BS EN 1017:2014

BSI Standards Publication

Chemicals used for treatment of water intended for human consumption — Half-burnt dolomite

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National foreword

This British Standard is the UK implementation of EN 1017:2014. It supersedes BS EN 1017:2008 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee CII/59, Chemicals for drinking water treatment.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

ISBN 978 0 580 84653 3

ICS 13.060.20; 71.100.80

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 August 2014.

Amendments issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1017

July 2014

ICS 71.100.80

Supersedes EN 1017:2008

English Version

Chemicals used for treatment of water intended for human consumption - Half-burnt dolomite

Produits chimiques pour le traitement de l'eau destinée à la consommation humaine - Dolomie semi-calcinée

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Halbgebrannter Dolomit

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Foreword

This document (EN 1017:2014) 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of an identical text or by endorsement, at the latest by January 2015 and conflicting national standards shall be withdrawn at the latest by January 2015.

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 1017:2008.

Significant technical differences between this edition and EN 1017:2008 are as follows:

a) increase of limits for lead to 15 mg/kg and for selenium to 5 mg/kg for type A (former type 1) products;

b) replacement of warning and safety precaution notes by labelling according to REGULATION (EC) No 1272/2008;

c) rules for safe handling and use transferred to new normative Annex B.

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Introduction

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

a) this European Standard provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA;

b) 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 standard 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.

1 Scope

This European Standard is applicable to half-burnt dolomite used for treatment of water intended for human consumption. It describes the characteristics of half-burnt dolomite and specifies the requirements and the corresponding test methods for half-burnt dolomite. It gives information on its use in water treatment.

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

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

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

3 Description

3.1 Identification

3.1.1 Chemical name

Calcium magnesium carbonate oxide.

3.1.2 Synonym or common name

Half-burnt dolomite; dolomite, calcined; half-calcined dolomite.

3.1.3 Relative molecular mass

140,39.

3.1.4 Empirical formula

$CCaMgO_4$.

3.1.5 Chemical formula

$CaCO_3$.MgO.

3.1.6 CAS Registry Number [1)]

83897-84-1.

3.1.7 EINECS reference [2)]

281-192-5.

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1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

3.2 Commercial forms

Half-burnt dolomite is available in crushed and granular form of various particle size ranges.

3.3 Physical properties

3.3.1 Appearance

The production is a white or grey granular material.

3.3.2 Density

The density is equal to 2,4 g/cm^3 at 20 °C. The bulk density is between 1,05 g/cm^3 to 1,2 g/cm^3.

3.3.3 Solubility in water

The solubility of the product is 0,02 g/l at 10 °C.

3.3.4 Vapour pressure

Not applicable.

3.3.5 Boiling point at 100 kPa [3)]

Not applicable.

3.3.6 Melting point

Not known.

3.3.7 Specific heat

Not applicable.

3.3.8 Viscosity (dynamic)

Not applicable.

3.3.9 Critical temperature

Not applicable.

3.3.10 Critical pressure

Not applicable.

3.3.11 Physical hardness

Not applicable.

3.3.12 Particle size

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

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3) 100 kPa = 1 bar.

3.4 Chemical properties

Half-burnt dolomite reacts as an alkali when dissolved in water. It reacts with carbon dioxide and water to form calcium hydrogen carbonate and magnesium hydrogen carbonate.

4 Purity criteria

4.1 General

This European Standard specifies the minimum purity requirements for half-burnt dolomite 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 product standard.

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 lead to significant quantities of impurities, by-products or additives being present, this shall be notified to the user.

4.2 Composition of commercial product

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

Table 1 — Composition of commercial product

Parameter	Content in mass fraction in % of commercial product
Free MgO and $Mg(OH)_2$ expressed as MgO min.	23
Content of $CaCO_3$ expressed as $CaCO_3$ min.	68

4.3 Impurities and main by-product

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

Table 2 — Impurities

Impurity		Limit in mass fraction in % of dry product
free calcium oxide and calcium hydroxide, expressed as CaO	max.	2
Si expressed as SiO_2	max.	2
Al expressed as Al_2O_3	max.	2
Fe expressed as Fe_2O_3	max.	2
S expressed as SO_4^{2-}	max.	1

4.4 Chemical parameters

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

Table 3 — Chemical parameters

Parameter		Limit in mg/kg of commercial product	
		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.	15	20
Mercury (Hg)	max.	0,5	1
Nickel (Ni)	max.	10	20
Selenium (Se)	max.	5	5
NOTE 1 Other chemical parameters and indicator parameters are not relevant in half-burnt dolomite because the raw materials used in the manufacturing process are free of them. For parametric values of half-burnt dolomite on trace metal content in drinking water, see Directive 98/83/EC [1]. NOTE 2 The user can specify a lower content of chemical parameters.			

5 Test methods

5.1 Sampling - solid

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

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

5.2 Analyses

Use the relevant methods for analysis described in EN 12485.

