

SVENSK STANDARD

SS-EN 13263-1:2005+A1:2009

Fastställt/Approved: 2009-03-19
Publicerad/Published: 2009-05-05
Utgåva/Edition: 1
Språk/Language: engelska/English
ICS: 91.100.30

Silikastoft till betong – Del 1: Definitioner, krav samt kriterier för överensstämmelse

Silica fume for concrete – Part 1: Definitions, requirements and conformity criteria

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Denna standard ersätter SS-EN 13263-1:2005, utgåva 1.

The European Standard EN 13263-1:2005+A1:2009 has the status of a Swedish Standard. This document contains the official English version of EN 13263-1:2005+A1:2009.

This standard supersedes the Swedish Standard SS-EN 13263-1:2005, edition 1.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13263-1:2005+A1

March 2009

ICS 91.100.30

Supersedes EN 13263-1:2005

English Version

Silica fume for concrete - Part 1: Definitions, requirements and conformity criteria

Fumée de silice pour béton - Partie 1: Définitions, exigences et critères de conformité

Silikastaub für Beton - Teil 1: Definitionen, Anforderungen und Konformitätskriterien

This European Standard was approved by CEN on 19 May 2005 and includes Amendment 1 approved by CEN on 8 February 2009.

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Foreword

This document (EN 13263-1:2005+A1:2009) 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of an identical text or by endorsement, at the latest by September 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.

This document includes Amendment 1, approved by CEN on 2009-02-08.

This document supersedes EN 13263-1:2005.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

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(s), see informative Annex ZA, which is an integral part of this document.

A1 EN 13263-1:2005+A1:2009 contains a modified requirement for the content of silicon dioxide in a new class 2. A1

EN 13263 consists of the following parts, under the general title *Silica fume for concrete*:

- Part 1: Definitions, requirements and conformity criteria;
- Part 2: Conformity evaluation.

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

Introduction

Silica fume consists of mainly spherical particles of amorphous silicon dioxide smaller than 10^{-6} m and is highly pozzolanic. It is collected by filters as a by-product of the smelting process to produce silicon metal and ferro-silicon alloys. It can be supplied as collected from the filters (undensified), after treatment to increase its bulk density (densified), or as a slurry. Silica fume from more than one furnace, filter or intermediate storage silo will normally be blended in the production plant.

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

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

1 Scope

This European Standard applies to the silica fume which is a by-product of the smelting process used to produce silicon metal and ferro-silicon alloys.

This part of EN 13263 gives requirements for chemical and physical properties for silica fume to be used as a type II addition in concrete conforming to EN 206-1, or in mortars, grouts and other mixes. This part of EN 13263 also states conformity criteria and related rules.

EN 13263 does not give rules for the use of silica fume in concrete. Some rules are given in EN 206-1.

NOTE 1 Supplementary rules related to the use of silica fume in concrete may be given in non conflicting national standards for concrete.

NOTE 2 EN 206-1 (5.2.5.1 in the 2000 edition) provides conditions for national acceptance of silica fumes coming from calcium silicon alloys production or other silica fumes, not conforming completely to EN 13263, as type II additions for use in concrete.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. 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 196-7:2007 ^{A1}, *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 413-2:2005 ^{A1}, *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 13263-2:2005, *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 European Standard, the following terms and definitions apply.

3.1

activity index

measurement of the effect of silica fume on the compressive strength of mortar

3.2

allowable probability of acceptance

CR

for a given sampling plan, the allowed probability of acceptance of silica fume with a characteristic value outside the specified characteristic value

3.3

autocontrol

continuous statistical quality control of the silica fume based on the testing of samples taken by the manufacturer at point(s) of release from the silica fume production plant

3.4

autocontrol testing

continual testing by the manufacturer of silica fume spot samples taken at the point(s) of release from the production plant

3.5

certificate of conformity to EN 13263-1

document issued under the rules of a certain scheme for the evaluation of conformity indicating that adequate confidence is provided that a silica fume is in conformity with this part of EN 13263

3.6

certification

procedure by which a third party gives written assurance that a product, process or service conforms to specified requirements

[EN 45020:1998]

3.7

certification body

impartial body, governmental or non-governmental, possessing the necessary competence and responsibility to carry out conformity certification according to given rules of procedure and management

3.8

certified silica fume

silica fume for which a certificate of conformity (see 3.5) has been issued

3.9

characteristic value

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

[ISO 8930:1987]

NOTE Equivalent to "fractile" which is defined in ISO 3534-1:1993.

3.10

conformity mark

protected mark applied on the basis of the certificate of conformity (see 3.5)

3.11

control period

period of production and dispatch identified for the evaluation of the autocontrol test results

3.12

densified silica fume

silica fume that has been treated to increase the bulk density by particle agglomeration, the bulk density typically being above 500 kg/m³

3.13

depot

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

3.14

existing production plant

production plant which is already producing silica fume under the certification scheme

3.15

factory production control

permanent internal control of silica fume production exercised by the manufacturer including internal quality control and autocontrol testing

NOTE The required activities are stated in 4.1 to 4.3 in EN 13263-2:2005.

3.16

further testing of samples

testing according to 4.4 in EN 13263-2:2005

3.17

initial period

immediate period after the first issuing of the certificate of conformity for a silica fume (see 5.6.1 in EN 13263-2:2005 for duration)

3.18

intitial type testing

testing of the first audit sample according to 5.4 in EN 13263-2:2005

3.19

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

3.20

new production plant

production plant which is not already producing silica fume under the certification scheme

3.21

production plant

facility used by a manufacturer for the production of silica fume:

- a) silicon metal or silicon alloy production plant;
- b) processing plant, for example for the selection, slurrifying, blending or densifying of silica fume.

3.22

quality control

part of quality management focused on fulfilling quality requirements

[EN ISO 9000:2000]