Tests for mechanical and physical properties of aggregates - Part 11: Determination of compressibility and confined compresssive strength of lightweight aggregates

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1097-11

July 2013

ICS 91.100.15

English Version

Tests for mechanical and physical properties of aggregates - Part 11: Determination of compressibility and confined compressive strength of lightweight aggregates

Essais pour déterminer les caractéristiques mécaniques et physiques des granulats - Partie 11: Détermination de la compressibilité et de la résistance à la compression triaxiale des granulats légers

Prüfverfahren für mechanische und physikalische Eigenschaften von Gesteinskörnungen - Teil 11: Bestimmung der Verdichtbarkeit und Druckfestigkeit bei behinderter Querdehnung von leichten Gesteinskörnungen

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Foreword

This document (EN 1097-11:2013) 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of an identical text or by endorsement, at the latest by January 2014, and conflicting national standards shall be withdrawn at the latest by January 2014.

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1 Scope

This European Standard specifies the reference method used for type testing, and in case of dispute, for determining the compressibility and confined compressive strength of lightweight aggregates (LWA). For other purposes, in particular factory production control, other methods may be used provided that an appropriate working relationship with the reference method has been established.

The test is applicable to LWA passing the 32 mm sieve.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 932-2, *Tests for general properties of aggregates — Part 2: Methods for reducing laboratory samples*

EN 932-5, *Tests for general properties of aggregates — Part 5: Common equipment and calibration*

EN 1097-5, *Tests for mechanical and physical properties of aggregates — Part 5: Determination of the water content by drying in a ventilated oven*

prEN 13055:2012, *Lightweight aggregates for concrete, mortar, grout*, *bituminous mixtures, surface treatments and for unbound and bound applications*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in prEN 13055:2012 and the following apply.

3.1
bulk density
mass of loose filled or compacted aggregates divided by the part of the volume of the container that they occupy

Note 1 to entry: The measurement of this bulk density is different from the one defined in EN 1097-3.

3.2
test specimen
sample used in a single determination when a test method requires more than one determination of a property

4 Principle

First, a test specimen is placed in a steel container and compacted by vibration for the purpose of determining the compressibility and bulk densities before and after vibration. Second, the steel container filled with this test specimen is subjected to a compression test with a constant loading rate until a given percentage of deformation is reached. During this second step, the load and displacement are continuously recorded in order to determine the confined compressive stress–deformation curve and to calculate the confined compressive strength.

5 Apparatus

Unless otherwise stated, all apparatus shall conform to the general requirements of EN 932-5.

5.1 Ventilated oven, thermostatically controlled to maintain a temperature of (110 ± 5) °C.

5.2 Polyethylene bags, of suitable sizes.

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