

Specification for

Acrylonitrile- butadiene-styrene (ABS) pressure pipe —

Part 1: Pipe for industrial uses

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	Water Companies Association
	Water Research Centre

This British Standard, having been prepared under the direction of the Plastics Standards Committee, was published under the authority of the Executive Board on 29 October 1976

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The following BSI references relate to the work on this standard:
Committee reference PLC/9, PLC/9/3
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Foreword

This Part of BS 5391 has been prepared under the authority of the Plastics Standards Committee and is based on a draft submitted by the British Plastics Federation.

This Part specifies requirements for pipe for industrial uses; it is intended to publish Part 2 dealing with pipe for use with potable water when work to ensure biological suitability for this application has been completed.

The nominal size dimensions specified in Table 1 are in accordance with BS 3867.

Maximum sustained working pressures are based on a recommended maximum working stress for the material of 7.5 MPa at a temperature of 20° when in the pipe form and are specified in bars, but Appendix G is included giving equivalent values in technical metric and imperial units.

Attention is drawn to CP 312, which has been prepared to assist users in assessing the suitability of plastics pipes for particular purposes and to ensure their proper application.

Attention is also drawn to BS 5392-1 which specifies requirements for ABS fittings for use with the pipe.

Certification. It is strongly recommended that in view of the nature of this specification manufacturers and purchasers should make use of the certification facilities described on the inside back cover of this standard.

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 8, 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 Part of BS 5391 specifies requirements for pipe made from acrylonitrile-butadiene-styrene (ABS) polymer for industrial purposes including foodstuffs and pharmaceuticals.

2 References

The titles of the standards publications referred to in this standard are listed on page 8.

3 Material

3.1 The material from which the pipe is made shall be acrylonitrile-butadiene-styrene polymer formulated to facilitate the manufacture of pipe of good surface finish and mechanical strength.

3.2 If the pipe is intended for use with foodstuffs or pharmaceuticals the material shall be suitable for its particular intended use.

NOTE Attention is drawn to British Plastics Federation Publication 45/3, Code of Practice, Plastics food contact application.

3.3 When tested by method 102J of BS 2782:1970 the deformation temperature of the material shall be not lower than 90 °C.

3.4 The addition of the manufacturer's own clean rework material resulting from the manufacture of pipe in accordance with this standard is permissible; no other rework material shall be used.

4 Designation of dimensional characteristics

Pipe dimensions shall be designated by the nominal size (see Table 1).

5 Classification of pipe

Pipe shall be classified according to its suitability for threading and for maximum sustained working pressures, as follows.

Unsuitable for threading:

- class B 6.0 bar^a;
- class C 9.0 bar;
- class D 12.0 bar;
- class E 15.0 bar.

Suitable for threading in compliance with BS 21:

- class T 12.0 bar.

^a 1 bar = 10⁵ N/m² = 100 kPa.

NOTE Equivalent values in other units are given in Appendix G. The maximum sustained working pressures given above are based on water at a temperature of 20 °C. These pressures are the respective maximum sustained working pressures for which the classes of pipe are suitable for use.

6 Dimensions

6.1 General. Pipe shall conform to the outside diameters and wall thicknesses given in Table 1.

6.2 Tolerance on outside diameter. An out of roundness tolerance of ± 0.5 % on the mid mean outside diameter applicable to classes C, D, E and T is incorporated in the values for individual outside diameters given in Table 1.

NOTE This extra ovality tolerance is not necessary for pipe which may easily be re-rounded.

6.3 Length. Pipe shall be supplied in straight lengths, normally of 3 m, 6 m and 9 m. Other lengths may be supplied, if required by the purchaser and by agreement with the manufacturer.

6.4 Tolerance on length. The effective length shall be not less than the appropriate length specified or as ordered in accordance with 5.3.

7 Physical characteristics

7.1 Appearance. The internal and external surface of the pipe shall be smooth, clean and reasonably free from grooving and other defects. The ends shall be cleanly cut and square with the axis of the pipe.

7.2 Heat reversion. When tested by the method described in Appendix A, at no point round the pipe shall the length change by more than 5.0 %. After testing, the pipe shall show no faults, e.g. cracks, cavities or blisters.

7.3 Heat ageing. After heat ageing by the method described in Appendix B, the pipe shall meet the requirements of 7.5 except that the mass of the weighted striker shall be reduced to 50 % of the appropriate value given in Table 4.

7.4 Resistance to weathering. When exposed as described in Appendix C the pipe shall meet the requirements of 7.5 except that the mass of the weighted striker shall be reduced to 50 % of the appropriate value given in Table 4.

7.5 Impact resistance. When tested at a temperature of 0 °C by the method described in Appendix D compliance shall be judged on the failure rate (a failure being defined as a test specimen fracturing or cracking right through the complete wall thickness) as follows.

- a) If the first 14 specimens tested contain no failures the batch of pipe shall be deemed to be satisfactory.
- b) If the first 14 specimens tested contain four or more failures the batch of pipe shall be deemed to be unsatisfactory.