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BS EN 1097-6:2013



BSI Standards Publication

Tests for mechanical and physical properties of aggregates

Part 6: Determination of particle density and water absorption

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This British Standard is the UK implementation of EN 1097-6:2013. It supersedes BS EN 1097-6:2000 which is withdrawn.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (EN 1097-6:2013) has been prepared by Technical Committee CEN/TC 154 "Aggregates", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2014, and conflicting national standards shall be withdrawn at the latest by January 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1097-6:2000.

Annex J provides details of significant changes between this European Standard and the previous edition.

This standard forms a part of a series of tests for mechanical and physical properties of aggregates. Test methods for other properties of aggregates are covered by the following European Standards:

- EN 932 (all parts), *Tests for general properties of aggregates*
- EN 933 (all parts), *Tests for geometrical properties of aggregates*
- EN 1367 (all parts), *Tests for thermal and weathering properties of aggregates*
- EN 1744 (all parts), *Tests for chemical properties of aggregates*
- EN 13179 (all parts), *Tests for filler aggregate used in bituminous mixtures*

The other parts of EN 1097 include:

- *Part 1: Determination of the resistance to wear (micro-Deval)*
- *Part 2: Methods for the determination of resistance to fragmentation*
- *Part 3: Determination of loose bulk density and voids*
- *Part 4: Determination of the voids of dry compacted filler*
- *Part 5: Determination of the water content by drying in a ventilated oven*
- *Part 7: Determination of the particle density of filler — Pyknometer method*
- *Part 8: Determination of the polished stone value*
- *Part 9: Determination of the resistance to wear by abrasion from studded tyres — Nordic test*
- *Part 10: Determination of water suction height*

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece,

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Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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1 Scope

This European Standard specifies the reference methods used for type testing and in case of dispute, for the determination of particle density and water absorption of normal weight and lightweight aggregates. Other methods may be used for other purposes, such as factory production control, provided that an appropriate working relationship with the reference method has been established. For convenience, some of these other methods are also described in this standard.

The reference methods for normal weight aggregates specified are:

- a wire basket method for aggregate particles retained on the 31,5 mm sieve (Clause 7, except for railway ballast which uses Annex B);
- a pycnometer method for aggregate particles passing the 31,5 mm test sieve and retained on the 4 mm test sieve (Clause 8);
- a pycnometer method for aggregate particles passing the 4 mm test sieve and retained on the 0,063 mm test sieve (Clause 9).

In Clauses 7, 8 and 9, three different particle density parameters (oven-dried particle density, saturated and surface dried particle density and apparent particle density) and water absorption are determined after a soaking period of 24 h. In Annex B, the oven-dried particle density parameter is determined after soaking in water to constant mass.

The wire basket method may be used as an alternative to the pycnometer method for aggregate particles passing the 31,5 mm test sieve and retained on the 4 mm test sieve. In case of dispute, the pycnometer method described in Clause 8 should be used as the reference method.

NOTE 1 The wire basket method can also be used for single aggregate particles retained on the 63 mm sieve.

NOTE 2 The pycnometer method described in Clause 8 can be used as an alternative for aggregates passing the 4 mm sieve but retained on the 2 mm sieve.

The reference method for lightweight aggregates (Annex C) is a pycnometer method for aggregate particles passing the 31,5 mm test sieve and retained on the 4 mm test sieve. Three different particle density parameters and water absorption are determined after pre-drying and a soaking period of 24 h.

Three other methods for normal weight aggregates can be used to determine the pre-dried particle density:

- a wire basket method for aggregate particles passing the 63 mm test sieve and retained on the 31,5 mm test sieve (A.3);
- a pycnometer method for aggregate particles passing the 31,5 mm test sieve and retained on the 0,063 mm test sieve (A.4);
- a pycnometer method for aggregate particles passing the 31,5 mm test sieve, including the 0/0,063 mm size fraction (Annex G).

NOTE 3 If water absorption is less than about 1,5 %, the apparent particle density can be assessed using the pre-dried particle density method as defined in Annex A.

The quick method in Annex E can be used in factory production control to determine the apparent particle density of lightweight aggregates.

Guidance on the significance and use of the various density and water absorption parameters is given in Annex H.