

Specification for

Compressed non-asbestos fibre jointing

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Piping Systems Components Standards Policy Committee (PSE/-) to Technical Committee PSE/2, upon which the following bodies were represented:

- Asbestos Information Centre Ltd.
- British Adhesives and Sealants Association
- British Compressed Gases Association
- British Gas plc
- British Pump Manufacturers' Association
- British Railways Board
- Energy Industries Council
- Engineering Equipment and Materials Users' Association
- Health and Safety Executive
- Institution of Gas Engineers
- Institution of Water and Environmental Management
- Liquefied Petroleum Gas Industry Technical Association (UK)
- Water Services Association of England and Wales

This British Standard, having been prepared under the direction of the Piping Systems Components Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 31 January 1992

© BSI 03-2000

The following BSI references relate to the work on this standard:
Committee reference PSE/2
Draft for comment 91/73377 DC

ISBN 0 580 20248 8

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
1 Scope	1
2 Definitions	1
3 Material and grades	1
4 Finish	1
5 Thickness	1
6 Tests	2
7 Retest	2
8 Marking	2
9 Test certificate	3
Appendix A Information to be supplied by purchaser	4
Appendix B Method of carrying out residual stress test	4
Appendix C Method of carrying out resistance to oil and water absorption tests	5
Appendix D Method of carrying out compressibility test	7
Appendix E Method of carrying out gas permeability test	7
Appendix F Method of test to determine maximum stress value	8
Appendix G Method of calibration of residual stress testing apparatus	9
Figure 1 — General assembly of residual stress testing apparatus	10
Figure 2 — Details of residual stress testing apparatus	11
Figure 3 — Details of dynamometer for calibration of residual stress testing apparatus	12
Figure 4 — Typical calibration curve for residual stress testing apparatus	13
Figure 5 — Typical layout of test apparatus for sealability	14
Figure 6 — Arrangement for calibration of dynamometer at increased temperatures	15
Figure 7 — Dynamometer	15
Table 1 — Tolerance for thickness of sheet	2
Publication(s) referred to	Inside back cover

Foreword

This British Standard has been prepared under the direction of the Piping Systems Components Standards Policy Committee.

This standard is one of a series of standards specifying the following materials and compounds.

BS 1832, *Specification for compressed asbestos fibre jointing*.

BS 6956, *Jointing materials and compounds*.

- *Part 1: Specification for corrugated metal joint rings*;
- *Part 2: Specification for vulcanized fibre sheets¹⁾*;
- *Part 3: Specification for flexible vulcanized fibre sheets¹⁾*;
- *Part 4: Specification for rubber reinforced jointing¹⁾*;
- *Part 5: Specification for jointing compounds for use with water, low pressure saturated steam, 1st family gases (excluding coal gas) and 2nd family gases*;
- *Part 6: Specification for jointing compound for 3rd family gases*;
- *Part 7: Specification for anaerobic jointing compounds for use with 1st, 2nd and 3rd family gases¹⁾*.

WARNING. This British Standard calls for the use of substances and/or procedures that may be injurious to health if adequate precautions are not taken. It refers only to the technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

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. Attention is drawn particularly to the Health and Safety at Work etc. Act 1974.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 16, 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⁾ In preparation.

1 Scope

This British Standard specifies the requirements for the manufacture, quality and finish, thickness and testing of elastomer bonded compressed fibre jointing material that does not contain asbestos.

NOTE 1 Appendix A lists the information which is to be supplied by the purchaser.

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

2 Definitions

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

2.1 jointing

a manufactured solid run single-ply material supplied in sheets, from which required shapes can be cut and used for the purpose of sealing mating faces of components from the ingress or egress of fluids

2.2 inert fluid

a gas or liquid (other than aqueous) which under no circumstances will cause any chemical reaction with any part of the jointing or tend to cause any disintegration

2.3 manufacturing run

that amount of jointing all of one grade in units of a maximum of 5 t

3 Material and grades

3.1 Material

The material shall consist of fibres and inorganic fillers bonded with a suitable elastomer or blend of elastomers, and shall be manufactured in the form of sheets. The fibres shall be uniformly dispersed throughout the jointing.

NOTE Examples of fibres that may be used (singly or in combination) are aramid, carbon and glass.

Asbestos fibres shall not be used.

3.2 Grades

This standard provides for two grades as follows.

- a) Grade X shall be suitable for water, steam and gases at temperatures up to 250 °C and for oil, solvents and inert liquids at temperatures up to 440 °C.
- b) Grade Y shall be suitable for water, steam and gases at temperatures up to 200 °C and for oil, solvents and inert liquids at temperatures up to 350 °C.

NOTE The purchaser should state in his enquiry and/or order which grade is required.

3.3 Contact with potable water

When used under the conditions for which they are designated, non-metallic products in contact with or likely to come into contact with potable water shall comply with the requirements of BS 6920-1:1988.

