

BS EN 459-3:2015



BSI Standards Publication

Building lime

Part 3: Conformity evaluation

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National foreword

This British Standard is the UK implementation of EN 459-3:2015. It supersedes BS EN 459-3:2011 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/516/11, Lime.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Foreword

This document (EN 459-3:2015) has been prepared by Technical Committee CEN/TC 51 “Cement and building limes”, the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by October 2015, and conflicting national standards shall be withdrawn at the latest by October 2015.

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This document supersedes EN 459-3:2011.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

The European Standard EN 459 for *Building lime* consists of the following parts:

- *Part 1: Definitions, specifications and conformity criteria;*
- *Part 2: Test methods;*
- *Part 3: Conformity evaluation.*

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1 Scope

This European Standard specifies the scheme for the attestation and verification of constancy of performance (AVCP) of building limes to their corresponding product standard EN 459-1. It provides rules for surveillance, assessment and evaluation of the factory production control and rules for the frequency of inspections.

The European Standard specifies technical rules for factory production control by the manufacturer, including autocontrol testing of samples. It also provides rules for actions to be followed in the event of non-conformity and requirements for dispatching centres.

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 459-1:2015, *Building lime — Part 1: Definitions, specifications and conformity criteria*

EN 459-2, *Building lime — Part 2: Test methods*

3 Terms and definitions

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

**3.1
factory**
facility used by a manufacturer for the production of building lime using equipment which is suitable for continuous mass production of building lime including, where relevant, equipment for adequate calcining, slaking, grinding and equipment for homogenization and the necessary capacity for the storage and dispatch of each type of building lime produced

Note 1 to entry: This equipment and the production control applied allow the control of production to ensure that the requirements of EN 459-1 are met.

**3.2
factory production control**
permanent internal control of building lime production exercised by the manufacturer consisting of internal quality control and autocontrol testing

**3.3
work's quality manual**
document(s) providing information on the factory production control applied by a manufacturer at a particular factory to ensure compliance of the building lime with the requirements of EN 459-1

**3.4
depot**
building lime handling facility (not located at the factory) used for the dispatch of building lime (whether in bulk or bagged) after transfer or storage where the manufacturer has full responsibility for all aspects of the quality of the building lime

**3.5
dispatching centre**
building lime handling facility (not located at the factory) used for the dispatch of building lime (whether in bulk or bagged) after transfer or storage where a distributor has full responsibility for all aspects of the quality of the building lime

3.6

distributor

natural or legal person who takes from the manufacturer bulk building lime declared according to this European Standard and bearing the conformity marking, who undertakes full responsibility for maintaining in a bulk handling facility all aspects of the quality of the building lime and who supplies the building lime onwards to a further person

3.7

confirmation autocontrol testing

continual testing carried out by a distributor which consists of the testing of samples taken by the distributor at the point(s) of release from the dispatching centre

4 Factory production control by the manufacturer

4.1 General requirements

4.1.1 Definition and concept

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

The details of the factory production control are described in the work's quality manual (see 4.1.2).

4.1.2 Work's quality manual

The manufacturer's documentation and procedures for factory production control shall be described in a work's quality manual, which shall adequately describe, among others:

- a) the quality aims, organization structure, responsibilities and powers of the management with regard to product quality, the means to monitor the achievement of the required product quality and the effective operation of the factory production control (see 4.1.3);
- b) the manufacturing and quality control techniques, processes and systematic actions that will be used (see 4.2.1 and 4.2.3);
- 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).

The work's quality manual prepared by the manufacturer for each factory shall include an adequate system of documentation (see 4.1.4).

The work's quality manual shall address and document the procedures operated to ensure that the manufactured building lime conforms to the technical specifications. It may be referred to associated documents which provide further details of the autocontrol testing of samples and the internal quality control.

NOTE Manufacturers having an FPC system, which complies with EN ISO 9001 standard and which addresses the provisions of the present European standard are considered as satisfying the FPC requirements of the Regulation (EU) No 305/2011.

