

# Aggregates for unbound and hydraulically bound uses

## 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 unbound and hydraulically bound uses the product standard is BS EN 12620 with the supporting National Guidance given in PD 6682-6.

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 6682-6 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 6682-6 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retained as a term, but the test method/equipment is new and there is no correlation with the BS 812 Test which will be withdrawn.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 6682-6 highlights the UK approach of assessing the end product rather than the individual constituent materials. It is recommended that this approach be maintained and therefore the new flakiness index is not recommended for the UK.

The new test for "shape index" effectively replaces the BS 812 elongation test, which again will be withdrawn, and assesses the relationship between the maximum and minimum dimensions of individual particles.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

## Crushed and Broken Surfaces

This new test assesses the potential for mechanical interlock between the coarse aggregate particles. PD 6682-6 gives guidance on its use for the UK, particularly for crushed gravel aggregates.

## 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 6682-6 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 assesses the resistance to wear, particularly where particles are in contact and subject to movement. There is no experience of this test in the UK and hence it is not recommended.

## Durability

Due to the long-term experience in the UK the magnesium sulfate 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 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.

#### **"Sonnenbrand" of Basalt**

This new test assesses the potential for rock decay. It is not applicable to UK materials, but may have some value in respect of imported basalt aggregates.

#### **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. Attestation Level 4 is applicable to aggregates for unbound and hydraulically bound uses.

#### **Note**

This bulletin sheet does not replace the relevant product standard – BS EN 13242 or the National Guidance Documents – PD 6682-6 and PD 6682-9 – and aims to give introductory information only.

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

#### **BS EN 13242: 2002**

Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction.

#### **PD 6682-6: 2003**

Aggregates – Part 6: Aggregates for unbound and hydraulically bound materials for use in civil engineering works and road construction – Guidance on the use of BS EN 13242.

#### **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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