

Precast concrete pipes, fittings and ancillary products —

Part 114: Specification for porous pipes

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Cement, Gypsum, Aggregates and Quarry Products Standards Policy Committee (CAB/-) to Technical Committee CAB/12, upon which the following bodies were represented:

- Association of Consulting Engineers
- Association of Metropolitan Authorities
- British Cement Association
- British Precast Concrete Federation Ltd.
- Concrete Pipe Association
- Concrete Society
- County Surveyors' Society
- Department of Transport
- Federation of Civil Engineering Contractors
- Institution of Civil Engineers
- Institution of Highways and Transportation
- Institution of Water and Environmental Management
- Ministry of Agriculture, Fisheries and Food
- Pipe Jacking Association
- Sand and Gravel Association Limited
- Water Services Association of England and Wales

The following body was also represented in the drafting of the standard, through subcommittees and panels:

- Department of Transport

This British Standard, having been prepared under the direction of the Cement, Gypsum, Aggregates and Quarry Products Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 November 1992

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Foreword

This Part of BS 5911 has been prepared under the direction of the Cement, Gypsum, Aggregates and Quarry Products Standards Policy Committee. It supersedes BS 1194:1969 which is withdrawn.

In carrying out the revision the opportunity has been taken to integrate the new standard with the BS 5911 series and to align the contents wherever appropriate with BS 5911-100.

Compared with BS 1194, which has remained untouched since its publication in 1969, the revision is fully metricated and incorporates an inspection system based on BS 6001-1:1991 for controlling production batches.

Product certification. Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard based on testing and continuing surveillance, which may be coupled with assessment of a supplier's quality systems against the appropriate Part of BS 5750.

Enquiries as to the availability of third party certification schemes will be forwarded by BSI to the Association of Certification Bodies. If a third party certification scheme does not already exist, users should consider approaching an appropriate body from the list of Association members.

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.

Section 1. General

1 Scope

This Part of BS 5911 specifies requirements for unreinforced porous concrete pipes which are intended to admit water through the pipe wall throughout their full length and full circumference or, in the case of pipes with non-porous inverts, throughout part of their circumference. Porosity of the joint is not a requirement.

The specification covers constituent materials, dimensional requirements, performance requirements, appropriate test methods and inspection procedures.

Combinations of special cements have not been included in this standard in the absence of experience with them in this context.

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

2 Definitions

For the purposes of this Part of BS 5911 the following definitions apply.

2.1

porous pipe

a hollow cylinder manufactured from unreinforced porous concrete, of uniform internal diameter and cross section throughout its length, except at the joint profile

NOTE When "pipe" is used alone in this standard this indicates a porous pipe.

2.2

barrel

that portion of a pipe throughout which the internal diameter and cross section remain substantially uniform

2.3

rebated joint

a joint made within the wall thickness of a pipe, including ogee joints

NOTE See Figure 1.

2.4

nominal size (DN)

a numerical designation of the bore of a pipe, which is a convenient round number approximately equal to the internal diameter in millimetres

