BRITISH STANDARD

BS EN
1353:1997

Determination of moisture content of autoclaved aerated concrete

The European Standard EN 1353:1996 has the status of a British Standard

ICS 91.100.30

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee B/523, Prefabricated concrete and lightweight aggregate concrete with open structure, upon which the following bodies were represented:

Aggregate Concrete Block Association
Autoclaved Aerated Concrete Association
British Masonry Society
British Precast Concrete Federation Ltd.
Department of the Environment (Building Research Establishment)
Institution of Structural Engineers
Local Authority Organizations

This British Standard, having been prepared under the direction of the Sector Board for Building and Civil Engineering, was published under the authority of the Standards Board and comes into effect on
15 October 1997

The following BSI references relate to the work on this standard:
Committee reference B/523
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Amendments issued since publication

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Contents

National foreword

This British Standard has been prepared under the direction of Technical Committee B/523 and is the English language version of EN 1353:1996 *Determination of moisture content of autoclaved aerated concrete*, published by the European Committee for Standardization (CEN).

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 5 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1353

December 1996

ICS 91.100.30

Descriptors: Concrete, cellular concrete, tests, determination, rates: per unit time, humidity, computation, weight losses, drying

English version

Determination of moisture content of autoclaved aerated concrete

Détermination du taux d'humidité du béton cellulaire autoclavé

Bestimmung des Feuchtegehalts von dampfgehärtetem Porenbeton

This European Standard was approved by CEN on 1996-11-30. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 177, Prefabricated reinforced components of autoclaved aerated concrete or lightweight aggregate concrete with open structure, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsment, at the latest by June 1997, and conflicting national standards shall be withdrawn at the latest by June 1997.

In order to meet the performance requirements as laid down in the product standard for prefabricated components of autoclaved aerated concrete, a number of standardized test methods are necessary.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom

Contents

1 Scope

This European Standard specifies a method of determining the moisture content of prefabricated components of autoclaved aerated concrete (AAC)[1)].

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.[1)]

3 Principle

Prismatic test specimens (prisms, cubes, or cylinders) are taken from prefabricated components making provision that the moisture content remains unchanged until the first weighing. The mass of the test specimens is determined in the moist state and after drying to constant mass at (105 ± 5) °C. Furthermore, the volume of the test specimens is determined from the measured dimensions.

The moisture content is calculated from the mass loss through drying, related to the mass or to the volume of the dried test specimens, respectively.

4 Apparatus

a) *Any saw*, suitable for cutting reinforced AAC components without disturbing the moisture content of the AAC;

b) *Callipers*, capable of reading the dimensions of test specimens to an accuracy of 0,1 mm;

c) *A balance*, capable of determining the mass of test specimens to an accuracy of 0,1 %;

d) *A ventilated drying oven*, capable of maintaining a temperature of (105 ± 5) °C.

5 Test specimens

5.1 Sample

The sample for the preparation of the test specimens (i.e. normally at least one prefabricated component) shall be taken in such a manner that it is representative of the product to be investigated.

5.2 Shape and size of test specimens

The test specimens shall be prisms, cubes, or cylinders with a minimum dimension of at least 50 mm and a volume of at least $0{,}5 \times 10^{-3}$ m^3 each.

5.3 Number of test specimens

A test set shall consist of at least three test specimens.

Whenever possible, one test specimen shall be prepared from the upper third of the component, one from the middle and one from the lower third, in the direction of rise of the mass during manufacture (see Figure 1).

The position of the test specimens in the material, relative to the rise of the mass, shall be shown by the numbering.

Alternatively, one single test specimen is sufficient, if it extends over the full height of the rise of the mass and if its volume is at least $1{,}5 \times 10^{-3}$ m^3. The moisture content determined on such a test specimen is equivalent to the mean value of three individual test specimens according to **5.2**.

5.4 Preparation of test specimens

The test specimens shall be cut by means of a saw (or by means of a core drill in the case of cylindrical test specimens) taking care that the moisture content is influenced as little as possible (e.g. no water cooling of the saw or core drill). All surfaces shall be clean and plane enough to enable determination of the volume with sufficient accuracy (see **6.2**).

If the inclusion of reinforcement cannot be avoided, the mass and the volume of the reinforcement, including anti-corrosion coating, shall be considered in the calculation of the moisture content.

NOTE Preferably, test specimens should not contain any reinforcement.

