



SLOVENSKI STANDARD
oSIST prEN 15167-2:2023
01-junij-2023

**Grobozrnata plavžna žlindra za uporabo v betonu, malti in injekcijski malti - 2. del:
Ocenjevanje in preverjanje nespremenljivosti lastnosti**

Ground granulated blast furnace slag for use in concrete, mortar and grout - Part 2:
Assessment and verification of constancy of performance

Hüttensandmehl zur Verwendung in Beton, Mörtel und Einpressmörtel - Teil 2:
Bewertung und Überprüfung der Leistungsbeständigkeit

Laitier granulé de haut-fourneau moulu pour utilisation dans le béton, mortier et coulis -
Partie 2 : Évaluation et vérification de la constance des performances

Ta slovenski standard je istoveten z: prEN 15167-2

ICS:

91.100.15 Mineralni materiali in izdelki Mineral materials and
products

oSIST prEN 15167-2:2023

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 15167-2

April 2023

ICS 91.100.15

Will supersede EN 15167-2:2006

English Version

Ground granulated blast furnace slag for use in concrete, mortar and grout - Part 2: Assessment and verification of constancy of performance

Laitier granulé de haut-fourneau moulu pour
utilisation dans le béton, mortier et coulis - Partie 2:
Evaluation de la conformité

Hüttensandmehl zur Verwendung in Beton, Mörtel und
Einpressmörtel - Teil 2: Konformitätsbewertung

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

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Factory production control	6
4.1 General requirements	6
4.1.1 Concept	6
4.1.2 Works' quality documentation	6
4.1.3 Quality management system	6
4.1.4 System of documentation	7
4.2 Internal quality control	7
4.2.1 Process control	7
4.2.2 Measuring and testing	8
4.2.3 Handling, storage, packaging and delivery	8
4.3 Autocontrol testing of samples	8
4.3.1 Sampling and testing	8
4.3.2 Corrective action	8
4.3.3 Measuring and test equipment for autocontrol testing	9
4.3.4 Quality records	9
5 Tasks for the purpose of certification	9
5.1 Assessment of the performance of the ground granulated blast furnace slag	9
5.2 Initial inspection of the manufacturing plant and of factory production control	9
5.2.1 Inspection of a new factory	9
5.2.2 Inspection of an existing factory	9
5.2.3 Criteria for the assessment of the production equipment	9
5.2.4 Criteria for the assessment of laboratories	10
5.3 Continuing surveillance, assessment and evaluation of factory production control	10
5.3.1 Inspection of the factory and the factory production control	10
5.3.2 Evaluation of the results of autocontrol testing of samples	10
5.4 Audit testing of samples taken at the factory/depot	11
5.4.1 Sampling	11
5.4.2 Testing	11
5.4.3 Evaluation of test results	11
5.5 Reports	12
5.6 Actions to be taken in the event of non-conformity	12
5.6.1 Following inspection of the factory production control and evaluation of the results of autocontrol testing	12
5.6.2 Following evaluation of the results of the audit testing	12
6 Procedure for certification of constancy of performance of the product	13
Annex A (normative) Evaluation of the representativeness and the accuracy of the 28 day activity index test results	15
Bibliography	17

European foreword

This document (prEN 15167-2:2023) has been prepared by Technical Committee CEN/TC 104 “Concrete”, the secretariat of which is held by Standard Norway (SN).

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 15167-2:2006.

In comparison with the previous edition, the following technical modifications have been made:

- a) use of the terminology given by the Delegated Regulation (EU) No 568/2014 amending Annex V to Regulation (EU) No 305/2011 (Construction Products Regulation), in particular adoption of the tasks defined in the Delegated Regulation for AVCP system 1+ for a re-arrangement of the clauses of this document;
- b) numbering of the clauses according to the order of the tasks specified in this Delegated Regulation;
- c) removal of the rules for dispatching centres;
- d) clarification / specification of the rules for depots;
- e) replacement of the term ‘Works quality documentation’ by ‘Works quality documentation’;
- f) replacement of the term ‘management representative’ by ‘quality manager’;
- g) editorial revision of the document.

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

EN 15167, *Ground granulated blast furnace slag for use in concrete, mortar and grout* is composed of two parts:

- *Part 1: Definitions, specifications and conformity criteria;*
- *Part 2: Assessment and verification of constancy of performance.*

prEN 15167-2:2023 (E)**1 Scope**

This document specifies the scheme for the assessment and verification of constancy of performance (AVCP) of ground granulated blast furnace slag, including certification of constancy of performance.