2.5

manufacturing diameter

a diameter of a pipe that a manufacturer seeks to achieve

2.6

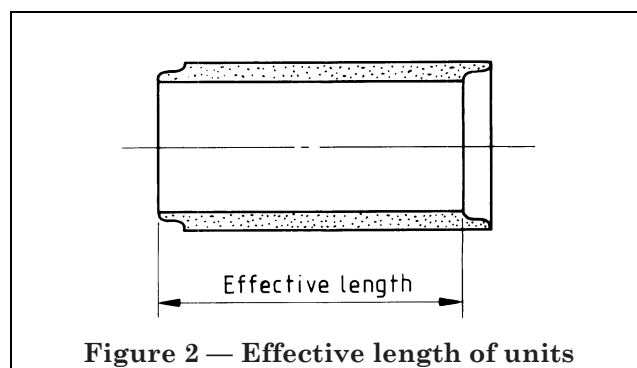
actual internal diameter

an internal diameter found by measurement

2.7

effective length

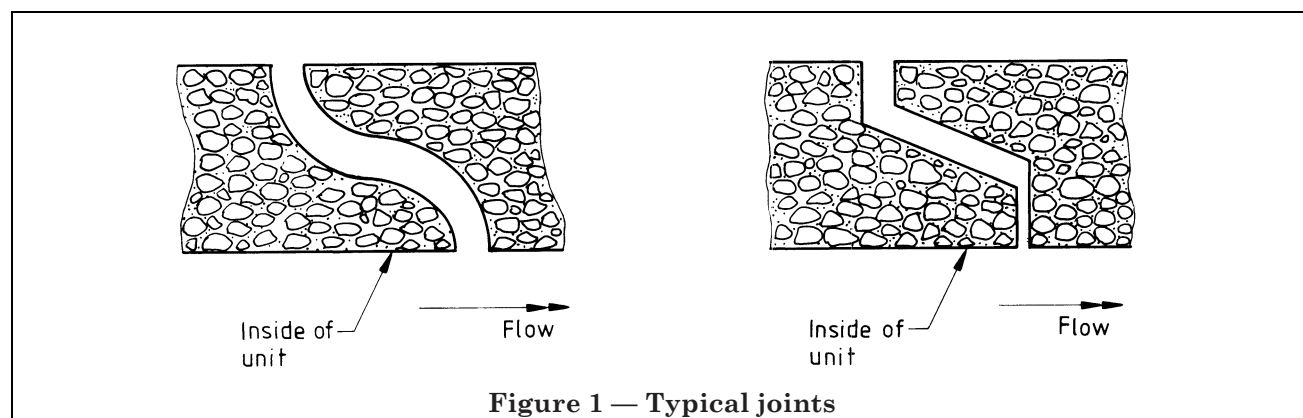
the length of a pipe measured as shown in Figure 2



2.8

batch

the number of pipes of a particular specification produced under uniform conditions during a given production period by one particular process



Section 2. Materials

3 Cement

The cement shall be factory-produced by the cement manufacturer and comply with one of the following standards as appropriate:

Type of cement	Standard to be complied with
ordinary and rapid-hardening Portland	BS 12
Portland-blastfurnace	BS 146
sulfate-resisting Portland	BS 4027

4 Aggregates

4.1 General

Aggregates shall consist of either:

- a) materials complying with BS 882:1983 except that the manufacturer may modify the grading requirements of clause 5 of that standard (see clause 0 of BS 882:1983); or
- b) lightweight aggregate complying with BS 3797.

4.2 Testing

4.2.1 Mechanical properties

The limiting values on the mechanical properties of coarse aggregates shall be either a minimum 10 % fines value of 100 kN or a maximum aggregate impact value of 30 %. Aggregates complying with BS 3797-2 shall have values of 10 % fines, aggregate impact and chloride ion content which are consistent with the relevant provisions of BS 882.

4.2.2 Nominal maximum size

The nominal maximum size of aggregate shall not exceed the least of the following:

- a) 20 mm;
- b) one quarter of the wall thickness.

5 Other concrete materials

5.1 Water

Water shall be clean and free from harmful matter in such quantities as would affect the properties of the concrete in either the plastic or the hardened state (see Appendix A of BS 3148:1980).

NOTE As a general rule, potable water, whether treated for distribution through the public supply or untreated, is suitable for marking concrete.

5.2 Admixtures

Admixtures shall comply with BS 5075.

NOTE Admixtures, when used (see Appendix A), should not impair the durability of the concrete, nor combine with the ingredients to form harmful compounds.

The chloride ion content of admixtures shall not exceed 2 % by mass of the admixture or 0.03 % by mass of the cement, when used in any concrete made with cement complying with BS 4027.

The manufacturer shall make available details of:

- a) the relevant production records;
- b) the admixture(s) used;
- c) the dosage rate of each admixture;
- d) the effect of under-dosing and over-dosing.

6 Concrete

6.1 Work in cold weather

Concrete, when placed, shall have a temperature of at least 5 °C, which shall be maintained until the concrete is hardened.

It is permissible to heat aggregates and water before mixing to a temperature not exceeding 60 °C.

Other materials and moulds, if at a temperature below 0 °C, shall not be used.