



SLOVENSKI STANDARD

SIST EN 13263-2:2005

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Mikro silika za beton – 2. del: Ovrednotenje skladnosti

Silica fume for concrete - Part 2: Conformity evaluation

Silikastaub für Beton - Teil 2: Konformitätsbewertung

Fumée de silice pour béton - Partie 2: Evaluation de la conformité

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91.100.30	Beton in betonski izdelki	Concrete and concrete products
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Silica fume for concrete - Part 2: Conformity evaluation

Fumée de silice pour béton - Partie 2: Evaluation de la conformité

Silikastaub für Beton - Teil 2: Konformitätsbewertung

This European Standard was approved by CEN on 19 May 2005.

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.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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Foreword

This document (EN 13263-2:2005) 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of an identical text or by endorsement, at the latest by December 2005, and conflicting national standards shall be withdrawn at the latest by December 2005.

EN 13263 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 Part 1 of EN 13263.

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, 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.

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1 Scope

This part of EN 13263 specifies the scheme for the evaluation of conformity of silica fume to EN 13263-1, including certification of conformity by a certification body.

This European Standard provides technical rules for production control by the manufacturer, including autocontrol testing of samples, and for the tasks of the certification body. It also provides rules for actions to be followed in the event of non-conformity and the procedure for the certification of conformity.

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 196-7:1989, *Methods of testing cement — Part 7: Methods of taking and preparing samples of cement*;

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

EN 13263-1:2005, *Silica fume for concrete — Part 1: Definitions, requirements and conformity criteria*.

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3 Terms and definitions

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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 EN 13263-1

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.

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 this part of EN 13263.

3.16**further testing of samples**

testing according to 4.4 in this part of EN 13263

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3.17**initial period**

immediate period after the first issuing of the certificate of conformity for a silica fume (see 5.6.1 in this part of EN 13263 for duration)

3.18**initial type testing**

testing of the first audit sample according to 5.4 in this part of EN 13263

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]

3.23**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

3.24**silica fume**

very fine particles of amorphous silicon dioxide collected as a by-product of the smelting process used to produce silicon metal and ferro-silicon alloys

NOTE 1 Silica fume may be processed, for example by classification, selection, blending, densifying, or slurrifying, or by a combination of these processes, in adequate production plants. Such processed silica fume may consist of silica fumes from different sources, each conforming to the definition given in this subclause.

NOTE 2 Other names used for silica fume are condensed silica fume and microsilica.

3.25**silica fume slurry**

homogeneous, pH regulated liquid suspension of silica fume in water, typically with a dry content of 50 % by mass, corresponding to about 700 kg of silica fume per m³ of slurry

3.26**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

3.27**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 Conformity with the specified characteristic values in EN 13263-1 is verified by the methods in 7.2 of EN 13263-1:2005.

3.28**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

[EN 196-7:1989]

3.29**test**

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

[Adapted from EN 45020:1998]

3.30**test cement**

selected brand of Portland cement of type CEM I, strength class 42,5 N or higher, conforming to EN 197-1 to be used for carrying out the tests needed to evaluate conformity to the requirement of 5.3.3 in EN 13263-1:2005.

Test cement is selected by the silica fume manufacturer and is further characterized by its fineness and contents of tricalcium aluminate and alkalis as follows:

- Fineness: 300 m²/kg to 400 m²/kg when determined in accordance with EN 196-6;
- Tricalcium aluminate: 8 % to 12 % when determined in accordance with EN 196-2;
- Alkalis (Na₂O eqv): 0,6 % to 1,2 % when determined in accordance with EN 196-2.

3.31**testing laboratory**

laboratory which measures, examines, tests, calibrates or otherwise determines the characteristics or performance of materials or products

3.32**test method**

specified technical procedure for performing a test

[EN 45020:1998]

3.33**type II addition**

finely divided inorganic, pozzolanic or latent hydraulic material that may be added to concrete in order to improve certain properties or to achieve special properties, see EN 206-1

3.34**undensified silica fume**

silica fume taken directly from the collection filter, the bulk density typically being in the range 150 kg/m³ to 350 kg/m³

3.35**works' quality manual**

document that provides information on the production control which is applied by a manufacturer at a particular production plant to ensure conformity of the silica fume with the requirements of EN 13263-1.

