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Tests for mechanical and physical properties of aggregates - Part 6: Determination of particle density and water absorption

Essais pour déterminer les caractéristiques
mécaniques et physiques des granulats - Partie 6 :
Détermination de la masse volumique et du coefficient
d'absorption d'eau

Prüfverfahren für mechanische und physikalische
Eigenschaften von Gesteinskörnungen - Teil 6:
Bestimmung der Korndichte und der Wasseraufnahme

This European Standard was approved by CEN on 12 December 2021.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European foreword

This document (EN 1097-6:2022) has been prepared by Technical Committee CEN/TC 154 “Aggregates”, the secretariat of which is held by BSI.

This document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2022, and conflicting national standards shall be withdrawn at the latest by August 2022.

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

This document supersedes EN 1097-6:2013.

In comparison with the previous edition, the following technical modifications have been made:

- a) Normative references has been extended with EN 1097-5 (used in Annex D). EN 932-1 has been deleted from the clause since sampling is out of the scope, as for other standards;
- b) the definitions of laboratory sample and subsample have been added in Clause 3;
- c) the glass funnel in 6.4.4 has been deleted since it is part of the pyknometer in 6.5.1. The minimum volume of the pyknometer in 6.5.1 has been changed from 250 ml to 500 ml. New 6.8 and 6.10 have been added and describe special apparatus referenced in new Annexes D and F;
- d) Clause 9 has been extended with an illustration of the surface-dry state assessment using the cone test;
- e) the possibility to remove air from the pyknometer by applying a vacuum has been added in A.4.3;
- f) in Annex B, the test portion mass for single aggregates (B.2.2) and the temperature requirement in B.3 have been clarified. In addition, the time needed for achieving constant mass during suction has been clarified;
- g) the Note in C.1 has been revised to say that the method can also be used for aggregate particles passing the 4 mm sieve and retained on the 1 mm sieve. Soaking times for the water absorption determination have been added in C.1. A new paragraph has been added in C.1, saying that for concrete applications the water absorption of coarse lightweight aggregate shall be determined in the as-used moisture state instead of the oven-dry state. In C.4, a Note about using vibrating table as a vibration means has been added. Precision of individual values has been defined in C.5;
- h) a new normative Annex D has been designed to determine the particle density and water absorption of fine lightweight aggregates. Consequently, Annex C has been retitled to only apply to coarse lightweight aggregates;
- i) the title of Annex E has been shorted. The Note in E.1 has been revised to say that the method can also be used for aggregate particles passing the 2 mm sieve and retained on the 1 mm sieve. Precision of individual values has been defined in E.4;
- j) Annex F has been replaced by a new informative annex designed to determine the particle density and water absorption of aggregates passing the 4 mm sieve;

- k) the procedure in Annex H has been extended to specify double determination. In addition, the recommended volume which the test portion should occupy to enable the release of entrapped air, has been changed from one third to one half of the pycnometer volume, in consistency with other clauses;
- l) all annexes have been reordered to collect the annexes about lightweight aggregates. Annex D Density of water has been moved to Annex G and Annex J List of main changes has been deleted.

Furthermore, the whole standard has been updated according to the current rules and to reflect the changes. The text has been clarified and the Bibliography has been supplemented.

This document 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 — Pycnometer 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*

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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