4.1.3 Management system

4.1.3.1 Quality policy

The work's quality manual shall include a statement by management 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 European Standard 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 work's quality manual to meet the requirements of this European Standard, the manufacturer shall perform at least once per year:

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

4.1.3.4 Training

The work's 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 shall be responsible for the control of all documents and data related to factory 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.

The producer shall have a system to identify the current versions of documents in order to prevent the use of non-applicable documents.

4.1.4.2 Quality records

The manufacturer shall retain records of factory 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 work's quality manual shall describe the parameters for process planning, process control and testing, inspection, corrective action, verification, dispatch and the associated records.

4.2.1.2 Composition of calcium lime, dolomitic lime, natural hydraulic lime and hydraulic lime

The work's quality manual shall describe the methods used by the manufacturer to ensure that the composition of the building lime produced conforms to EN 459-1 including appropriate test methods.

4.2.1.3 Constituents and composition of formulated lime

The manufacturer shall establish documented procedures and select appropriate test methods to ensure that the constituents meet the requirements of the relevant product specification standard and are suitable to enable formulated lime to be produced meeting the requirements of EN 459-1.

The work's quality manual shall describe the methods used by the manufacturer to ensure that the composition of the formulated lime produced conforms to EN 459-1 including appropriate test methods.

4.2.1.4 Control of off-specification production

The work's 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 work's quality manual.

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 work's quality manual. These shall include procedures for the control of off specification intermediate materials.

4.2.3 Handling, storage, packaging and delivery

The work's quality documentation shall describe the precautions taken for the protection of the quality of the building lime while under the responsibility of the manufacturer. It shall include a description of the procedures used at depots. Delivery documentation shall allow traceability to the producing works.

4.3 Autocontrol testing of samples

4.3.1 Sampling and testing

The manufacturer shall operate a system of autocontrol testing for each building lime. This system shall be used to demonstrate compliance to the requirements in the subclauses entitled "Compliance criteria" in EN 459-1:2015. The properties to be tested, test methods and the minimum testing frequencies of autocontrol during routine testing and product type determination and the compliance criteria shall be in accordance with the basic requirements given in EN 459-1:2015, 4.4.8, 4.5.8 and 5.6.

For building lime not being dispatched continuously, the frequency of testing and the point of sampling shall be as specified in the work's quality manual.

All test data shall be documented.

4.3.2 Evaluation of results of autocontrol testing of samples

4.3.2.1 General

As a rule, the manufacturer shall carry out a non-statistical evaluation, as specified in 4.3.2.2. Where the frequency of testing applied by the manufacturer is so that at least 20 autocontrol test results are obtained within a control period, the manufacturer may carry out a statistical evaluation, as specified in 4.3.2.3.

4.3.2.2 Non-statistical evaluation

The manufacturer shall check that all individual autocontrol test results meet the requirements given in EN 459-1:2015, Tables 2 to 6, 9 to 13, 16 to 18, 20 to 22 and 24 to 26.

4.3.2.3 Statistical evaluation

4.3.2.3.1 Against statistical conformity criteria

The manufacturer shall check that the test results of the autocontrol testing conform to EN 459-1:2015, A.1. The frequency of statistical evaluation, by the manufacturer, of the data of the control period shall be at least once a year.

4.3.2.3.2 Against single result conformity criteria

Evaluation shall be made on the basis of individual autocontrol test results against the limit values given in EN 459-1:2015, A.2.

4.3.3 Corrective action

The work's quality manual shall document procedures for the review and adjustment of the factory production control in case of non-conformity (see 6.1).

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

In the event of a building lime yielding a test result not conforming to the single result limit value conformity criteria specified in EN 459-1, the manufacturer shall immediately determine the affected quantity, take appropriate action to prevent the dispatch of this quantity and inform the affected customer if such building lime has been released. In addition, the manufacturer shall immediately determine the causes of such non-conformity take corrective actions and undertake a review of all relevant factory production control procedures. All such actions and findings shall be appropriately recorded in a report subject to inspection during the management review.

4.3.4 Measuring and test equipment for autocontrol testing

The equipment used for autocontrol testing shall be regularly checked and calibrated in accordance with procedures and frequencies laid down in the work's quality manual. These procedures shall include comparison of test results with other laboratories or from reference materials designated in the work's quality manual.