4 Tasks for the manufacturer

4.1 Factory production control

4.1.1 Concept

Factory production control means the permanent internal control of silica fume production exercised by the manufacturer and consists of internal quality control (see 4.2) and autocontrol testing of samples of silica fume taken at the point of release (see 4.3).

NOTE The requirements of EN 13263-2 as regards production control take account of those clauses of EN ISO 9001 which are relevant to the production, process control and testing of silica fume.

4.1.2 Works' quality manual

The manufacturer's documentation and procedures for production control shall be described in a works' quality manual, which shall adequately describe, among other things:

- a) quality aims and the organisational structure, responsibilities and powers of the management with regard to product quality and the means to monitor the achievement of the required product quality and the effective operation of the internal quality control (see 4.1.3);
- b) manufacturing and quality control techniques, processes and systematic actions that will be used (see 4.2.1, 4.2.3 and 4.3.2);
- c) inspections and tests that will be carried out before, during and after manufacture, and the frequency with which they will be carried out (see 4.2.2, 4.3.1 and 4.3.3).

The works' quality manual prepared by the manufacturer for each production plant shall include an adequate system of documentation (see 4.1.4 and 4.3.4).

The works' quality manual shall address and document the procedures operated to ensure that the manufactured silica fume conforms to the technical specifications. The manual may reference associated documents which provide further details of the autocontrol testing of samples and the internal quality control. For the purpose of this scheme, the term works' quality manual shall be considered to include these associated documents.

NOTE In the case of an existing quality management system according to EN ISO 9001, the certification body may examine if the corresponding quality manual meets all the requirements of EN 13263-1 which are relevant to the production control of silica fume. Provided all the requirements are included, this quality manual should also be applied for product certification.

4.1.3 Management systems

4.1.3.1 Quality policy statement

The works' quality manual shall include a statement by the management of the manufacturer defining its quality policy, objectives and commitments to the attainment of product quality.

4.1.3.2 Management representative

The manufacturer shall appoint a management representative who, irrespective of other responsibilities, shall have defined authority and responsibility for ensuring that the requirements of this part of EN 13263 for the evaluation of conformity are implemented and maintained.

4.1.3.3 Internal audits and management review

In order to ensure the continuing suitability and effectiveness of the works' quality manual to meet the requirements of EN 13263-1, the manufacturer shall perform at least once per year:

- a) internal audits covering the scope of this clause 4 and 6.1;
- b) manufacturer's management review of the production control, taking into account records of the internal audits.

4.1.3.4 Training

The works' quality manual shall describe the measures taken to ensure that all the personnel involved in operations that can affect internal quality control and product quality have appropriate experience or training. Appropriate records shall be retained.

4.1.4 System of documentation

4.1.4.1 Document control

The management representative of the manufacturer shall be responsible for the control of all documents and data related to production control and to this scheme for the evaluation of conformity.

This control shall ensure that the appropriate issues of all documents are available at essential locations, that obsolete documents are withdrawn and that changes or modifications to any document are effectively introduced.

A master list shall be established to identify the current version of documents in order to prevent the use of non-applicable documents.

4.1.4.2 Quality records

The manufacturer shall retain records of production control for at least the period required to comply with relevant legislation.

4.2 Internal quality control

4.2.1 Process control

4.2.1.1 General

The works' quality manual shall describe the parameters for process planning, process control and testing, inspection, corrective action, verification, dispatch and the associated records.

Depending on the installation, the following measures shall be provided:

- a) in all types of production plants:
 - 1) in-process testing of silica fume properties;
 - 2) silos or tanks of adequate capacity for storage of the silica fume produced allowing a proper identification of the product and giving possibilities of taking spot samples at any time without prior notice;
- b) additionally, in production plants using processing facilities:
 - 1) separate and adequate storing facilities for the silica fumes to be processed;
 - 2) controlled proportioning of the silica fumes to be processed in order to achieve the target properties of the produced silica fume;
 - 3) facilities for adequate homogenization of silica fume;
 - 4) in-process testing of silica fume properties.

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