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Fly ash for concrete - Part 2: Conformity evaluation

Flugasche für Beton - Teil 2: Konformitätsbewertung

Cendre volante pour béton - Partie 2: Évaluation de la conformité

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Fly ash for concrete - Part 2: Conformity evaluation

Cendre volante pour béton - Partie 2: Évaluation de la conformité

Flugasche für Beton - Teil 2: Konformitätsbewertung

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Contents

Page

Foreword 4

1 Scope 5

2 Normative references 5

3 Terms and definitions 5
3.1 Specific definitions 5
3.2 General definitions 6

4 Tasks for the producer 7
4.1 Factory production control 7
4.2 Internal quality control 8
4.3 Autocontrol testing of samples 10

5 Tasks for the certification body 11
5.1 General 11
5.2 Surveillance, assessment and acceptance of the production control 11
5.3 Evaluation of the results of autocontrol testing of samples 11
5.4 Audit testing of samples taken at the production plant/depot and initial type testing 12
5.5 Initial inspection of the production plant and the production control 13
5.6 Evaluation of test results during the initial period 14

6 Actions in the event of non-conformity 14
6.1 Actions to be taken by the producer 14
6.2 Actions to be taken by the certification body 14

7 Procedure for third party certification of conformity 15

8 Certificate of conformity and conformity mark 15
8.1 Indication of conformity 15
8.2 Certificate of conformity 15
8.3 Conformity mark 16

9 Requirements for dispatching centres 16
9.1 General requirements 16
9.2 Tasks for the intermediary 16
9.3 Tasks for the third party 17

Annex A (normative) Evaluation of the representativeness and the accuracy of the fineness test results 20
A.1 General 20
A.2 Sets of results considered 20
A.3 Evaluation procedure 20
A.3.1 Introduction 20
A.3.2 Symbols 20
A.3.3 Evaluation of whether set A and set B belong to the same population (sampling error check) 21
A.3.4 Comparison between set B and set C in order to check the accuracy of the autocontrol testing (testing error check) 21

Annex B (informative) General definitions 22
B.1 Definitions based on the Construction Products Directive 22
B.2 Definitions from or based on EN 45020 22
B.3 Definition from EN ISO 9000 22
B.4 Definitions from EN 197-1 and EN 196-7 23

Bibliography 24

Tables

Table 1 — Actions to be taken by the certification body in the event of non-conformity of the results of autocontrol and/or audit testing 18

Table 2 — Confirmation and audit testing of samples of certified fly ash taken at dispatching centres: properties and minimum testing frequencies 19

Table A.1 — Symbols 21

Foreword

This document (prEN 450-2:2010) 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 will supersede EN 450-2:2005.

The following amendments have been made to the 2005-05 edition of this standard:

— extension of provision for processing plants with respect to co-combustions and staring conditions

— accuracy provisions of fineness test results

— general editorial revision

1 Scope

This European standard specifies the scheme for the evaluation of conformity of fly ash according to EN 450-1.

The standard provides technical rules for the production control by the producer, including autocontrol testing of samples. It also provides rules for actions to be followed in the event of non-conformity, the procedure for the certification of conformity and requirements for dispatching centres.

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

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

EN 450-1, *Fly ash for concrete — Part 1: Definition, specifications and conformity criteria*

3 Terms and definitions

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

3.1 Specific definitions

3.1.1
certificate of conformity
document issued under the rules of a certain scheme for the evaluation of conformity indicating that adequate confidence is provided that fly ash is in conformity with EN 450-1

3.1.2
conformity mark
protected mark applied on the basis of the certificate of conformity (see 3.1.1)

3.1.3
certified fly ash
fly ash for which a certificate of conformity has been issued

3.1.4
initial period
immediate period after the first issuing of the certificate of conformity for a fly ash

3.1.5
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

3.1.6
production control
permanent internal control of fly ash production exercised by the producer consisting of internal quality control and autocontrol testing

3.1.7
production plant
facility, which is under the control of the producer and used for the production of fly ash, e.g.:

a) power plant with one(several) boiler(s), and/or

b) processing plant, for example for the classification, selection, sieving, drying, blending, grinding and/or carbon reduction of fly ash(es).

NOTE The equipment in the production plant is suitable for production of fly ash including the necessary silo capacity for the storage and dispatch of the fly ash produced, and equipment to test, evaluate and control the fly ash production. This equipment and the production control applied allow the control of production with sufficient accuracy to ensure that the requirements of EN 450-1 are met

3.1.8
new production plant
production plant which is not already producing fly ash certified under this scheme

3.1.9
existing production plant
production plant which is already producing fly ash certified under this scheme

3.1.10
depot
bulk fly ash handling facility (not located at the production plant) used for the dispatch of fly ash (whether in bulk or bagged) after transfer or storage where the producer has full responsibility for all aspects of the quality of the fly ash

3.1.11
dispatching centre
bulk fly ash handling facility (not located at the production plant) used for the dispatch of fly ash after transfer or storage where an intermediary has full responsibility for all aspects of the quality of the fly ash

3.1.12
intermediary
natural or legal person who takes from the producer fly ash certified according to EN 450-2 and bearing the conformity mark, who undertakes full responsibility for maintaining in a dispatching centre all aspects of the quality of the fly ash and who supplies the fly ash onwards to a further natural or legal person

3.1.13
confirmation autocontrol testing
continual testing carried out by an intermediary which consists of testing of samples taken by the intermediary at the point(s) of release from the dispatching centre

3.1.14
works' quality manual
document that provides information on the production control which is applied by a producer at a particular production plant to ensure conformity of the fly ash with the requirements of the relevant product specification standard

3.1.15
producer
producer is the operator of the production plant or a person (natural or legal) authorised by the production plant. The producer is named in the certificate of conformity.

