BS EN 15072:2013

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Chemicals used for treatment of swimming pool water — Sodium dichloroisocyanurate, anhydrous

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National foreword

This British Standard is the UK implementation of EN 15072:2013. It supersedes BS EN 15072:2006+A1:2008 which is withdrawn.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.

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EUROPEAN STANDARD

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EN 15072

May 2013

ICS 71.100.80

Supersedes EN 15072:2006+A1:2008

English Version

Chemicals used for treatment of swimming pool water - Sodium dichloroisocyanurate, anhydrous

Produits chimiques utilisés pour le traitement de l'eau des piscines - Dichloroisocyanurate de sodium, anhydre

Produkte zur Aufbereitung von Schwimm- und Badebeckenwasser - Natriumdichlorisocyanurat, wasserfrei

This European Standard was approved by CEN on 28 March 2013.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 15072:2013) 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of an identical text or by endorsement, at the latest by November 2013, and conflicting national standards shall be withdrawn at the latest by November 2013.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 15072:2006+A1:2008.

Significant technical differences between this edition and EN 15072:2006+A1:2008 are as follows:

— Replacement of warning and safety precautions notes by labelling according to Regulation (EC) No 1272/2008.

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, 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

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

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

NOTE 2 This product is a biocide and needs to comply with the relevant legislation in force. In the European Union, at the time of publication, this legislation is Directive 1998/8/EC [1].

1 Scope

This European Standard is applicable to sodium dichloroisocyanurate, anhydrous used directly or used to prepare commercial formulations for disinfecting swimming pool water. It describes the characteristics of sodium dichloroisocyanurate, anhydrous and specifies the requirements and the corresponding test methods for sodium dichloroisocyanurate, anhydrous. It gives information on its use for treating swimming pool water and determines the rules relating to safe handling and use (see Annex B).

2 Normative reference

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 12931, *Chemicals used for treatment of water intended for human consumption — Chemicals for emergency use — Sodium dichloroisocyanurate, anhydrous*

3 Description

3.1 Identification

3.1.1 Chemical name

1-sodium - 3,5-dichloro - 1,3,5-triazine - 2,4,6-trione.

3.1.2 Synonym or common name

Sodium dichloroisocyanurate.

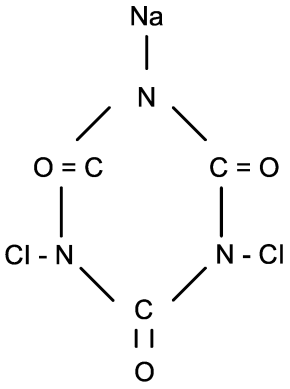
3.1.3 Relative molecular mass

219,98.

3.1.4 Empirical formula

$C_3N_3O_3Cl_2Na$.

3.1.5 Chemical formula



3.1.6 CAS Registry Number [1)]

2893-78-9.

3.1.7 EINECS reference [2)]

2-207-67-7.

3.2 Commercial form

The product is available in various granular forms.

3.3 Physical properties

3.3.1 Appearance and odour

The product is a white granular solid with chlorinous odour.

3.3.2 Density

The bulk density is approximately 0,9 g/cm^3.

3.3.3 Solubility in water

The solubility in water is 250 g/l at 25 °C.

3.3.4 Vapour pressure

Not applicable.

3.3.5 Boiling point at 100 kPa [3)]

Not applicable, the product decomposes before fusion.

3.3.6 Melting point

Not applicable.

3.3.7 Specific heat

(1 090 ± 40) J/kg.K at 20 °C.

3.3.8 Viscosity, (dynamic)

Not applicable.

3.3.9 Critical temperature

Not applicable.

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1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

3) 100 kPa = 1 bar.

3.3.10 Critical pressure

Not applicable.

3.3.11 Physical hardness

Not applicable.

3.4 Chemical properties

The product is a strong oxidant. It is corrosive and hygroscopic; sodium dichloroisocyanurate decomposes into hydrochloric acid and cyanuric acid. When dissolved in an excess of water, it liberates chlorine by hydrolysis.

4 Purity criteria

4.1 General

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

4.2 Composition of commercial product

The product shall contain at least 62 percent by mass (% (*m/m*)) of available chlorine.

4.3 Impurities and main by-products

The water content shall be less than 3 % (*m/m*) of the product.

The sodium chloride content shall be less than 0,05 % (*m/m*) of the product.

4.4 Toxic substances

NOTE For the purpose of this standard, "toxic substances" are those defined in the EU Directive 80/778/EEC of 15 July, 1980 [1].