6 Testing procedure

6.1 Determination of the mass of test specimens in the moist state

Immediately after the preparation of the test specimens, before any loss of moisture has occurred, the mass m_{hum} of the individual test specimens in the moist state shall be determined to an accuracy of 0,1 %.

[1)] A European Standard for prefabricated reinforced components of autoclaved aerated concrete is in preparation at CEN.

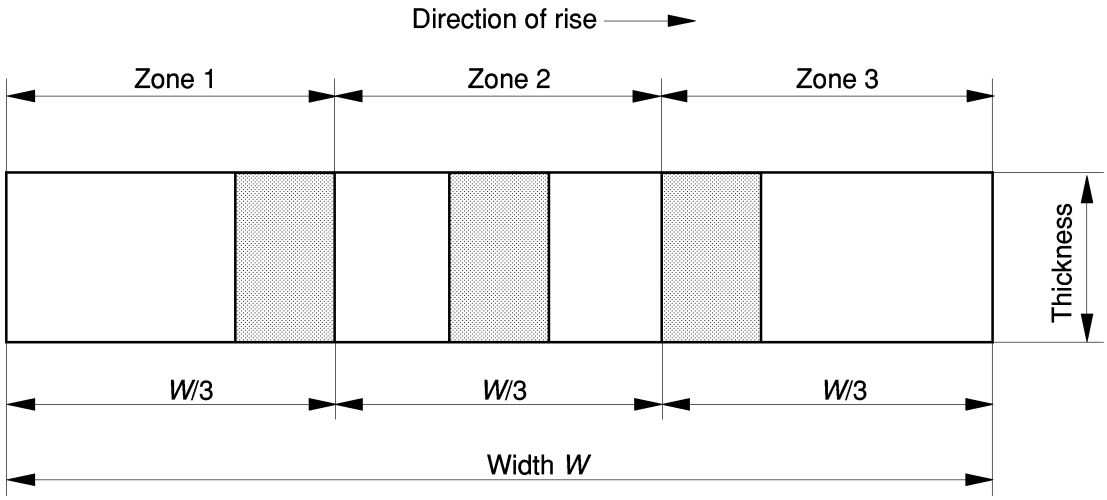

Figure 1 — Sampling scheme

6.2 Determination of the volume of test specimens

The volume of the individual test specimens is calculated from their measured dimensions. The error in determining the volume V shall not exceed 1 %.

6.3 Drying of test specimens

After these measurements, the test specimens shall be placed in a ventilated drying oven at (105 ± 5) °C until constant mass is attained. The dry mass m_{dry} of the individual test specimens shall be determined immediately after removal from the drying oven. The error in determining the mass shall not exceed 0,1 %. The mass of the test specimen is considered constant if after 24 h of further drying it has not changed by more than 0,2 %.

7 Test results

The moisture content, related to mass, is calculated according to equation (1):

$$\mu_m = 100 \frac{m_{hum} - m_{dry}}{m_{dry}} \quad (1)$$

where

μ_m is the moisture content, related to mass, in percent;

m_{hum} is the mass of the test specimen in the moist state, in grams;

m_{dry} is the mass of the dried test specimen, in grams.

The moisture content, related to mass, μ_m, of each individual test specimen and the mean value shall be expressed to the nearest 0,1%.

The moisture content, related to volume, is calculated according to equation (2):

$$\mu_V = \frac{m_{hum} - m_{dry}}{V} 10^6 \quad (2)$$

where

μ_V is the moisture content, related to volume, in kilograms per cubic metre;

m_{hum} is the mass of the test specimen in the moist state, in grams;

m_{dry} is the mass of the dried test specimen, in grams.

V is the volume of the test specimen, in cubic millimetres.

The moisture content related to volume, μ_V, of each individual test specimen and the mean value shall be expressed to the nearest 1 kg/m^3.

8 Test report

The test report shall include the following:

a) identification of the product;

b) date of manufacture or other code;

c) place and date of testing, testing institute, and person responsible for testing;

d) number and date of issue of this European Standard;

e) shape, size, and relative position of test specimens;

f) moisture content μ_m and/or μ_V of each individual test specimen and mean value;

g) (if unusual) observations on the appearance of test specimens;

h) (if appropriate) deviations from the standard method of testing;

j) a declaration that the testing has been carried out in accordance with this European Standard, except as detailed in **8** h).

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