

Specification for aggregates from natural sources for concrete

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Committees responsible for this British Standard

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- Association of Consulting Engineers
- British Aggregate Construction Materials Industries
- British Cement Association
- British Geological Survey
- British Precast Concrete Federation
- British Ready Mixed Concrete Association
- British Steel Industry
- Building Employers' Confederation
- County Surveyors' Society
- Department of the Environment (Building Research Establishment)
- Department of the Environment (Property Services Agency)
- Department of Transport
- Sand and Gravel Association

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Foreword

This British Standard has been prepared under the direction of Technical Committee B/502 Aggregates. This edition introduces technical changes but it does not reflect a full review or revision of the standard which will be undertaken in due course. This standard supersedes BS 882:1983, which is withdrawn.

Terminology included in this edition reflects the preliminary work being undertaken on a European Standard, under the auspices of the European Committee for Standardization (CEN), by CEN/TC 154, Aggregates, which will supersede this edition in due course. “Fine aggregate” is replaced by “sand”, which now refers to natural uncrushed, partially crushed and crushed rock material. “Fines” replaces “clay, silt and fine dust” and refers to any solid material passing a 75 μm sieve.

New grading requirements are introduced for coarse aggregates containing 2 mm to 10 mm fractions with the inclusion of limits for material passing a 14 mm sieve. This ensures a reasonable fraction of the aggregate will be retained between the 20 mm and 14 mm sieves and eliminates the anomaly that some nominal 14 mm aggregates previously complied with the 20 mm grading requirements.

Changes in test methods since the 1983 edition are reflected. The difference in results for mechanical properties dependent on the moisture condition of the aggregate is eliminated by linking limits to tests on oven-dry materials.

Another example reflects the change in the test for fines content to the washing and sieving method and limits have been correspondingly increased. Attention is also drawn to the importance of performance characteristics where doubt exists in place of fixing particular limits for fines contents.

The appendices give further consideration to provision of information by the supplier and advice on user concerns. Appendix A is expanded to include provision of information on request from tests in accordance with BS 812 for acid soluble sulphate contents and drying shrinkage. Additionally in several cases the time period is reduced from which test results are to be provided. Appendix B identifies the potential damaging effect of mundic mine waste specifically in Cornwall and Devon. Finally Appendix C includes tighter guideline limits on chloride content in the total combined aggregate whilst stressing the need to calculate the chloride content of the concrete mix from the total of the measured values for each of the constituents.

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.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 9 and a back cover.

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0 Introduction

When specifying aggregates in compliance with this standard, there may be a need to specify or approve certain additional quality requirements or narrower grading limits within one of those in Table 4 for sands, to suit special applications, for example, the production of concrete having an especially fine finish or suitable for very severe conditions of exposure. Certain machine-formed concrete or precast products may also require aggregate gradings outside those given in Table 3, Table 4 and Table 5. In these cases appropriate grading should be agreed between the purchaser and the supplier. When narrower grading limits are required, sands should be obtained from sources which demonstrate from test data no more variability than a grading width (see Appendix A). Guidance is given in Appendix B on special factors to be considered in the selection of aggregates for which limits cannot be specified and determined by testing the aggregate itself in accordance with an accepted method of test. Guidance on chloride content is given in Appendix C.

In general it will not be necessary to test each aggregate for all of the requirements specified in this standard. Consideration of the nature of the aggregate and its source will normally indicate which characteristics will need periodic examination, particularly in respect of those properties for which different requirements are given for specific uses. The suitability of an aggregate for the required use can be assessed initially by reference to data provided by the supplier in accordance with Appendix A.

Some variation in the measured quality of material from any source can be expected due to sampling and testing in addition to the variability of the material itself. Data provided in accordance with Appendix A may not be strictly applicable to the material in a single sample or consignment.

1 Scope

This British Standard specifies the quality and grading requirements for aggregates obtained by processing natural materials for use in concrete. (For lightweight aggregates, see BS 3797.)

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 British Standard the following definitions apply.

2.1

aggregate

a granular material obtained by processing natural materials

2.2

coarse aggregate

aggregate mainly retained on a 5.0 mm BS 410 test sieve and containing no more finer material than is permitted for the various sizes in this specification.

NOTE Coarse aggregate may be described as gravel (uncrushed, crushed or partially crushed) as defined in 2.2.1, or as crushed rock as defined in 2.2.2, or as blended coarse aggregate as defined in 2.2.3.

2.2.1

gravel

a) **uncrushed gravel**

coarse aggregate resulting from the natural disintegration of rock

b) **crushed gravel**

coarse aggregate produced by crushing gravel

c) **partially crushed gravel**

coarse aggregate produced from a mixture of crushed and uncrushed gravel

2.2.2

crushed rock

coarse aggregate produced by crushing rock

2.2.3

blended coarse aggregate

coarse aggregate produced by the controlled blending of gravel and crushed rock