The content of toxic substances shall conform to the requirements specified in Table 1.

Table 1 — Toxic substances

Element		Limit mg/kg of product	
		Type 1	**Type 2**
Arsenic (As)	max.	10	10
Cadmium (Cd)	max.	1	1
Chromium (Cr)	max.	6	10
Mercury (Hg)	max.	0,02	0,02
Nickel (Ni)	max.	3	5
Lead (Pb)	max.	4	15
Antimony (Sb)	max.	5	5
Selenium (Se)	max.	1	1
NOTE Cyanide, which does not exist in a strong oxidising medium such as sodium dichloroisocyanurate, is not a relevant toxic substance (see [2]). Pesticides and polycyclic aromatic hydrocarbons are not by-products of the manufacturing process.			

5 Test methods

The sampling and the analytical methods are those described in EN 12931.

6 Labelling - Transportation - Storage

6.1 Means of delivery

The product shall be delivered in fibre or polyethylene drums or semi-bulk containers.

To ensure the purity of the product, the means of delivery shall not have previously been used 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 sodium dichloroisocyanurate anhydrous at the date of the publication of this European Standard.

4) See [3].

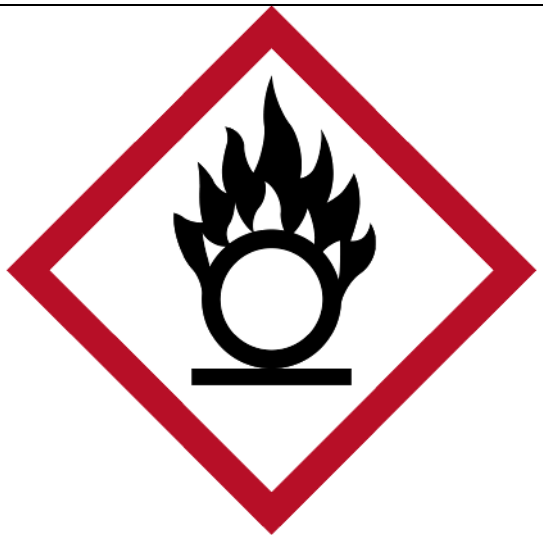

Figure 1 — GHS 03

Figure 2 — GHS 07

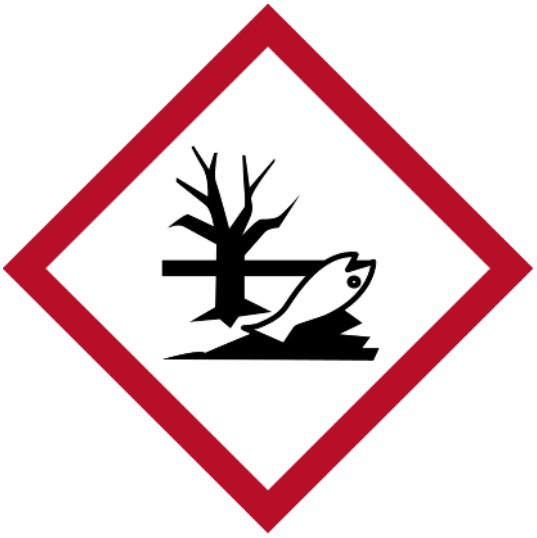

Figure 3 — GHS 09

— Signal word:

Danger

— Classification and hazard statement:

H272 May intensify fire; oxidiser

H 302 Harmful if swallowed

H400 Very toxic to aquatic life

The regulation [3], 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 dichloroisocyanurate, anhydrous is listed as UN Number [5] 2465 and is classified as follows:

— RID [6]: class 5.1, classification code O2, packing group II;

— ADR [7]: class 5.1, classification code O2, packing group II;

— IMDG [8]: class 5.1;

— IATA [9]: class 5.1.

6.4 Marking

The marking shall include the following:

— name “sodium dichloroisocyanurate, anhydrous”, trade name and type;

— net mass;

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

— statement "this product conforms to EN 15072".

6.5 Storage

6.5.1 General

The product shall be stored in its original package, firmly closed in a cool and dry place, away from any sources of heat or incompatible materials.

6.5.2 Long term stability

When stored in above conditions, the product is stable for at least three years.

6.5.3 Storage incompatibilities

Store the product on its own if possible. Keep it away from:

— water;

— strong acids;

5) United Nations Number.

6) Regulations concerning International carriage of Dangerous goods by rail.

7) European Agreement concerning the international carriage of Dangerous goods by Road.

