BS EN 15075:2013

BSI Standards Publication

Chemicals used for treatment of swimming pool water — Sodium hydrogen carbonate

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National foreword

This British Standard is the UK implementation of EN 15075:2013. It supersedes BS EN 15075:2006 which is withdrawn.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.

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English Version

Chemicals used for treatment of swimming pool water - Sodium hydrogen carbonate

Produits chimiques utilisés pour le traitement de l'eau des piscines - Hydrogénocarbonate de sodium

Produkte zur Aufbereitung von Schwimm- und Badebeckenwasser - Natriumhydrogencarbonat

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Foreword

This document (EN 15075:2013) 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of an identical text or by endorsement, at the latest by November 2013, and conflicting national standards shall be withdrawn at the latest by November 2013.

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 15075:2006.

Significant technical differences between this edition and EN 15075:2006 are as follows:

— Updating of subclause 6.2 in line with current legislation.

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Introduction

In respect of potential adverse effects on the quality of water for swimming pools caused by the product covered by this European Standard, the following statements apply:

— This European Standard provides no information as to whether the products may be used without restriction in any of the Member States of the EU or EFTA.

— It should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of these products remain in force.

NOTE Conformity with the European 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 European Standard is subject to regulation or control by National Authorities.

1 Scope

This European Standard is applicable to sodium hydrogen carbonate used directly or used to prepare commercial formulations for treating swimming pool water. It describes the characteristics of sodium hydrogen carbonate and specifies the requirements and the corresponding test methods for sodium hydrogen carbonate. It gives information on its use in treating swimming pool water.

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 898, *Chemicals used for treatment of water intended for human consumption — Sodium hydrogen carbonate*

3 Description

3.1 Identification

3.1.1 Chemical name

Sodium hydrogen carbonate.

3.1.2 Synonym or common name

Sodium bicarbonate, bicarbonate of soda, baking soda.

3.1.3 Relative molecular mass

84,01.

3.1.4 Empirical formula

$NaHCO_3$.

3.1.5 Chemical formula

$NaHCO_3$.

3.1.6 CAS Registry Number[1)]

144-55-8.

3.1.7 EINECS reference[2)]

205-633-8.

1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

3.2 Commercial forms

The product is available as powder or crystals.

3.3 Physical properties

3.3.1 Appearance

The product is a white powder or crystals, slightly hygroscopic.

3.3.2 Density

The density of this product is 2,2 g/cm^3.

The bulk density is ranging from 0,5 kg/dm^3 to 1,1 kg/dm^3.

3.3.3 Solubility in water

The product is soluble at 95 g/l at 20 °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 applicable. The product decomposes at 50 °C.

3.3.7 Specific heat

1,197 J/(kg K).

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

The hardness of solid sodium hydrogen carbonate is given as 1,5 to 2 on the Mohs' scale of hardness.

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3) 100 kPa = 1 bar.

3.4 Chemical properties

Sodium hydrogen carbonate as specified is technical water-free $NaHCO_3$.

Sodium hydrogen carbonate reacts exothermically with acids and leads to the formation of carbon dioxide.

4 Purity criteria

4.1 General

This European Standard specifies the minimum purity requirements for sodium hydrogen carbonate used for treating water for swimming pools. 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, the user, and when necessary the relevant authorities, shall be notified.

Users of this product should check the national regulations in order to clarify whether it is of appropriate purity for treatment of water for swimming pools, taking into account raw water quality, required dosage, contents of other impurities and additives used in the products 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, the user shall be notified.

4.2 Composition of commercial product

The product shall contain not less than a mass fraction of 98,5 % of $NaHCO_3$.

4.3 Impurities and main by-products

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

The concentration limits refer to pure $NaHCO_3$.

Table 1 — Impurities

Impurity		**Limit in mg/kg of $NaHCO_3$**
Iron (II)[a]	max.	5
Insoluble matters[b]	max.	200
[a] Iron(II) can cause organoleptic problems.		
[b] Indicates the presence of foreign matter.		

4.4 Chemical parameters

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

Table 2 — Chemical parameters

Parameter		Limit in mg/kg of $NaHCO_3$
Arsenic (As)	max.	2
Cadmium (Cd)	max.	2
Chromium (Cr)	max.	2
Mercury (Hg)	max.	0,1
Nickel (Ni)	max.	2
Lead (Pb)	max.	2
NOTE Antimony, selenium, cyanides, pesticides and polycyclic aromatic hydrocarbons are not relevant in sodium hydrogen carbonate. For parametric values of sodium hydrogen carbonate on trace metal content in drinking water, see [1].		

5 Test methods

The sampling and the analytical methods shall be those described in EN 898.

6 Labelling - Transportation - Storage

6.1 Means of delivery

Sodium hydrogen carbonate can be delivered in bulk, bulk bags or in bags.

To ensure the purity of the product, the means of delivery shall not have been previously used for any different product or it shall have been specially cleaned and prepared before use.

6.2 Labelling according to EU legislation[4)]

Sodium hydrogen carbonate is not subject to labelling regulations at the publication date of this European Standard.

The regulation [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

Sodium hydrogen carbonate is not listed under a UN Number.[5)] Sodium hydrogen carbonate is not classified as a dangerous product for road, rail, sea and air transportation.

4) See [2].

5) United Nations Number.

6.4 Marking

The marking shall include the following information:

— name "sodium hydrogen carbonate", the trade name and the grade;

— net mass;

— name and the address of supplier and/or manufacturer;

— statement "this product conforms to EN 15075".

6.5 Storage

6.5.1 Long-term stability

Sodium hydrogen carbonate is stable up to 50 °C in dry conditions.

6.5.2 Storage incompatibilities

Keep bags tightly closed and dry; keep away from acids.

Annex A
(informative)

General information on sodium hydrogen carbonate

A.1 Origin

A.1.1 Raw materials

Sodium hydrogen carbonate is manufactured from sodium chloride, limestone or sodium carbonate and carbon dioxide.

A.1.2 Manufacturing process

Sodium hydrogen carbonate is produced by following the ammonia-soda-process (SOLVAY process).

A.2 Use

A.2.1 Function

The product is used to increase the pH of swimming pool water.

A.2.2 Form in which the product is used

The product is used as a powder or as a solution at concentrations up to approximately a mass fraction of 5 %.

A.2.3 Treatment dose

The treatment dose is variable depending on water quality and application. Usually, in order to have an efficient treatment, it is recommended that the alkalinity should be between 80 mg/l to 200 mg/l of $CaCO_3$.

A.2.4 Means of application

The product is dosed directly as a powder or as a solution.

For private pools: manual addition directly into the pool or after a previous dissolution.

A.2.5 Secondary effects

Not relevant.

A.2.6 Removal of excess product

Remove excess product by using an aqueous solution of acid or by diluting with water.

A.3 General rules relating to safety

A.3.1 Rules for safe handling and use

Anti-dust mask if dust is present.

Protective gloves in the case of frequent or prolonged use.

Anti-dust glasses if dust is present.

A.3.2 Emergency procedures

A.3.2.1 First aid

In case of contact with eyes, rinse with running water to eliminate particles of the product.

In case of ingestion, water should be given to drink.

A.3.2.2 Spillage

The product should be collected, and then it should be rinsed with water.

A.3.3 Fire

Sodium hydrogen carbonate is not combustible.

Bibliography

[1] 98/83/EC: Council Directive of 3rd November 1998 on the quality of water intended for human consumption

[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)

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