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SPECIFICATION FOR

ASBESTOS CEMENT PRESSURE PIPES

BRITISH STANDARDS INSTITUTION

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ASBESTOS CEMENT PRESSURE PIPES

B.S. 486 : 1966

Price 8/- net

BRITISH STANDARDS INSTITUTION

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THIS BRITISH STANDARD, having been approved by the Asbestos Cement Products Industry Standards Committee and endorsed by the Chairman of the Building Divisional Council, was published under the authority of the General Council on 16th November, 1966.

First published, April, 1933.
First revision, December, 1956.
Second revision, November, 1966.

The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 4000, fully indexed and with a note of the contents of each, will be found in the British Standards Yearbook, price 15s. The B.S. Yearbook may be consulted in many public libraries and similar institutions.

This standard makes reference to the following British Standards:

B.S. 12.	Portland cement (ordinary and rapid hardening).
B.S. 903.	Methods of testing vulcanized rubber. Part A7. Determination of hardness.
B.S. 1452.	Grey iron castings.
B.S. 2494.	Rubber joint rings for gas mains, water mains and sewers.

British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.

The following B.S.I. references relate to the work on this standard:
Committee reference ASB/2 Draft for comment D65/4181

CO-OPERATING ORGANIZATIONS

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

*Asbestos Cement Manufacturers' Association
*Crown Agents for Oversea Governments and Administrations
Incorporated Association of Architects and Surveyors
*Institution of Civil Engineers
*Institution of Municipal Engineers
*Institution of Structural Engineers
*Ministry of Public Building and Works
*Ministry of Technology—Building Research Station
*National Federation of Building Trades Employers
National Federation of Builders' and Plumbers' Merchants
National Federation of Roofing Contractors
*Royal Institute of British Architects
*The Royal Institution of Chartered Surveyors
Royal Society for the Promotion of Health

The Government departments 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 Waterworks Association
Cement Makers' Federation
Federation of Civil Engineering Contractors
Gas Council
Institution of Gas Engineers
Institution of Water Engineers
Ministry of Housing and Local Government

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BRITISH STANDARD SPECIFICATION FOR

ASBESTOS CEMENT PRESSURE PIPES

FOREWORD

This British Standard, issued under the authority of the Asbestos Cement Products Industry Standards Committee, has been revised to take account of the greater availability of materials and improved methods of manufacture which have enabled a reduction to be effected in the tolerances on the external diameter at the ends of the pipes. Dimensions and requirements of bends of various angles have been incorporated and the requirements of the hydraulic bursting test have been amended. Since the 1965 edition the range of pipes has been extended to 36 in diameter from the previous maximum of 24 in, in increments of 3 in. A 16 ft 4⅞ in length (5 m) has also been incorporated in addition to the existing 13 ft 1½ in length (4 m). An appendix gives precautions to be taken in regard to the fixing of ferrules.

This standard generally follows the test requirements specified in the ISO Recommendation R.160, Asbestos Cement Pressure Pipes.

NOTE 1. The values in British units are to be regarded as the standard. Any metric conversions are approximate. More accurate conversions should be based on the data in B.S. 350, 'Conversion factors and tables'. The metric values stated for nominal diameters are the 'corresponding values' given in ISO Recommendation R.160, Asbestos Cement Pressure Pipes.

NOTE 2. In place of the customary but incorrect use of the pound as a unit of force, the unit called the pound-force (abbreviation lbf) has been used in this standard. It is the force which, when acting on a body of mass one pound, gives it an acceleration equal to that of standard gravity.

SPECIFICATION

SCOPE

1. This British Standard gives requirements for pipes, joints and bends manufactured from asbestos fibre and cement and suitable for use under pressure. Four classes of pipe are covered, tested to pressures ranging from 200 ft to 800 ft (60·9 m to 243·8 m) head of water (approx. 87 lbf/in² to 348 lbf/in²) (6·1 kgf/cm² to 24·4 kgf/cm²).

NOTE Information generally required from the purchaser is given in Appendix H.

COMPOSITION

2. The pipes and fittings shall be made from a close and homogeneous mixture consisting essentially of cement complying in every respect with the requirements of B.S. 12* and clean asbestos fibre excluding any material liable to cause ultimate deterioration in the quality. The finished products shall be capable of being cut, drilled and tapped.

* B.S. 12, 'Portland cement (ordinary and rapid hardening)'.

CEMENT

3. The cement used in the manufacture of the pipes, joints and bends shall comply in every respect with the requirements of B.S. 12*.

MANUFACTURE

4. The materials used in the manufacture of the pipes, joints and bends shall be intimately mixed by mechanical means and the finished product shall be entirely seamless and homogeneous.

After forming and during the period of setting, the date of manufacture and the class shall be impressed on the pipe wall. The class and size shall be stencilled on bends.

When the pipes and bends have hardened sufficiently to be handled safely they shall be completely immersed in water for a period of not less than 7 days.

The ends of the pipes and bends shall be finished square to the axis, and turned or otherwise finished as appropriate to ensure accurate jointing.

The pipes and bends shall be allowed to mature for a period of at least 14 days (inclusive of the 7 days water immersion) before being subjected to any of the tests specified in Clauses 12 to 16.

After maturing, the pipes and bends shall be coated internally and externally by dipping in a bituminous solution (see Clause 19), unless otherwise specified by the purchaser.