8) International maritime transport of Dangerous Goods.

9) International Air Transport Association.

— nitrogenated products;

— organic solvents;

— hydrocarbons;

— peroxides;

— hypochlorites;

— oils, greases and organic materials;

— ammonium salts;

— basic products.

Annex A
(informative)

General information on sodium dichloroisocyanurate, anhydrous

A.1 Origin

A.1.1 Raw materials

Sodium dichloroisocyanurate, anhydrous is manufactured from isocyanuric acid $(CNOH)_3$, sodium hydroxide (NaOH) and chlorine (Cl_2).

A.1.2 Manufacturing process

Sodium dichloroisocyanurate, anhydrous is produced by chlorination of disodium cyanurate ($Na_2H(NCO)_3$) using chlorine (Cl_2) and neutralisation with sodium hydroxide (NaOH).

Disodium cyanurate is obtained by action of sodium hydroxide on isocyanuric acid.

A.2 Use

A.2.1 Function

The product is used as a disinfectant of swimming pool water. It is an indirect source of free chlorine (HOCl) when dissolved in water via an organic carrier substance (sodium cyanurate, $C_3N_3O_3H_2Na$):

$$C_3N_3O_3Cl_2Na + 2H_2O \text{ - > } C_3N_3O_3H_2Na + 2HOCl \quad (A.1)$$

As the disinfectant (HOCl) is used up, more chlorine atoms are released from "sodium dichloroisocyanurate, anhydrous" to form hypochlorous acid. This results in an enrichment of sodium isocyanurate in the pool water which cannot be removed by the water treatment process. Only dilution with fresh water keeps the sodium isocyanurate concentration at a satisfactory level. If the sodium isocyanurate concentration becomes too high, unsatisfactory disinfection can result. The automatic amperometric monitoring of free chlorine residual is negatively affected by sodium isocyanurate.

A.2.2 Form in which it is used

The product is used in tablet and granular form.

A.2.3 Treatment dose

The treatment dose is subject to national regulations, depending on the required free chlorine concentration in the pool water

In order to have 2,5 mg/l free chlorine concentration, one should add 3,97g/m^3 of sodium dichloroisocyanurate, anhydrous.

A.2.4 Means of application

The product is dissolved either directly or using a dissolution device.

A.2.5 Secondary effects

The secondary effects include the following:

— oxidation of iron, of manganese and ammonium compounds;

— slight increase of "Kjeldahl" nitrogen;

— slight increase in the chloride content;

— odour and colour removal;

— chlorination of organic compounds leading to formation of halogenated by-products (e.g. trihalomethanes);

— build-up of cyanuric acid concentration.

A.2.6 Removal of excess product

Removal of excess product is achieved (dechlorination of excess product) by using an aqueous solution of sodium hyposulfite (thiosulfate), sodium sulfite or sodium hydrogenosulfite. Passing through activated carbon is also effective.

Annex B
(normative)

General rules relating to safety

B.1 Rules for safe handling and use

The supplier shall provide current safety instructions.

WARNING: NEVER MIX THIS PRODUCT WITH INORGANIC CHLORINE (sodium hypochlorite or calcium hypochlorite or any product containing them) IN THE SAME CONTAINER.

B.2 Emergency procedures

B.2.1 First aid

In case of contact with the skin, remove any excess product, rinse immediately with cold water and remove the contaminated clothes.

In case of contact with the eyes or mucous membranes, rinse immediately and thoroughly with water and seek medical advice immediately.

In case of inhalation, place the affected person at rest away from the polluted area; place them in a reclined position and seek medical advice immediately.

In case of ingestion, gently clean the mouth with a clean linen and, if the person is conscious, give them a large quantity of water to drink. Place the person in a safe position in case of loss of consciousness; do not induce vomiting and seek medical advice immediately.

B.2.2 Spillage

Collect and store in separate containers. Do not accumulate the spilled material and do not dispose of it via a rubbish bin or drain. Disposal shall be carried out in accordance with the local regulations.

B.2.3 Fire

The material is not combustible, but due to the formation of oxygen as a decomposition by-product, it will support combustion. Use air-independent respiratory equipment for fire fighting. Use water to extinguish fire and to cool containers exposed to fire. Do not use dry chemical extinguishers containing ammonium compounds, e.g. mono-ammonium phosphate.

Bibliography

[1] Directive 98/8/EC of the European Parliament and of the Council concerning the placing of biocidal products on the market

[2] 98/83/EC Council Directive of 3rd November 1998 on the quality of water intended for human consumption

[3] 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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