The work's quality manual shall document procedures to ensure that all personnel involved in autocontrol testing have appropriate experience and training. Appropriate records shall be retained.

4.3.5 Quality records

The manufacturer shall retain records of the autocontrol test results and appropriate records on test equipment for at least the period required to comply with relevant legislation on product liability.

4.4 Product type determination of the building lime

The product type determination of the building lime shall be based on the autocontrol test results and the test results obtained during the initial period of, normally, three months.

Sampling and testing shall be carried out as specified in the subclauses entitled "Conformity criteria" in EN 459-1:2015.

The results from the product type determination shall be assessed and documented.

5 Surveillance, assessment and evaluation of the factory production control

5.1 Inspection of the factory production control

5.1.1 Inspection tasks

The inspection tasks include surveillance, assessment and evaluation of the factory production control. Inspection shall verify that the factory production control complies with the requirements of Clause 4 of this European standard and has been carried out according to the work's quality manual.

NOTE See EN 459-1:2015, Annex ZA for the assignment of tasks by the notified production control certification body and for the purpose of CE marking.

5.1.2 Initial inspection of the factory and the factory production control

In the case of a new factory, an initial inspection of the factory and the factory production control shall be made, based on information on the factory production control and the equipment to be used to produce the building lime.

The inspection shall, among other things:

- a) verify that the work's quality manual complies with the requirements of 4.1.2;
- b) verify that the equipment used to produce and test the building lime(s) meets the criteria in 5.1.4 and 5.1.5.

5.1.3 Inspection of an existing factory

In the case of a new type of building lime at an existing factory, information on any significant changes concerning the factory production control and the equipment, caused by the production of the new building lime, shall be considered. This shall form the basis to decide, based on the importance of the changes to the work's quality manual, whether a particular inspection is necessary. In this case any new equipment which has caused a major change in the work's quality manual shall be inspected to verify that it meets the relevant criteria in 5.1.4 and 5.1.5.

5.1.4 Criteria for the assessment of the production equipment

The inspection shall assess the suitability of the production equipment in relation to the work's quality manual and in relation to providing the ability to meet the requirements of EN 459-1. The following criteria shall be considered:

- a) The constituents as described in EN 459-1 shall be protected against contamination within the factory.
- b) Equipment shall be provided which is suitable for continuous mass production of building lime, including, where relevant, equipment for adequate calcining, slaking, grinding and equipment for homogenization, allowing control of production with sufficient accuracy to ensure that the requirements of EN 459-1 are met.
- c) Measures shall be taken to prevent the mixing of different building limes during conveying and storage.
- d) Each building lime shall be stored in one or more separate silos, protected to prevent contamination and deterioration. The silos may include or take the form of fully enclosed separated air-tight subdivisions. Silos and/or discharge points shall be clearly marked with an indication of the building lime type, strength class (NHL, FL, HL) and any additional identification required.

- e) Points where building lime is released from the factory and/or depot shall allow samples to be taken in accordance with the methods in EN 459-2.

5.1.5 Criteria for the assessment of laboratories

The laboratory responsible for carrying out the tests required for internal quality control has at least the equipment needed to carry out the relevant tests indicated or referred to in the work's quality manual (see also 4.2.2).

The laboratory responsible for carrying out autocontrol testing has at least the equipment needed to carry out tests for the properties listed in EN 459-1 using the test methods described in EN 459-2 (see 4.3.4).

The laboratory shall demonstrate the ability to provide results within a time and in a manner suitable for the manufacturer's factory production control.

5.1.6 Frequency of inspections

The inspections shall normally be carried out once per year and the manufacturer shall be informed in advance when an inspection is to be made.

For factories with an annual production of less than 1 000 tonnes a frequency of inspection of one per every three years shall apply.

For factories with an annual production between 1 000 tonnes and 10 000 tonnes a frequency of inspection of one per every two years shall apply.

5.2 Reports

Following each inspection, a confidential report shall be prepared and sent to the manufacturer.

The manufacturer shall record any corrective actions taken or planned to be taken following receipt of the report.

