

Testing of resin and polymer/cement compositions for use in construction —

**Part 11: Methods for determination of
creep in compression and in tension**

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee B/517, Concrete, to Subcommittee B/517/8, Protection and repair of concrete structures, upon which the following bodies were represented:

- British Adhesives and Sealants Association
- British Cement Association
- British Railways Board
- Building Employers Confederation
- Cement Admixtures Association
- Concrete Repair Association
- Concrete Society
- County Surveyors' Society
- Department of the Environment (Building Research Establishment)
- Department of Transport
- Department of Transport (Transport Research Laboratory)
- Federation of Civil Engineering Contractors
- FeRFA
- Institution of Highways and Transportation
- Institution of Structural Engineers
- Plastics and Rubber Institute
- Sprayed Concrete Association

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Foreword

This Part of BS 6319 has been prepared under the direction of Technical Committee B/517, Concrete. This Part describes methods for determining creep in compression and in tension and is one of a series of Parts describing methods for measuring basic physical properties of resin and polymer modified materials.

This Part of BS 6319 should be read in conjunction with BS 6319-1 which provides general information and describes the method for preparing test specimens.

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. In particular, attention is drawn to the Health and Safety at Work etc. Act 1974 [1].

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 6319 describes methods for the determination of the creep of specimens of polymer and polymer/cement mortars. Creep in compression is measured on rectangular prisms and creep in tension on necked specimens having a maximum aggregate size of 2.4 mm.

The prime objective of the methods is to provide comparative data on materials in order to establish whether or not creep is likely to be significant in the intended application. The methods provide an estimate of creep strains within $\pm 10\%$ of the absolute value under the particular environmental conditions in which the test is conducted. For comparative purposes, it is necessary to control the temperature to within $\pm 2^\circ\text{C}$ of the specified temperature but control of humidity is not essential.

NOTE For specific applications where a higher level of accuracy is required, additional requirements for measurement of load, achieving axiality and environmental conditions should be agreed before testing commences.

2 References

2.1 Normative references

This Part of BS 6319 incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revisions of, any of these publications apply to this Part of BS 6319 only when incorporated in it by updating or revision.

2.2 Informative references

This Part of BS 6319 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Definitions

For the purposes of this Part of BS 6319 the definitions given in BS 6319-1:1983 apply, together with the following.

3.1

compressive stress

force per unit area of the original cross section of a member in compression

3.2

elastic strain

deformation produced by a stress up to the elastic limit and expressed as the change per unit of original dimension

3.3

elastic compressive strain

elastic strain measured immediately following the application of compressive load

3.4

tensile stress

force per unit area of the original cross section of a member in tension

3.5

elastic tensile strain

elastic strain measured immediately following the application of tensile load

3.6

creep strain

time-dependent strain measured over and above elastic strain under the application of a constant load

3.7

creep coefficient

ratio of creep strain to elastic strain at the same applied stress

3.8

elastic recovery strain

amount of elastic strain lost by a member immediately on unloading to zero stress

3.9

creep recovery strain

amount of creep strain lost by a member following unloading to zero stress

3.10

creep recovery coefficient

ratio of creep recovery strain to elastic recovery strain

4 Principle

In the test for creep in compression, a prism of 4 : 1 aspect ratio is subjected to a constant compressive load and change in creep strain with time is related to the elastic compressive strain.

In the test for creep in tension, a necked specimen is subjected to a constant tensile load and change in creep strain with time is related to the elastic tensile strain.

5 Apparatus

5.1 Compressive creep rig, capable of applying the constant load, derived as in 7.2.5, for at least 30 weeks along the axis of the test specimens described in 6.1.