3.2 General definitions

See Annex B (informative).

4 Tasks for the producer

4.1 Factory production control

4.1.1 Concept

Production control means the permanent internal control of fly ash production exercised by the producer and consists of internal quality control (see 4.2) and autocontrol testing[1] of samples of fly ash taken at the point of release (see 4.3).

NOTE The requirements of EN 450-2 as regards the production control take account of those clauses of EN ISO 9001 which are relevant to the production, process control and testing of fly ash.

4.1.2 Works' quality manual

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

a) the quality aims and the organisational structure, responsibilities and powers of the responsible staff 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) the production and quality control techniques, processes and systematic actions that will be used (see 4.2.1, 4.2.3 and 4.3.2);

c) the inspections and tests that will be carried out before, during and after production, 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 producer for each production plant shall include an adequate system of documentation (see 4.1.4 and 4.3.4). In case of suitability testing of fly ash from co-combustion of pulverised coal with certain co-combustion materials according to EN 450-1, the procedure of sampling shall be documented in agreement with the certification body.

The Works' quality manual shall address and document the procedures operated to ensure that the fly ash 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 450-1 which are relevant to the production control of fly ash. Provided all the requirements are included, this quality manual may 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 producer defining its quality policy, objectives and commitments to the attainment of product quality.

4.1.3.2 Management representative

The producer 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 this European standards for the evaluation of conformity are implemented and maintained.

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[1] This testing corresponds also to the "further testing of samples" mentioned in Annex III Section 2 point (i) of the Construction Products Directive 89/106/EEC.

If the producer is a person authorized by the production plant (see 3.1.15), suitable relations between the producer and the production plant shall be established and documented in order to ensure that the requirements of this document are met.

4.1.3.3 Internal audits and management review

In order to ensure the continuing suitability and effectiveness of the Work's quality manual to meet the requirements of EN 450-1, the producer shall perform at least once per year:

a) internal audits covering the scope of this clause 4 and 6.1;

b) producer'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 producer shall be responsible for the control of all documents and data related to the 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 producer 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 fly ash properties;

   2) silos of adequate capacity for storage of the fly ash 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 fly ashes to be processed;

2) controlled proportioning of the fly ashes to be processed in order to achieve the target properties of the produced fly ash;

3) facilities for adequate homogenisation of fly ash;

4) in-process testing of fly ash properties.

4.2.1.2 Provisions for processing plants

In production plants for the controlled processing of fly ash, for example by classification, selection, sieving, drying, blending, grinding, and carbon reduction, the relevant information on each consignment of incoming fly ash and all operating steps in the process shall be documented in the Work´s quality manual by the producer in agreement with the certification body. The following information shall be at least part of this documentation:

a) the producer and the production location from which the fly ash originates;

b) an acknowledgement that the fly ash is in accordance with clause 3.2 in EN 450-1;

c) the documented suitability and environmental compatibility as required in EN 450-1, where co-combustion materials have been used;

d) in case of blending, the properties of each incoming fly ash shall be controlled on a regular basis in order to be able to achieve the target properties of the fly ash blend. On each incoming fly ash the relevant properties listed in Table 2 of EN 450-1 except particle density, activity index, initial setting time and water requirement shall be tested by the supplier of the incoming fly ash. The minimum testing frequency shall be chosen as indicated in Table 2 of EN 450-1, "Routine situation", and shall be documented in the works' quality manual. Each incoming fly ash shall conform to the requirements in clauses 4 and 5 of EN 450-1 with the exception of loss on ignition, fineness, and variation of fineness;

e) if one of the incoming fly ashes is obtained from co-combustion, the environmental compatibility of the blended fly ash shall be proven as required by clause 4.3 of EN 450-1;

f) if one or more of incoming fly ashes are obtained from co-combustion, the processed fly ash shall be considered as fly ash from co-combustion;

g) normally fly ash should be stored and delivered in a dry condition. For re-drying of fly ash transport and storage may also be done in wet condition.

4.2.1.3 Provisions for co-combustion materials

In power plants where co-combustion of materials, or mixtures of materials, according to clause 4 of EN 450-1 and mixtures thereof is conducted, the following measures shall be ensured:

a) different co-combustion materials shall be stored separately;

b) the proportion of co-combustion material(s) related to pulverised coal used in the boiler shall be controlled at regular intervals.

4.2.1.4 Control of off-specification production

The Works' quality manual shall contain procedures to ensure that off-specification production is adequately managed.

4.2.2 Measuring and testing

4.2.2.1 Inspection, measuring and test equipment

The equipment for in-process inspection and testing shall be regularly checked and calibrated in accordance with the procedures and frequencies laid down in the Works' quality manual.