



# SLOVENSKI STANDARD SIST EN 1018:2021

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## Kemikalije, ki se uporabljajo za pripravo pitne vode - Kalcijev karbonat

Chemicals used for treatment of water intended for human consumption - Calcium carbonate

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Calciumcarbonat

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Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Carbonate de calcium

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13.060.20	Pitna voda	Drinking water
71.100.80	Kemikalije za čiščenje vode	Chemicals for purification of water

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EUROPEAN STANDARD

EN 1018

NORME EUROPÉENNE

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## Chemicals used for treatment of water intended for human consumption - Calcium carbonate

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Carbonate de calcium

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Calciumcarbonat

This European Standard was approved by CEN on 26 April 2021.

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.

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 CEN-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## European foreword

This document (EN 1018:2021) has been prepared by Technical Committee CEN/TC 164 “Water supply”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by December 2021, and conflicting national standards shall be withdrawn at the latest by December 2021.

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

This document supersedes EN 1018:2013+A1:2015.

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

- modification of 7.3 on transportation regulations and labelling, adding the sentence “The user shall be aware of the incompatibilities between transported products.”;
- modification of 7.4 on marking. The requirements of marking are also applied to the accompanying documents;
- changes in the requirements for the composition of the porous products (Table 1) and their impurities (Table 2).

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: 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, Turkey and the United Kingdom.

**EN 1018:2021 (E)****Introduction**

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this document:

- 1) this document provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA;
- 2) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

NOTE Conformity with this document does not confer or imply acceptance or approval of the product in any of the Member States of the EU or EFTA. The use of the product covered by this document is subject to regulation or control by National Authorities.

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## 1 Scope

This document is applicable to calcium carbonate used for treatment of water intended for human consumption. It describes the characteristics of calcium carbonate and specifies the requirements and the corresponding test methods for calcium carbonate. It gives information on its use in water treatment.

## 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 12485, *Chemicals used for treatment of water intended for human consumption — Calcium carbonate, high-calcium lime, half-burnt dolomite, magnesium oxide, calcium magnesium carbonate and dolomitic lime — Test methods*

ISO 3165, *Sampling of chemical products for industrial use — Safety in sampling*

ISO 6206, *Chemical products for industrial use — Sampling — Vocabulary*

ISO 9277, *Determination of the specific surface area of solids by gas adsorption — BET method*

## 3 Terms and definitions

No terms and definitions are listed in this document.

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

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

## 4 Description

### 4.1 Identification

#### 4.1.1 Chemical name

Limestone.

Calcium carbonate.

#### 4.1.2 Synonym or common name

Limestone.

Calcium carbonate.

#### 4.1.3 Relative molecular mass

100,09.

#### 4.1.4 Empirical formula

CaCO<sub>3</sub>.

#### 4.1.5 Chemical formula

CaCO<sub>3</sub>.

**EN 1018:2021 (E)****4.1.6 CAS-Registry Number <sup>1</sup>**

1317-65-3 for limestone.

471-34-1 for calcium carbonate.

**4.1.7 EINECS reference <sup>2</sup>**

215-279-6 for limestone.

207-439-9 for calcium carbonate.

**4.2 Commercial form**

Both types of calcium carbonate (limestone and chemically produced) are available in crushed and granular form of various particle size ranges, as a slurry and in a mixture of both substances. Annex A provides general information about calcium carbonate. To distinguish between non-porous and porous calcium carbonate, Annex B applies.

**4.3 Physical properties****4.3.1 Appearance**

The product is a white or grey material in crushed and granular form.

**4.3.2 Density**

The density of the product is equal to 2,71 g/cm<sup>3</sup> at 20 °C.

The bulk density of the product is between 1,0 g/cm<sup>3</sup> to 1,5 g/cm<sup>3</sup>.

**4.3.3 Solubility**

The solubility of product is equal to 0,014 g/l at 10 °C.

**4.3.4 Vapour pressure**

Not applicable.

