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ADMIXTURES FOR CONCRETE, MORTAR AND GROUT - TEST METHODS - PART 11: DETERMINATION OF AIR VOID CHARACTERISTICS IN HARDENED CONCRETE

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Zusatzmittel für Beton, Mörtel und Einpressmörtel - Prüfverfahren - Teil 11: Bestimmung von Luftporenkennwerten in Festbeton

This European Standard was approved by CEN on 28 July 2005.

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Foreword

This European Standard (EN 480-11:2005) has been prepared by Technical Committee CEN/TC 104 “Concrete and related products”, 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of an identical text or by endorsement, at the latest by March 2006, and conflicting national standards shall be withdrawn at the latest by March 2006.

This document is part of the series EN 480 "Admixtures for concrete, mortar and grout – Test methods" which comprises the following

Part 1 *Reference concrete and reference mortar for testing*

Part 2 *Determination of setting time*

Part 4 *Determination of bleeding of concrete*

Part 5 *Determination of capillary absorption*

Part 6 *Infrared analysis*

Part 8 *Determination of the conventional dry material content*

Part 10 *Determination of water soluble chloride content*

Part 11 *Determination of air void characteristics in hardened concrete*

Part 12 *Determination of the alkali content of admixtures*

Part 13 *Reference masonry mortar for testing mortar admixtures*

Part 14 *Admixtures for concrete, mortar and grout - Test methods - Part 14: Measurement of corrosion susceptibility of reinforcing steel in concrete - Potentiostatic electro-chemical test method* [1)]

This document is applicable together with the other standards of the EN 480 series.

This document supersedes EN 480-11:1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1) This part is under preparation

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1 Scope

This document describes a test method for determination of the air-void structure in a hardened concrete sample which contains entrained air. The air-void structure is described by means of the following parameters, which are defined in Clause 3.

i) Total air content

ii) Specific surface of air void system

iii) Spacing factor

iv) Air-void size distribution

v) Micro air content

The method as described is only suitable for use on hardened concrete specimens where the original mix proportions of the concrete are accurately known and the specimen is representative of these mix proportions. This will generally be the case only where the concrete concerned is produced in a laboratory.

2 Normative references

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

EN 480-1, *Admixtures for concrete, mortar and grout – Test methods – Part 1: Reference concrete and reference mortar for testing;*

EN 934-2, *Admixtures for concrete, mortar and grout – Part 2: Concrete admixtures –Definitions, requirements, conformity, marking and labelling*

ISO 1920-3, *Testing of concrete - Part 3: Making and curing test specimens*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1
air void
space enclosed by the cement paste that was filled with air or other gas prior to the setting of the paste. This does not refer to voids of submicroscopic dimensions, such as the porosity inherent in a hydrated cement paste. For the purposes of this test method, all voids within the cement paste are considered that are visible at the test magnification with an intercepted chord length of up to 4 mm, other than obvious cracks

3.2
total air content *A*
proportion of the total volume of the concrete that is air voids; expressed as a percentage by volume

3.3
paste content *P*
proportion of the total volume of the concrete that is hardened cement paste, expressed as a percentage by volume. This is the sum of the proportional volumes of cement, mixing water and any admixtures present. For the purposes of this test method it is calculated from the batch weights of the test concrete.

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