The document provides technical rules for the factory production control, further testing of samples taken at the manufacturing plant (autocontrol testing) and the assessment of the performance of the ground granulated blast furnace slag, initial inspection of the manufacturing plant and of the factory production control and audit-testing of samples. It also provides rules for actions to be followed in the event of non-conformity and the requirement for depots.

This document is linked with the Annex ZA of the European Standard covering ground granulated blast furnace slag, i.e. EN 15167-1:2006.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 196-7, *Methods of testing cement — Part 7: Methods of taking and preparing samples of cement*

EN 15167-1, *Ground granulated blast furnace slag for use in concrete, mortar and grout — Part 1: Definitions, specifications and conformity criteria*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1**AVCP**

abbreviation for assessment and verification of constancy of performance

3.2**certificate of constancy of performance of the product**

document issued under the rules of the scheme for the AVCP indicating that adequate confidence is provided that ground granulated blast furnace slag conforms to the performance(s) declared in accordance with EN 15167-1

3.3**depot**

bulk ground granulated blast furnace slag handling facility, not located at the factory, used for the dispatch of ground granulated blast furnace slag, whether in bulk or bagged, after transfer or storage where the manufacturer has full responsibility for all aspects of the quality of the ground granulated blast furnace slag

3.4**distributor**

natural or legal person in the supply chain, other than the manufacturer or the importer, who makes a construction product available on the market

[SOURCE: Regulation (EU) no 305, Article 2 (Construction Product Regulation)]

3.5**existing factory**

factory which is already producing ground granulated blast furnace slag certified using EN 15167-1

3.6**factory production control**

documented, permanent and internal control of production in a factory, in accordance with harmonized standard EN 15167-1

3.7**factory**

facility used by a manufacturer for the production of ground granulated blast furnace slag using equipment which is suitable for continuous mass production of ground granulated blast furnace slag, in particular, equipment for adequate grinding and homogenisation and the necessary silo capacity for the storage and dispatch of each ground granulated blast furnace slag produced

Note 1 to entry: This equipment and the production control applied allow the control of production with sufficient accuracy to ensure that the requirements of EN 15167-1 are met.

3.8**importer**

natural or legal person established within the European Union, who places a construction product from a third country on the European Union market

[SOURCE: Regulation (EU) no 305, Article 2 (Construction Product Regulation)]

3.9**initial period**

immediate period starting after the first issuing of the certificate of constancy of performance of the product for a ground granulated blast furnace slag and at the latest from the first dispatching of ground granulated blast furnace slag

3.10**intermediary**

natural or legal person who takes from the manufacturer ground granulated blast furnace slag certified according to this standard and bearing the conformity mark, who undertakes full responsibility for maintaining in a dispatching centre all aspects of the quality of the ground granulated blast furnace slag and who supplies the ground granulated blast furnace slag onwards to a further natural or legal person

3.11**new factory**

factory which is not already producing ground granulated blast furnace slag certified using EN 15167-2

3.12**product certification body**

body notified in accordance with Chapter VII of Regulation (EU) No305/2011 to carry out constancy of performance certification

3.13**works' quality documentation**

documentation that provides information on the factory production control which is applied by a manufacturer at a particular factory to ensure constancy of performance of the ground granulated blast furnace slag

prEN 15167-2:2023 (E)**4 Factory production control****4.1 General requirements****4.1.1 Concept**

Factory production control means the permanent internal control of ground granulated blast furnace slag production and consists of internal quality control (see 4.2) completed by autocontrol testing of samples of ground granulated blast furnace slag taken at the point of release¹ (see 4.3).

NOTE 1 The requirements of this document as regards factory production control apply to factories and their depots.

NOTE 2 The requirements of this document in regards to factory production control take into account the clauses of EN ISO 9001 which are relevant to the production, process control and testing of ground granulated blast furnace slag.

4.1.2 Works' quality documentation

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

- a) the 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 and 4.2);
- b) the 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) the 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 documentation shall include an adequate system of documentation (see 4.1.4 and 4.3.4).

The Works' quality documentation shall address and document the procedures operated to ensure that the manufactured ground granulated blast furnace slag conforms to the performance(s) declared in accordance with EN 15167-1. The documentation 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 documentation shall be considered to include these associated documents.

