

Specification for

Asbestos-cement flue pipes and fittings, heavy quality

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Co-operating organizations

The Asbestos and Asbestos-Cement Building Products Industry Standards Committee, under whose supervision this British Standard was prepared consists of representatives of the following Government departments and scientific and industrial organizations:

- Asbestos Cement Manufacturers' Association*
- Concrete Society
- Department of the Environment — Building Research Station
- Department of the Environment, Public Buildings and Works*
- Incorporated Association of Architects and Surveyors
- Institution of Civil Engineers
- Institution of Municipal Engineers*
- Institution of Structural Engineers
- National Federation of Builders' and Plumbers' Merchants
- National Federation of Building Trades Employers
- National Federation of Roofing Contractors
- Royal Institute of British Architects*
- Royal Institution of Chartered Surveyors
- Royal Society of Health
- An individual manufacturer*

The Government department and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

- British Gas Corporation
- Institute of Plumbing
- Institution of Gas Engineers
- National Federation of Plumbers and Domestic Heating Engineers
- Society of British Gas Industries
- Individual manufacturers

This British Standard, having been approved by the Fibre Reinforced Cement Products Standards Committee, was published under the authority of the Executive Board on 30 March 1973

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Foreword

This British Standard has been prepared under the authority of the Fibre Reinforced Cement Products Standards Committee. It has been revised in metric terms as part of that committee's programme of metrication and supersedes the 1967 edition. The metric values are given in SI units. For further information on SI units reference should be made to BS 3763, *"The International System of units (SI)"*.

Recommendations on methods of fixing and jointing flues for gas appliances are given in the appropriate sections of CP 337, *"Flues for gas appliances up to 1 50 000 Btulh rating"*.

Where such pipes are used in conjunction with incinerators having a refuse combustion chamber capacity exceeding 0.03 m³ but not exceeding 0.09 m³ or with solid smokeless fuel burning or oil burning appliances, it is essential that the first 1 800 mm of flue pipe leading from the outlet is made of cast iron complying with the requirements of BS 41, *"Cast iron spigot and socket flue or smoke pipes and fittings"*, or of mild steel not less than 5 mm thick. An asbestos-cement socket for connecting asbestos-cement pipes to metal pipes of similar internal diameter is illustrated in this standard. For oil burning appliances, however, where the flue temperature is unlikely to exceed 260 °C such use of a metal flue for the first 1 800 mm length may not be necessary and the appropriate building authority should be consulted.

The detailed description of the apparatus and procedures for the testing of flue pipes and fittings have been omitted from this standard as these are given in the appropriate sections of BS 4624, *"Methods of test for asbestos and asbestos-cement building products"*.

There are several different designs of terminals available and approved by the British Gas Corporation for use with flues for gas-fired appliances. The British Gas Corporation should be consulted as to suitable designs of terminals for this purpose.

The clause defining sampling, inspection and acceptance has been amended to agree with the description standardized in ISO/R 390, *"Sampling and inspection of asbestos-cement products"*, drawn up by Technical Committee 77 of the International Organization for Standardization responsible for products in asbestos-cement.

The recommendations for the co-ordination of dimensions in building are embodied, where appropriate, in this standard; the terminology is in accordance with the definitions in BS 6100-1.5.1.

The manufacture of all asbestos based products is covered by the requirements of the Control of Asbestos at Work Regulations 1987, introduced on 1 March 1988. These set out comprehensive provisions covering work activities involving exposure to asbestos. Advice on how to comply with these regulations can be obtained from the manufacturers of the material, from the Asbestos Information Centre, St. Andrew's House, 22-28 High Street, Epsom, Surrey KT19 8AH, from the local area office of the Health and Safety Executive or from the Environmental Health Department of the Local Authority.

WARNING. Breathing asbestos dust is dangerous to health and precautions have to be taken during the manufacture and use of these products.

Particular note has to be taken of the Asbestos Products (Safety) Regulations 1985, made under the Consumer Safety Act 1978 and of the Asbestos (Prohibitions) Regulations 1985¹⁾ made under the Health and Safety at Work etc. Act 1974, which prohibit the supply of products containing amosite or crocidolite and set out requirements for the labelling of all products containing asbestos.

All the above legislation implements European Directives.

¹⁾ Parallel regulations for Northern Ireland came into force on 6 March 1986.

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 to iv, 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 Scope

This British Standard covers heavy quality asbestos-cement flue pipes and fittings, of diameters from 75 mm to 600 mm inclusive, with or without internal acid-resisting coatings, intended for use with the following types of appliances:

- 1) solid smokeless fuel burning stoves (output rating not exceeding 45 kW)
- 2) oil-burning appliances (output rating not exceeding 45 kW)
- 3) gas fired appliances
- 4) incinerators (not exceeding 0.09 m³ in capacity).

It is important that there shall be no direct flame impingement on the walls of the flue pipes.

These pipes and fittings may also be used for ventilation and other purposes. Where it is anticipated that the material will be subjected to a flue temperature exceeding 260 °C the advice of manufacturers should be sought.

NOTE 1 For flue pipes and fittings of diameters of 150 mm and under, for use with gas-fired appliances having an input rating not exceeding 45 kW, see BS 567.

