

Aggregates for concrete

Implementation day 1 January 2004

Introduction

Bulletin 1 of this series of information sheets gave a general introduction to the changes that all producers, specifiers and users of aggregates will need to be familiar with once the European Standards are adopted as from 1 January 2004.

For aggregates for concrete the product standard is BS EN 12620 with the supporting National Guidance given in PD 6682-1. The importance of the National Guidance cannot be over emphasised since it identifies the critical details of the common European product standard and highlights how it should be applied in the UK.

Particular guidance on the relevant test methods is given in PD 6682-9.

The following issues will be of particular interest to all producers, specifiers and users.

Scope

The European product standards include materials from recycled and manufactured sources as well as natural materials.

Aggregate sizes

As described in BS EN 12620 aggregate sizes are expressed in terms of "d/D" with the guidance given in PD 6682-1 providing a table of recommended sizes that represent the best match to current production. Note that 4mm replaces 5mm as the break point between fine and coarse aggregate. For example, 20 - 5mm graded aggregate becomes 4/20.

Gradings

PD 6682-1 sets out the recommended sieves for use in the UK and thus steers all parties to the use of common sizes, avoiding unnecessary confusion.

The new grading procedure places greater emphasis on "consistency of product" and is based on the declaration of the producers "typical" grading with controlling tolerances and overall requirements on designated sieves. This represents a move away from a rigid compliance envelope and the risk of wide variations during supply.

Shape of coarse aggregate

The "flakiness index" is retained as a term, but the test method/equipment is new and there is no correlation with the BS 812 Test which will be withdrawn. PD 6682-1 gives guidance on recommend values.

The new test for "shape index" effectively replaces the BS 812 elongation test, which again will be withdrawn, and assesses the relationship between the maximum and minimum dimensions of individual particles. As elongation was rarely specified the shape index is not recommended for the UK.

Fines quality

The two new tests for fines quality, sand equivalent and methylene blue, are not considered sufficiently precise by the UK for the assessment of harmful fines (clay) content and it is recommended that the existing approach of complying with the fines

content limit or evidence of satisfactory use is maintained.

Resistance to fragmentation

The 10% fines test is replaced by the Los Angeles test. Since the tests do not measure the same properties there is no direct correlation. Guidance on the required Los Angeles values is given in PD 6682-1 for general uses and experience of satisfactory performance will be taken into account until further research can clarify the position.

Resistance to wear

The new micro-Deval test assess the resistance to wear, particularly where particles are in contact and subject to movement. This requirement is not considered relevant to concrete applications.

Highway surfaces

Polished Stone value (PSV) and Aggregate Abrasion value (AAV) tests are the same as the existing BS methods. However, abrasion from studded tyres is not relevant to the UK.

Durability

Due to the long-term experience in the UK the magnesium sulphate soundness test is recommended in preference to the new freeze/thaw test. Although the soundness test is the same as the current BS method, care needs to be taken with the reporting of the results - they are now reversed! There is little experience of the new freeze/thaw test in the UK and its use is not recommended.

CE marking

The new product standard sets out the minimum requirements for a factory production control system, declaration of conformity of the essential requirements and hence CE Marking. Based on safety criteria - skidding resistance - aggregates having a PSV of 58 or above must be subject to Attestation Level 2+, but for all other purposes Level 4 is applicable.

Note

This bulletin sheet does not replace the relevant product standard - BS EN 12620 - or the National Guidance Documents - PD 6682-1 and PD 6682-9 - and aims to give introductory information only.

Further information can be obtained from **QPA** at the address below.

BS EN 12620: 2002

Aggregates for concrete

PD 6682-1: 2003

Aggregates - Part 1: Aggregates for concrete - Guidance on the use of BS EN 12620

PD 6682-9: 2003

Aggregates - Part 9: Guidance on the use of European test method standards

All documents are available from

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