NOTE 1 Non-metallic products for installation and use in the United Kingdom which are verified and listed under the UK Water Fittings Byelaws Scheme are deemed to satisfy the requirements of this clause. Details of the Scheme are obtainable from WRc plc, 660 Ajax Avenue, Slough SL1 4BG.

Non-metallic products approved by the Department of the Environment Committee on Chemicals and Materials of Construction for use in Public Water Supply and Swimming Pools are considered free from adverse health effects for the purposes of compliance with this clause.

NOTE 2 A list of approved chemicals and materials and details of the approvals scheme are available from the Secretary of the Committee at the Department of the Environment, Water Division, Romney House, 43 Marsham Street, London SW1P 3PY.

NOTE 3 The purchaser should state in his enquiry and/or order whether when used under the conditions for which they are designated, non-metallic products come or are likely to come into contact with potable water (see Appendix A).

4 Finish

The sheets of either grade of jointing shall be of uniform texture, smooth on both sides and free from irregularities such as blisters, tears and lumps.

NOTE When required by the purchaser, one or both surfaces may be treated with graphite or other acceptable release agent (see Appendix A).

5 Thickness

5.1 Nominal thickness

The nominal thickness of either grade of jointing shall be one of the following:

- a) 0.5 mm;
- b) 0.75 mm;
- c) 1.0 mm;
- d) 1.5 mm;
- e) 2.0 mm.

NOTE The purchaser should state in his enquiry and/or order the thickness required.

5.2 Thickness tolerance

The maximum variation of any sheet from the nominal thicknesses, and the maximum permissible variation in thickness between any points not more than 250 mm apart on a sheet shall be in accordance with Table 1.

Table 1 — Tolerance for thickness of sheet

Nominal thickness of sheet	Maximum permissible variation from nominal thickness	Maximum permissible variation in thickness between points not more than 250 mm apart
mm	mm	mm
0.5	± 0.05	0.05
0.75 and 1.0	± 0.10	0.10
1.5 and 2.0	± 0.15	0.10

5.3 Thickness measurement

The thickness shall be measured with either:

- a ratchet micrometer complying with BS 870 and having an anvil of 6 mm to 16 mm in diameter. The reading shall be taken after three clicks of the ratchet; or
- a dial type micrometer complying with BS 907, with a flat pressure foot of not less than 6 mm diameter and a flat anvil of diameter not less than that of the pressure foot.

6 Tests

6.1 Samples

The manufacturer shall select from each manufacturing run of jointing, a sample or samples including those treated with graphite where appropriate (see clause 4 and Appendix A) sufficient to provide the test pieces for one complete series of tests as specified in this clause. The manufacturer shall carry out tests in accordance with 6.2 to 6.5 for each manufacturing run of jointing.

6.2 Residual stress

The residual stress when determined in accordance with Appendix B shall be not less than 25 MPa for grade X or 22 MPa for grade Y.

6.3 Resistance to oil and water absorption

6.3.1 Oil

When determined in accordance with Appendix C the oil absorption shall not be greater than the following:

- 20 % as measured by increase in the original thickness for jointing of 0.5 mm and 0.75 mm thickness;
- 10 % as measured by increase in the original thickness for jointing over 0.75 mm thickness.

6.3.2 Water

When determined in accordance with Appendix C the water absorption shall not be greater than 15 % as measured by increase in the original thickness of the jointing.

6.4 Compressibility

When determined in accordance with Appendix D, jointing of 0.75 mm nominal thickness and above shall show a depth of the impression, expressed as a percentage of the original thickness under preload, of not less than 6 %.

NOTE Values for thickness of 0.5 mm have been omitted owing to the practical difficulty of making satisfactory measurements.

6.5 Gas permeability

When determined in accordance with Appendix E the leakage shall not exceed 1 mL/min.

7 Retest

If any sample fails to comply with the requirements related to any appropriate test, two further samples shall be selected from the same manufacturing run for retesting and each shall comply with the requirements of the test(s). If either of the retest samples fails the test the whole manufacturing run of material shall be deemed not to comply with this British Standard.

8 Marking

8.1 Every sheet of jointing shall be indelibly marked with the number of this British Standard and the grade of the material, e.g. BS 7531²⁾ Grade X.

8.2 If the jointing is marked with the manufacturer's identification mark this shall be indelibly marked on every 300 mm × 300 mm of the jointing.

NOTE If the purchaser does not require the manufacturer's identification mark this should be stated in the enquiry or order (see Appendix A).

8.3 When the individual marking of small items is impracticable, the markings specified in 8.1 shall be shown clearly on the package.

²⁾ Marking BS 7531 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.

9 Test certificate

If the purchaser requires a test certificate for each consignment it shall be worded as follows.

“We hereby certify that the jointing supplied complies in all respects with the requirements of BS 7531, *Specification for compressed non-asbestos fibre jointing*.

Grade

The identification marks on the jointing are”

NOTE A test certificate is not normally provided. The purchaser should state in his enquiry and/or order whether a test certificate is required (see Appendix A).