6 Labelling - Transportation - Storage

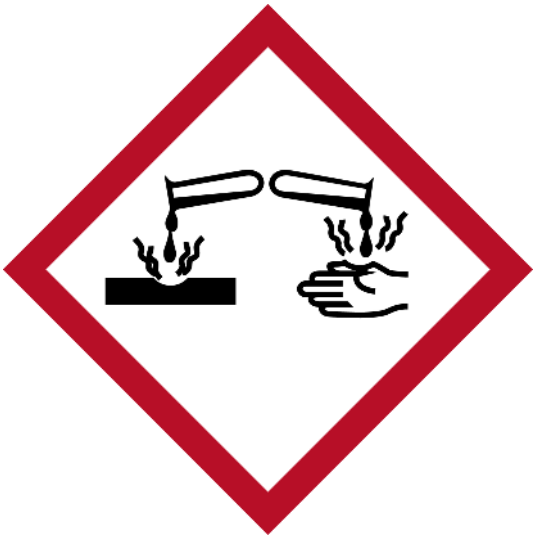
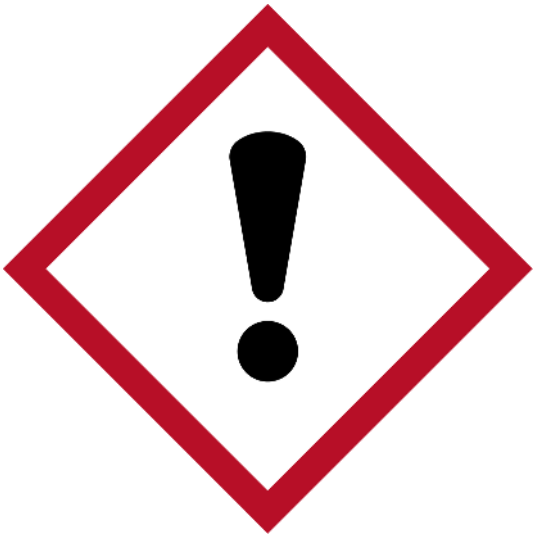
6.1 Means of delivery

Half-burnt dolomite is delivered in bags, containers and as a bulk material.

In order that the purity of the products is not affected, the means of delivery shall not have been used previously for any different product or it shall have been specially cleaned and prepared before use.

6.2 Labelling according to the EU legislation [4)]

The following labelling requirements shall apply to half-burnt dolomite at the date of publication of this European Standard.

<table>
<tr><td>Hazard pictograms
 
GHS05</td><td>Signal word:
Danger
Hazard statement:
H318: Causes serious eye damage</td><td rowspan="2">Precautionary statements (“P statements”) should be provided by the company being responsible for the marketing of the substance.
They should be indicated on the packaging label and in the extended safety data sheet (eSDS) of the substance.</td></tr>
<tr><td> 
GHS07</td><td>Signal word:
Warning
Hazard statement:
H315: Causes skin irritation
H335: May cause respiratory irritation</td></tr>
</table>

EU Regulation No 1272/2008 [2], and its amendments for the purposes of its adaptation to technical and scientific progress, contains a list of substances classified by the EU. Substances not listed in this regulation should be classified on the basis of their intrinsic properties according to the criteria in the regulation by the person responsible for the marketing of the substance.

6.3 Transportation regulations and labelling

Half-burnt dolomite is not classified as dangerous goods.

[4)] See EU Regulation No 1272/2008 [2].

6.4 Marking

The marking shall include the following:

— “half-burnt dolomite”, trade name and grade;

— net mass;

— name and address of supplier and/or manufacturer;

— number of this European Standard, i.e. EN 1017 and the type.

6.5 Storage

6.5.1 Long term stability

The product shall be stored in closed containers as it reacts with carbon dioxide when wet to produce magnesium carbonate.

6.5.2 Storage incompatibilities

The product shall be not allowed to come in contact with aluminium or acids. Material shall be protected against humidity.

Annex A
(informative)

General information on half-burnt dolomite

A.1 Origin

A.1.1 Raw materials

Natural dolomite.

A.1.2 Manufacturing process

Half-burnt dolomite is manufactured by quarrying, crushing and burning raw dolomite at approximately 750 °C (CO_2 in counterflow) and subsequent screening, followed by pelletisation where appropriate.

A.2 Use

A.2.1 Function

Half-burnt dolomite is used to adjust the pH value and hardness in water.

A.2.2 Other properties

The sum of ($CaCO_3$ + MgO) may also be expressed as neutralizing value according to EN 12945.

A.2.3 Form in which it is used

Half-burnt dolomite is used in the form of a granular filter medium.

Table A.1 — Usual particle size range

Dimensions in millimetres

0,5 to 1,2
0,5 to 2,5
2,0 to 4,5
4,0 to 7,0

If the particle size range is quoted, the contents of undersize or oversize should not exceed 10 % (*m/m*). For the determination of the particle size range, see [3].

A.2.4 Treatment dose

The treatment dose of half-burnt dolomite to be used depends on the application.

A.2.5 Means of application

Half-burnt dolomite is used in filters.

A.2.6 Secondary effects

Filtration of suspended solids and removal of metals.

A.2.7 Removal of excess product

Not applicable.

Annex B
(normative)

General rules relating to safety

B.1 Rules for safe handling and use

The supplier shall provide current safety instructions.

B.2 Emergency procedures

B.2.1 First aid

Eyes	Irrigate eyes immediately with plenty of water and seek medical advice.
Inhalation	Move source of dust or move affected person to fresh air. Obtain medical attention immediately.
Ingestion	Wash mouth with water and drink copious quantities of water. Do not induce vomiting. Seek medical advice immediately.
Skin	Carefully and gently brush the contaminated body surfaces in order to remove all traces of product. Wash affected area immediately with plenty of water. Remove contaminated clothing. If necessary seek medical advice.

B.2.2 Spillage

Remove mechanically dry.

B.2.3 Fire

Half-burnt dolomite is not flammable.

Bibliography

[1] Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, OJ L 330, 5.12.1998, p. 32–54

[2] Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (REACH), OJ L 353, 31.12.2008, p. 1–1355

[3] EN 12902, *Products used for treatment of water intended for human consumption - Inorganic supporting and filtering materials - Methods of test*

[4] EN 12945 *Liming materials - Determination of neutralizing value - Titrimetric methods*

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