In the case of an existing quality management system according to EN ISO 9001, the corresponding quality documentation may also be applied for product certification if it meets all requirements of this document which are relevant to the factory production control of ground granulated blast furnace slag.

4.1.3 Quality management system**4.1.3.1 Quality policy statement**

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

4.1.3.2 Quality manager

A quality manager shall be appointed who, irrespective of other responsibilities, shall have defined and adequate authority and responsibility for ensuring that the requirements of this document for the AVCP are implemented and maintained.

¹ This testing corresponds also to the "further testing of samples taken at the manufacturing plant" mentioned in Delegated Regulation (EU) No 568/2014 amending Annex V to Regulation (EU) No 305/2011 (Construction Products Regulation).

4.1.3.3 Internal audits and management review

In order to ensure the continuing suitability and effectiveness of the Work's quality documentation to meet the requirements of this document:

- a) internal audits covering the scope of Clause 4;
- b) a management review of the functioning and the results of the factory production control, taking into account records of the internal audits

shall be performed at least once a year.

4.1.3.4 Training

The Works' quality documentation 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

All documents and data related to factory production control and to this scheme for the AVCP shall be controlled.

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 system 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

Records shall be retained to provide evidence of factory production control for at least the period required.

4.2 Internal quality control

4.2.1 Process control

4.2.1.1 General

The Works' quality documentation shall describe the parameters for process planning, process control and testing, inspection, corrective action, verification, dispatch and the associated records for each factory and depot.

4.2.1.2 Constituents and composition of ground granulated blast furnace slag

Documented procedures and appropriate test methods shall be established to ensure that the constituents meet the requirements of EN 15167-1 and are suitable to enable ground granulated blast furnace slag to be produced meeting the targets and control limits.

The Works' quality documentation shall describe the methods used by the manufacturer to ensure that the composition of the ground granulated blast furnace slag produced conforms to the performance(s) declared in accordance with EN 15167-1, including appropriate test methods.

4.2.1.3 Control of off-specification production or non-conformity

The Works' quality documentation shall contain procedures for the review and adjustment of the factory production control in case of off-specification production or non-conformity.

The actions taken in the event of non-conformity shall be recorded in a report subject to inspection during the management review.

prEN 15167-2:2023 (E)

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 documentation.

4.2.2.2 Inspection and test status

Procedures for the inspection and test status through the stages of manufacture shall be detailed in the Works' quality documentation. These shall include procedures for the control of off-specification intermediate materials.

4.2.3 Handling, storage, packaging and delivery

The Works' quality documentation shall describe the precautions taken for the protection of the quality of the ground granulated blast furnace slag while under the responsibility of the manufacturer for the factory and each depot. Delivery documentation shall allow traceability to the producing works.

4.3 Autocontrol testing of samples

4.3.1 Sampling and testing

A system of autocontrol testing shall be operated to demonstrate constancy of performance of the ground granulated blast furnace slag in accordance with the clause entitled "Assessment and verification of constancy of performance – AVCP" in EN 15167-1.

The characteristics to be tested, the testing methods, the minimum frequency of autocontrol testing during routine testing and initial period testing and the AVCP criteria including the statistical evaluation of the autocontrol testing results shall be in accordance with the clause entitled "Assessment and verification of constancy of performance – AVCP" in EN 15167-1.

NOTE In the version EN 15167-1:2006, the title of the clause "Assessment and verification of constancy of performance – AVCP" is 'Evaluation of conformity'.

For ground granulated blast furnace slag not being dispatched continuously, the frequency of testing and the point of sampling shall be as specified in the Works' quality documentation.

The system of autocontrol testing shall include depots.

All test data shall be documented.

4.3.2 Corrective action

In the event of ground granulated blast furnace slag yielding a test result not conforming to the single result threshold value AVCP criteria specified in EN 15167-1, the affected quantity shall immediately be determined, appropriate action shall be taken to prevent the dispatch of this quantity and the affected customer shall be informed if such ground granulated blast furnace slag has been released.

In addition, the causes of such non-conformity shall immediately be determined, corrective actions shall be taken and a review of all relevant factory production control procedures shall be undertaken. All such actions and findings shall be appropriately recorded in a report subject to inspection during the management review.

In the event of a complaint plus warning, the minimum frequency of autocontrol testing of non-conforming characteristics shall be doubled for a period of two months following the warning, unless it can be demonstrated that adequate measures were taken from the time of the initial occurrence of the non-conformity until its resolution, including doubling the minimum frequency of autocontrol testing for a minimum period of two months.