**4.3.5 Boiling point at 100 kPa <sup>3</sup>**

Not applicable.

**4.3.6 Melting point**

Not applicable.

**4.3.7 Specific heat**

Not known.

**4.3.8 Viscosity, dynamic**

Not applicable.

<sup>1</sup> Chemical Abstracts Service Registry Number.

<sup>2</sup> European Inventory of Existing Commercial Chemical Substances.

<sup>3</sup> 100 kPa = 1 bar.



**4.3.9 Critical temperature**

Not applicable.

**4.3.10 Critical pressure**

Not applicable.

**4.3.11 Physical hardness**

Not relevant.

**4.3.12 Particle size**

It varies depending on the application (see A.2.3).

**4.4 Chemical properties**

Calcium carbonate has a low solubility in water and therefore is only very weak alkaline.

**5 Purity criteria****5.1 General**

This document specifies the minimum purity requirements for calcium carbonate used for the treatment of water intended for human consumption. Limits are given for impurities commonly present in the product. Depending on the raw material and the manufacturing process other impurities may be present and, if so, this shall be notified to the user and when necessary to relevant authorities.

Users of this product should check the national regulations in order to clarify whether it is of appropriate purity for treatment of water intended for human consumption, taking into account raw water quality, required dosage, contents of other impurities and additives used in the product not stated in this document.

Limits have been given for impurities and chemical parameters where these are likely to be present in significant quantities from the current production process and raw materials. If the production process or raw materials leads to significant quantities of impurities, by-products or additives being present, this shall be notified to the user.

**5.2 Composition of commercial product**

The product shall conform to the requirements specified in Table 1:

**Table 1 — Composition of commercial product**

Parameter	Non-porous calcium carbonate			Porous calcium carbonate	
	Class 1	Class 2	Class 3	Class 1	Class 2
Content of calcium carbonate (CaCO <sub>3</sub> ), in mass fraction in %, in dry substance	> 98	> 94	> 80	> 97	> 85
Total content of calcium carbonate (CaCO <sub>3</sub> ) and magnesium carbonate (MgCO <sub>3</sub> ) expressed as CaCO <sub>3</sub> - MgCO <sub>3</sub> , in mass fraction in %, in dry substance	> 98	> 94	> 90	> 98	> 94

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NOTE Examples of non-porous calcium carbonate: fine crystalline calcium carbonate, modification calcite; e.g. jura or devon limestone; examples of porous calcium carbonate: amorphous deposits of calcium carbonate; e.g. shell-lime.

**5.3 Impurities and main by-products**

The product shall conform to the requirements specified in Table 2.

**Table 2 — Impurities**

Impurity	Non-porous calcium carbonate			Porous calcium carbonate	
	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2
Content of residue not soluble in hydrochloric acid, in mass fraction in %, in dry substance	≤ 2	≤ 6	≤ 12	≤ 2	≤ 6

**5.4 Chemical parameters**

The product shall conform to the requirements specified in Table 3.

**Table 3 — Chemical parameters**

Parameter		Limit of product mg/kg, in dry substance	
		Type A	Type B
Antimony (Sb)	max.	3	5
Arsenic (As)	max.	3	5
Cadmium (Cd)	max.	2	2
Chromium (Cr)	max.	10	20
Lead (Pb)	max.	10	20
Mercury (Hg)	max.	0,5	1
Nickel (Ni)	max.	10	20
Selenium (Se)	max.	3	5

NOTE Other chemical parameters and indicator parameters are not relevant in calcium carbonate because the raw materials used in the manufacturing process are free of them. For parametric values of calcium carbonate on trace metal content in drinking water, see [1].

**6 Test methods****6.1 Sampling**

Observe the general recommendations of ISO 3165 and take account of ISO 6206.

Prepare the laboratory sample(s) required by the relevant procedure described in EN 12485.

**6.2 Analyses**

Use the relevant methods for analysis described in EN 12485.