5.3 Certification of the factory production control

Given that the initial inspection of the factory and the factory production control according to 5.1.2 or the inspection of the factory production control according to 5.1.3 indicates that the requirements of Clause 4 are met, a certificate of conformity of the factory production control shall be issued.

6 Actions in the event of non-conformity

6.1 Actions to be taken by the manufacturer

The control of non-conforming building lime and the corrective actions to be taken by the manufacturer are dealt with in 4.3.3. These are the full responsibility of the manufacturer who shall document the detailed procedures in the work's quality documentation.

In the event of non-conforming building lime the minimum frequency of autocontrol testing of non-conforming properties shall be doubled until they conform with the standard, unless it can be demonstrated that adequate measures were taken from the time of the initial occurrence of the non-conformity until its resolution.

6.2 Actions to be taken in case of a non-conforming factory production control system

In the event of non-compliances of the factory production control system, appropriate decisions/actions shall be taken in order to ensure that the factory production control is correctly applied by the manufacturer.

Cancellation of a certificate of the factory production control should be considered in the event of a continuing non-conformity of the factory production control system.

7 Declaration of performance

The declaration of performance for a building lime is made by the manufacturer and is based on the results of the certification of the factory production control (see 5.3).

NOTE See EN 459-1:2015, Annex ZA for the declaration of performance.

8 Requirements for dispatching centres

8.1 General

The distributor may use the CE marking applied by the manufacturer if he can prove that the properties of the building lime received are maintained during transport, reception, storage, packaging and dispatch. To demonstrate this, the distributor shall carry out his tasks as described in 8.2.

8.2 Tasks for the distributor

8.2.1 Quality control

The distributor shall demonstrate that he operates quality control incorporating a quality manual which describes the quality obligation and the organizational structure and which adequately covers purchasing, transport, reception, handling, storage, testing and dispatch of the building lime.

In particular the quality control shall include appropriate acceptance and identification testing in order to demonstrate that the building lime delivered to the dispatching centre has not suffered from damage, contamination or ageing and corresponds to the building lime specified in the purchasing or delivery contracts.

8.2.2 Confirmation autocontrol testing of samples taken at the dispatching centre

The distributor shall carry out confirmation autocontrol testing of samples to ensure that the building lime maintains its properties. The frequency of sampling and testing shall be at least as specified in Table 1. The results of the confirmation autocontrol testing carried out at the dispatching centre and at the factory supplying the building lime shall be compared, assessed and documented.

The confirmation autocontrol testing may be carried out in the laboratory of the distributor or in an external laboratory.

The distributor shall be only allowed to use the CE-marking applied by the manufacturer if the results of the confirmation autocontrol testing at the dispatching centre meet the standard and remain within the range of the maximum and minimum values of the corresponding results of the autocontrol testing at the factory for the preceding 12 months. If the results are outside this range the allowance to continue to use the CE-marking shall be based on a documented case by case assessment by the manufacturer.

Table 1 — Frequency of sampling and testing for the dispatching centre ^a

Property	Type^b	Test method to be used^c	Minimum frequency of testing by distributor
Setting time	Natural hydraulic lime (all) Formulated lime (all) Hydraulic lime (all)	EN 459-2	1/month
28 day strength	Natural hydraulic lime (all) Formulated lime (all) Hydraulic lime (all)		2/month
CO ₂	Quicklime Hydrated lime Lime putty		1/week
Free water	Hydrated lime Lime putty Natural hydraulic lime (all) Formulated lime (all) Hydraulic lime (all)		1/month
Reactivity	Quicklime		1/week

^a The methods used to take and prepare samples shall be in accordance with EN 459-2. The distributor shall ensure the requirements at the time of dispatch.

^b See EN 459-1 for a description of types of building lime.

^c Where allowed in the relevant clause of EN 459-2 other methods may be used for the factory production control provided that they give results which are equivalent to those obtained using the reference methods.

Bibliography

- [1] EN ISO 9001, *Quality management systems — Requirements (ISO 9001:2008)*
- [2] EN ISO/IEC 17065:2012, *Conformity assessment — Requirements for bodies certifying products, processes and services (ISO/IEC 17065:2012)*

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