NOTE 2 The titles of the British Standards referred to in this standard are listed on page 16.

2 Composition

Asbestos-cement flue pipes and fittings shall be made from a close and homogeneous mixture consisting essentially of a suitable inorganic hydraulic binder²⁾, asbestos fibre (except fibres of crocidolite and amosite which are not permitted) and water, and shall exclude any materials liable to cause ultimate deterioration in the quality of the pipes and fittings. They shall be left in their natural colour, or colouring matter conforming to the requirements of BS 1014 shall be added in the composition.

NOTE Pipes and fittings may also receive adherent coloured or uncoloured coatings on their surfaces.

3 Manufacture

The material used in the manufacture of the pipes and fittings shall be intimately mixed by mechanical means.

The finished pipes and fittings shall be smooth and of good appearance, their inner and outer surfaces being as nearly as practicable concentric; the ends of the pipes or fittings shall be finished square to their axes. They shall be in all respects sound, homogeneous and free from excrescences or other imperfections detrimental to their performance.

4 Dimensions and tolerances

4.1 Dimensions. Dimensions of pipes and fittings shall be as shown in Figure 1 to Figure 10 and in Table 1 to Table 10.

4.2 Nominal length. The nominal length of pipes shall be the total length exclusive of the internal depth of a socket.

4.3 Nominal size. The nominal size of a pipe or fitting shall be measured in terms of its internal diameter.

4.4 Spigots and sockets of pipes and fittings. Spigots and sockets of pipes and fittings shall conform to the dimensions laid down in Table 1. In all cases dimension C in Table 1 shall be the minimum internal diameter for the socket.

4.5 Tolerances. Permissible variations in length, thickness, internal and external diameter, are shown in Table 11.

5 Standard tests

5.1 Straightness, regularity of thickness, and diameter. The deviation of straightness of pipes when tested in the manner described in BS 4624 shall not be more than 3 mm in any 600 mm and not more than 6 mm in 1 800 mm.

The regularity of thickness and diameter when tested with gauges and callipers provided and maintained by the manufacturer in proper condition for the purpose shall be in accordance with Table 11.

5.2 Water tightness. Pipes and fittings, when subjected to a test of 400 mbar internal hydraulic pressure by the method described in BS 4624 shall not show any defects.

5.3 Bursting strength. The strength of the pipes shall be such that, when tested in the manner described in BS 4624 they will withstand the minimum hydraulic pressure shown in Table 12.

5.4 Water absorption. The mean water absorption of pipes and fittings, when specimens are tested in the manner described in BS 4624 shall not exceed 30 % of the dry weight of the material.

5.5 Chemical resistance. The mean amount of acetic acid neutralized, when specimens selected from pipes and fittings are tested in the manner described in BS 4624 shall not exceed 0.115 g/cm².

6 Protection and means of checking it

6.1 Where required and taking into consideration the purpose of the installation, a suitable protective coating as agreed between the user and the manufacturer shall be applied.

²⁾ Cement complying with the requirements of BS 12 satisfies this requirement.

When such a coating is required, the whole of the internal surface, including the socket and edge of the spigot end, shall be coated.

6.2 In those instances where the protective coating is required for pipes and fittings for flueing gas-fired appliances (see CP 337), it shall be identifiable by colour and the following additional tests shall apply.

6.2.1 Test for acid resistance (24 h). When tested in accordance with the method described in BS 4624 there shall be no peeling or formation of white deposits.

6.2.2 Test for acid resistance (100 h). When tested in accordance with the method described in BS 4624 there shall be no peeling or formation of white deposits.

6.2.3 Test for temperature susceptibility. When tested in accordance with the method described in BS 4624 there shall be no visual signs of cracking or of significant blistering of the internal coating.

6.2.4 Test of adhesion. When tested in accordance with the method described in BS 4624 there shall be no flaking or lifting of the exposed edges of the coating.

7 Sampling and arrangements for proving samples

7.1 All items in a consignment shall meet the requirements of Clauses 2, 3, 4, 5 and, where applicable, 6.

7.2 If the purchaser requires the manufacturer to test the products in a particular consignment in accordance with Clauses 5 and 6, this shall be stated in the enquiry and order. Specimens for testing for compliance with these clauses shall be selected by sampling in accordance with Appendix A. If tests are to be made in the presence of the purchaser, or his representative, this also shall be stated.

7.3 When the number of specimens required to be tested exceeds the numbers laid down in Table 13 the cost of such additional tests, unless otherwise stipulated, shall be borne:

- 1) by the manufacturer if the results show that the material does not comply with the specification,
- 2) by the purchaser if the results show that the material complies with the specification.

7.4 Independent tests may be carried out by agreement between the manufacturer and the purchaser, and attention is drawn to the Note following Clause 8.

8 Marking

Every pipe and fitting shall be marked legibly with the following:

- 1) the manufacturer's name or trade mark,
- 2) nominal size of the pipe or fitting,
- 3) the number of this British Standard, i.e. BS 835.

NOTE Attention is drawn to certification facilities offered by BSI; see the inside back cover of this standard.