss of mass after heat ageing	9	Appendix F
Staining	10	Appendix G

5 Plastic deformation (recovery)

When tested as described in Appendix B the sealant shall have a plastic deformation not greater than 25 %.

6 Adhesion and tensile modulus

6.1 General. Before each of the tests for adhesion and tensile modulus, described in Appendix C, the following shall be carried out.

- a) For the tests described in **C.6.2** to **C.6.5**, three assemblies shall be made for each type of test surface. For the test described in **C.6.6**, three assemblies consisting of one aluminium test surface and one glass surface shall be made.
- b) The assemblies shall be subjected to the appropriate tests described in Appendix C.
- c) The following acceptance criteria shall apply.
 - 1) If all three assemblies pass the test the sealant shall be accepted.
 - 2) If two assemblies fail the test the sealant shall be rejected.
 - 3) If one assembly fails the test, a) and b) shall be repeated using a second set of assemblies. If all three of these assemblies pass the second test, the sealant shall be accepted. However, if any assembly fails this test the sealant shall be rejected.

6.2 Testing. When an assembly is tested in accordance with **C.6.2**, **C.6.3**, **C.6.4** and **C.6.6** the total area (length $\times$ depth) of failure shall not exceed 100 mm² and the force required to produce the extension shall be not less than 25 N nor more than 270 N. When an assembly is tested as described in **C.6.5**, the total area (length $\times$ depth) of failure shall not exceed 100 mm².

7 Application life

When tested as described in Appendix D the sealant shall have an application life of not less than 2 h.

8 Adhesion in peel

When the sealant is tested as described in Appendix E the average peel strength of four strips of backing material for each of the test surfaces shall be not less than 25 N and the material shall not fail in adhesion over more than 25 % of the test area.

If not more than one strip of backing material on a test surface fails in adhesion over more than 25 % of the test area a second test shall be permitted. However, if any strip fails this test the sealant shall be deemed not to comply with this standard.

9 Loss of mass after heat ageing

When the sealant is tested as described in Appendix F the loss of mass shall not exceed 12 %, for pouring grade sealants, or 6 %, for gun grade sealants.

If one specimen fails the test, a second test shall be permitted. However, if any specimen fails this test the sealant shall be deemed not to comply with this standard.

10 Staining

When tested as described in Appendix G the sealant shall produce no staining on the primed or unprimed surfaces of the test mortar.

11 Marking and packaging

Each package containing the components of the sealant shall be marked with the following particulars:

- a) the name or identification mark of the manufacturer;
- b) the number of this British Standard, i.e. BS 4254¹⁾;
- c) the grade of sealant and the type of component, i.e. whether base or curing agent;
- d) the nominal volume of the mixed materials;
- e) the expiry date, i.e. the date before which the materials shall be used;
- f) the manufacturer's batch number;
- g) the storage temperature range;
- h) mixing instructions;
- i) the application life.
- j) details of any primer system, where appropriate.

Mixing instructions shall be supplied with the package.

¹⁾ Marking BS 4254 on or in relation to a product is a claim by the manufacturer that the product has been manufactured in accordance with the requirements of the standard. The accuracy of such a claim is therefore solely the manufacturer's responsibility. Enquiries as to the availability of third party certification should be addressed to the appropriate certification body.