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Hydraulische kalkhoudende microsilica voor beton - Definities, eisen en conformiteitscriteria

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Hydraulic silica-calcium fume for concrete - Definitions, requirements and conformity criteria

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Normcommissie 353039 "Beton"

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prEN 16622

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English Version

Hydraulic silica-calcium fume for concrete - Definitions, requirements and conformity criteria

Fumées hydrauliques de silico-calcium pour béton - Définitions, exigences et critères de conformité

Hydraulischer Siliko-Kalziumstaub für Beton - Definitionen, Anforderungen und Konformitätskriterien

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 104.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. prEN 16622:2013: E

Contents

Foreword

This document (prEN 16622:2013) has been prepared by Technical Committee CEN/TC 104 “Concrete and related products”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive (89/106/EEC), see informative Annex ZA, which is an integral part of this document.

Introduction

Hydraulic silico-calcium fume (HSCF) according to this European Standard is collected by filters as a by-product of the smelting process to produce silico-calcium alloys. It is only supplied as a densified product. HSCF from more than one furnace, filter or intermediate storage silo will normally be blended in the production plant.

Many years of practical experience have demonstrated that HSCF which satisfies the requirements in this European Standard has both hydraulic and pozzolanic properties, and may be used to produce concrete with improved properties in both the fresh and hardened states.

HSCF is normally used in combination with a plasticizer and/or superplasticizer.

1 Scope

This European Standard applies to the hydraulic silico-calcium fume (HSCF) which is a by-product of the smelting process used to produce silico-calcium alloys.

This European Standard gives requirements for chemical and physical properties for HSCF to be used as a type II addition in concrete conforming to EN 206-1, or in mortars, grouts and other mixes. This European Standard also states conformity criteria and related rules.

This European Standard does not give rules for the use of HSCF in concrete. Some general rules for the use of type II additions are given in EN 206-1.

NOTE Supplementary rules related to the use of HCSF in concrete may be given in non conflicting national standards for concrete.

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 196-1, *Methods of testing cement — Part 1: Determination of strength*

EN 196-2, *Methods of testing cement — Part 2: Chemical analysis of cement*

EN 196-6, *Methods of testing cement — Part 6: Determination of fineness*

EN 196-7, *Methods of testing cement — Part 7: Methods of taking and preparing samples of cement*

EN 197-1, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

EN 206-1, *Concrete — Part 1: Specification, performance, production and conformity*

EN 413-2, *Masonry cement — Part 2: Test methods*

EN 451-1, *Method of testing fly ash — Part 1: Determination of free calcium oxide content*

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

EN 13263-2, *Silica fume for concrete — Part 2: Conformity evaluation*

ISO 9277, *Determination of the specific surface area of solids by gas adsorption using the BET method*

ISO 9286, *Abrasive grains and crude — Chemical analysis of silicon carbide*

3 Terms and definitions

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

NOTE Some terms and definitions from EN 13263-2 to which this European Standard refers are included here for convenience. Where needed they are modified for the application to HSCF.

3.1
activity index
measurement of the effect of HSCF on the compressive strength of mortar

3.2
allowable probability of acceptance
CR
for a given sampling plan, allowed probability of acceptance of HSCF with a characteristic value outside the specified characteristic value

3.3
characteristic value
value having a prescribed probability of not being attained in a hypothetical unlimited test series

[SOURCE: ISO 8930]

Note 1 to entry: Equivalent to "fractile" which is defined in ISO 3534-1.

3.4
control period
period of production and dispatch identified for the assessment of the test results

3.5
densified HSCF
HSCF that has been treated to increase the bulk density by particle agglomeration, the bulk density typically being above 500 kg/m^3

3.6
depot
bulk HSCF handling facility – not located at the production plant – used for the dispatch of HSCF– whether in bulk or bagged – after transfer or storage where the manufacturer has full responsibility for all aspects of the quality of the HSCF

3.7
factory production control
permanent internal control of HSCF production exercised by the manufacturer including internal quality control and autocontrol testing

3.8
further testing of samples
testing according to 4.4 in EN 13263-2

3.9
initial period
immediate period after the first issuing of the certificate of conformity for a HSCF

3.10
intitial type testing
testing of the first audit sample according to 5.4 in EN 13263-2

3.11
inspection body
impartial body having the organization, staffing, competence and integrity to perform according to specified criteria functions such as assessing, recommending for acceptance and subsequent audit of manufacturers´ quality control operations, and selection and evaluation of products on site or in factories or elsewhere, according to specific criteria

3.12
new production plant
production plant which is not already producing HSCF under the certification scheme

3.13
production plant
facility used by a manufacturer for the production of HSCF:

a) silico-calcium alloy production plant;

b) processing plant, for example for the selection, blending or densifying of HSCF

Note 1 to entry: In the production plant equipment has to be used which is suitable for production of HSCF including the necessary silo capacity for the storage and dispatch of the HSCF produced, and equipment to test, evaluate and control the HSCF production must be available. This equipment and the production control applied allow the control of production with sufficient accuracy to ensure that the requirements of this European Standard are met.

3.14
quality control
part of quality management focused on fulfilling quality requirements

[SOURCE: EN ISO 9000]

3.15
sampling plan
specific plan which states the (statistical) sample size(s) to be used, the percentage P_k on which the characteristic value is based, and the allowable probability of acceptance CR

3.16
hydraulic silico-calcium fume (HSCF)
very fine particles of amorphous silicon dioxide and dicalcium silicate collected as a by-product of the smelting process used to produce silico-calcium alloys

Note 1 to entry: HSCF may be processed, for example by classification, selection, blending, densifying, or by a combination of these processes, in adequate production plants. Such processed HSCF may consist of HSCF from different sources, each conforming to the definition given in this subclause.

3.17
single result limit value
value of a chemical or physical property which – for any single test result – in the case of an upper limit is not to be exceeded or in the case of a lower limit is, as a minimum, to be reached

3.18
specified characteristic value
characteristic value of a chemical or physical property which in the case of an upper limit is not to be exceeded or in the case of a lower limit is, as a minimum, to be reached

Note 1 to entry: Compliance with the specified characteristic values in this European Standard is verified by the methods in Clause 8.

3.19
spot sample
sample taken at the same time and from one and the same place, relating to the intended tests. It can be obtained by combining one or more immediately consecutive increments

3.20
test
technical operation that consists of the determination of a characteristic of a product according to a specified procedure

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