

# SVENSK STANDARD

## SS-EN 459-1:2015

Fastställt/Approved: 2015-05-03  
Publicerad/Published: 2015-05-07  
Utgåva/Edition: 3  
Språk/Language: engelska/English  
ICS: 01.040.91; 91.100.10

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### **Byggkalk – Del 1: Sammansättning och fordringar**

### **Building lime – Part 1: Definitions, specifications and conformity criteria**



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Denna standard ersätter SS-EN 459-1:2010, utgåva 2.

The European Standard EN 459-1:2015 has the status of a Swedish Standard. This document contains the official English version of EN 459-1:2015.

This standard supersedes the Swedish Standard SS-EN 459-1:2010, edition 2.

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EUROPEAN STANDARD

**EN 459-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2015

ICS 91.100.10

Supersedes EN 459-1:2010

English Version

## Building lime - Part 1: Definitions, specifications and conformity criteria

Chaux de construction - Partie 1 : Définitions, spécifications et critères de conformité

Baukalk - Teil 1: Begriffe, Anforderungen und Konformitätskriterien

This European Standard was approved by CEN on 16 February 2015.

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 CEN-CENELEC Management Centre or to any CEN member.

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

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## Foreword

This document (EN 459-1:2015) 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of an identical text or by endorsement, at the latest by October 2015, and conflicting national standards shall be withdrawn at the latest by January 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 459-1:2010.

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

For relationship with Regulation (EU) No. 305/2011, see informative Annex ZA, which is an integral part of this document.

EN 459, *Building lime*, consists of the following parts:

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

The requirements in EN 459-1 are based on the results of tests on building lime determined in accordance with EN 459-2.

Annexes A and D are normative, Annexes B, C and ZA are informative.

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Introduction

The revision of this European Standard for building lime was initiated by Decision 4 taken by CEN/TC 51 "Cement and building limes" in 2013.

Different sources of raw materials and different climatic conditions have led to different developments in building construction and civil engineering practices and materials and therefore to different kinds of building lime in different regions of Europe.

The inclusion of a wider range of building lime which exists in Europe has made it necessary to establish a number of classes.

The previous national standards for building lime generally also formed the basis for different areas of application (see Annex C (informative)). The classification chosen therefore also takes into consideration these circumstances as far as possible.

For a better understanding, the standard makes a clear distinction between air lime (Clause 4) and lime with hydraulic properties (Clause 5). Depending on the composition and characteristics of the products, each clause is then divided into sub-paragraphs (calcium lime and dolomitic lime for air lime; natural hydraulic lime, formulated lime and hydraulic lime for lime with hydraulic properties) containing the appropriate definitions, specifications and conformity criteria.



## 1 Scope

This European Standard applies to building lime used for:

- preparation of binder for mortar (for example for masonry, rendering and plastering);
- production of other construction products (for example calcium silicate bricks, autoclaved aerated concrete, concrete, etc.);
- civil engineering applications (for example soil treatment, asphalt mixtures, etc.).

It gives definitions for the different types of building lime and their classification. It also gives requirements for their chemical and physical properties which depend on the type of building lime and specifies the conformity criteria.

Terms of delivery or other contractual conditions, normally included in documents exchanged between the supplier and the purchaser of building lime, are outside the scope of this European Standard.

## 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 197-1, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

EN 459-2:2010, *Building lime — Part 2: Test methods*

EN 459-3:2015, *Building lime — Part 3: Conformity evaluation*

## 3 Terms and definitions

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

NOTE See also Annex C.

### 3.1

#### **lime**

calcium oxide and/or hydroxide, and calcium-magnesium oxide and/or hydroxide produced by the thermal decomposition (calcination) of naturally occurring calcium carbonate (for example limestone, chalk, shells) or naturally occurring calcium magnesium carbonate (for example dolomitic limestone, dolomite)

### 3.2

#### **building lime**

group of lime products, exclusively consisting of two families: air lime and lime with hydraulic properties, used in applications or materials for construction, building and civil engineering

### 3.3

#### **air lime<sup>1)</sup>**

lime (see 3.1) which combines and hardens with carbon dioxide present in air

Note 1 to entry: Air lime has no hydraulic properties. Air lime is divided into two sub-families, calcium lime (CL) and dolomitic lime (DL).

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1) Translation of a term used in most European countries.

### 3.4

#### **lime with hydraulic properties**

building lime (see 3.2) consisting mainly of calcium hydroxide, calcium silicates and calcium aluminates

Note 1 to entry: It has the property of setting and hardening when mixed with water and/or under water. Reaction with atmospheric carbon dioxide is part of the hardening process. Lime with hydraulic properties is divided into three sub-families, natural hydraulic lime (NHL), formulated lime (FL) and hydraulic lime (HL).

### 3.5

#### **allowable probability of acceptance**

*CR*

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

### 3.6

#### **sampling plan**

specific plan which states the (statistical) sample size(s) to be used, the percentile  $P_k$  and the allowable probability of acceptance *CR*

### 3.7

#### **characteristic value**

value of a required property outside which lies a specified percentage, the percentile  $P_k$ , of all the values of the population

### 3.8

#### **specified characteristic value**

characteristic value of a strength, physical or chemical 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

### 3.9

#### **single result limit value**

value of a strength, physical or chemical 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

### 3.10

#### **spot sample**

sample taken at the same time and from one and the same place, relating to the intended tests

Note 1 to entry: It can be obtained by combining one or more immediately consecutive increments (see EN 459–2).

### 3.11

#### **autocontrol testing**

continual testing by the manufacturer of building lime spot samples taken at the point(s) of release from the factory/depot

### 3.12

#### **control period**

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

## **4 Air lime**

### **4.1 General**

Air lime is used for the preparation or the production of materials used in building construction as well as in civil engineering.

Air lime (see 3.3) when appropriately batched and mixed with water, forms a paste that improves the workability (values of flow and penetration) and water retention of mortars. The carbonation of hydrates in contact with atmospheric carbon dioxide forms calcium carbonate which develops strength and contributes to the durability of mortars containing building lime (hence the name of air lime).

Sub-families and forms of air lime are given in 4.2 and 4.3 respectively.

## **4.2 Sub-families of air lime**

### **4.2.1 Calcium lime (CL)**

Calcium lime is an air lime consisting mainly of calcium oxide and/or calcium hydroxide without any hydraulic or pozzolanic addition.

### **4.2.2 Dolomitic lime (DL)**

Dolomitic lime is an air lime consisting mainly of calcium magnesium oxide and/or calcium magnesium hydroxide without any hydraulic or pozzolanic addition.

## **4.3 Forms of air lime**

### **4.3.1 Quicklime (Q)**

Quicklime is an air lime mainly in the oxide form which reacts exothermically on contact with water. Quicklime is available in a range of sizes from lump to powder.

### **4.3.2 Hydrated lime (S, S PL or S ML)**

Hydrated lime is an air lime mainly in the hydroxide form produced by the controlled slaking of quicklime. Hydrated lime is available as:

- powder (S);
- putty (S PL); or
- slurry or milk of lime (S ML).

Dolomitic lime is also produced as semi-hydrated dolomitic lime (S1), mainly consisting of calcium hydroxide and magnesium oxide.

## **4.4 Calcium lime**

### **4.4.1 Classification of calcium lime**

Calcium lime shall be classified according to the notation given in Table 1 and its total (CaO + MgO) content in accordance with Table 2.