CLASSIFICATION AND DIMENSIONS

5. The pipes and bends shall be classified according to the minimum test pressure which they are intended to withstand.

The classification shall be as given in Table 1.

TABLE 1. CLASSIFICATION OF PIPES

	Test pressure			
	British units		Metric conversions	
Class of pipe	Head of water	Equivalent	Head of water	Equivalent
	ft	lbf/in²	m	kgf/cm²
A	200	86·7	60·9	6·09
B	400	173·4	121·9	12·19
C	600	260·1	182·8	18·28
D	800	346·8	243·8	24·38

NOTE. Diverse conditions of use preclude the specification of a working pressure, but it is recommended that this should not exceed one half of the test pressure.

The dimensions of pipes shall be as given in Tables 4 and 5.

* B.S. 12, 'Portland cement (ordinary and rapid hardening)'.

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FREEDOM FROM DEFECTS AND PERMISSIBLE VARIATION ON THICKNESS AND DIAMETER

6. The pipes, joints and bends shall be free from defects. The tolerances which shall be applied to the finished ends of the pipes and bends are given in Table 5. These tolerances do not apply to cast iron fittings, when used with asbestos cement pipes.

The thickness of the barrel shall be not less than that specified for the finished ends of the pipe. If required by the purchaser, 1 per cent of the pipes shall be supplied turned along the full length and these shall be marked by a painted line running the whole length to indicate that they are intended for cutting. Pipes turned full length may be supplied in lengths less than the standard provided that no pipe so supplied is less than 6 ft long.

LENGTH AND PERMISSIBLE VARIATION IN LENGTH

7. The standard length of the pipes shall be as given in Table 2.

TABLE 2. LENGTH OF PIPES

Nominal size of pipe	Length	Metric equivalents	
		Nominal size of pipe	Length
in	ft in	cm	m
2 and 3	10 0	5·0 and 7·5	3·048
4 to 10	13 1½	10·0 to 25·0	4·00
12 to 24	13 1½ 16 4⅞	30·0 to 61·0	4·00 5·00
27 to 36	16 4⅞	67·5 to 90·0	5·00

Shorter lengths shall be supplied on request.

A tolerance of minus ½ in (12·7 mm) or plus ⅛ in (3·17 mm) shall be allowed on the length of an individual pipe After cutting the pipes for test purposes during manufacture, a usable pipe of not less than 8 ft 9 in for 10 ft (2·66 m for 3·04 m), 12 ft for 13 ft 1½ in (3·65 m for 4·0 m) or 15 ft for 16 ft 4⅞ in (4·57 m for 5·0 m) respectively will be left. These shortened pipes with ends finished for jointing (see Clause 4) shall be accepted in that respect by the purchaser as standard lengths up to not more than 1 per cent of the order. In any case the total length of pipes supplied shall be not less than the total length ordered.

SAMPLING, TESTING AND INSPECTION

8. The purchaser or his representative shall have access at all reasonable times to that part of the manufacturer's premises set aside for inspection and testing of the pipes and fittings being supplied to his order.

Except where otherwise specified, the manufacturer, at his own expense, shall supply and maintain in proper condition all necessary dimensional gauges, prepare the necessary test pieces and supply labour and appliances for such tests as are specified herein and these shall be carried out on his premises in accordance with this specification. Failing facilities at his own works for making the prescribed tests, the manufacturer shall bear the cost of carrying out the tests elsewhere. All the manufacturer's tests shall be carried out before delivery.

A sufficient number of tests, as applicable and as determined statistically, shall be made by the manufacturer to ensure that the probability of any one of his pipes falling below the minimum requirements specified in Clauses 9, 10, 12, 13, 14, 15 and 16 and in Clause 11*b* (bends) shall not exceed one per thousand of total production.

When required by the purchaser the agreed number of optional additional tests on specimens selected by himself shall be made in accordance with Clauses 9, 10, 11, 12, 13, 14, 15 and 16, subject to Clause 20 and Appendix H.

TEST FOR STRAIGHTNESS

9. When tested for straightness, the pipes shall be rolled on a level surface or gantry. The deviation from the straight, as determined by use of suitable straight-edges, gauges and calipers, shall not exceed ½ in for 10 ft and 13 ft 1½ in pipes (12·7 mm for 3·04 m and 4·0 m), or ⅝ in for 16 ft 4⅞ in pipes (15·9 mm for 5·0 m).

BALL OR PLUG TEST

10. When the pipe is tested for regularity of internal diameter a steel ball or suitable steel plug shall pass freely through the whole of its length. The diameter of the ball or plug shall be less than the internal diameter of the pipe as specified in Table 4 by the amounts shown in Table 3.

TABLE 3. DIAMETER OF BALL OR PLUG

Nominal size of pipe	Diameter of ball or plug less than actual internal diameter of pipe by	Metric equivalents	
		Nominal size of pipe	Diameter of ball or plug less than actual internal diameter of pipe by
in	in	cm	mm
2 to 9	0·15	5·0 to 22·5	3·9
10 to 15	0·20	25·0 to 37·5	5·1
18 to 24	0·25	45·0 to 61·0	6·3
27 and 30	0·30	67·5 and 75·0	7·6
33 and 36	0·35	82·5 and 90·0	8·9

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