SLOVENSKI STANDARD
oSIST prEN 15077:2020

01-september-2020

Kemikalije, ki se uporabljajo za pripravo bazenske vode - Natrijev hipoklorit

Chemicals used for treatment of swimming pool water - Sodium hypochlorite

Produkte zur Aufbereitung von Schwimm- und Badebeckenwasser - Natriumhypochlorit

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

Ta slovenski standard je istoveten z: **prEN 15077**

ICS:

13.060.25	Voda za industrijsko uporabo	Water for industrial use
71.100.80	Kemikalije za čiščenje vode	Chemicals for purification of water

oSIST prEN 15077:2020 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 15077

June 2020

ICS 71.100.80

Will supersede EN 15077:2013

English Version

Chemicals used for treatment of swimming pool water - Sodium hypochlorite

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

Produkte zur Aufbereitung von Schwimm- und Badebeckenwasser - Natriumhypochlorit

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 164.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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.

CEN members are the national standards bodies of 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 United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword

This document (prEN 15077:2020) has been prepared by Technical Committee CEN/TC 164 “Water supply”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 15077:2013.

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

a) modification of 7.3 on transportation regulations and labelling, adding the sentence “The user shall be aware of the incompatibilities between transported products.”;

b) modification of 7.4 on marking. The requirements of marking are also applied to the accompanying documents.

Introduction

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

a) 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;

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 document does not confer or imply acceptance or approval of the product in any of the Member States of the EU or EFTA. Use of the product covered by this document 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 Regulation (EU) No 528 /2012 [1].

1 Scope

This document is applicable to sodium hypochlorite used directly or for the production of formulations for treating swimming pool water. It describes the characteristics of sodium hypochlorite and specifies the requirements and the corresponding test methods for sodium hypochlorite. It gives information on its use for treating swimming pool water.

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 901, *Chemicals used for treatment of water intended for human consumption — Sodium hypochlorite*

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/ui
- IEC Electropedia: available at http://www.electropedia.org/

4 Description

4.1 Identification

4.1.1 Chemical name

Sodium hypochlorite.

4.1.2 Synonym or commons name

Liquid bleach, soda bleach, bleach lye.

4.1.3 Relative molecular mass

74,44.

4.1.4 Empirical formula

NaClO.

4.1.5 Chemical formula

NaClO.

4.1.6 CAS-Registry Number [1]

7681-52-9.

4.1.7 EINECS reference [2]

231-668-3.

[1] Chemical Abstracts Service Registry Number.
[2] European Inventory of Existing Commercial Chemical Substances.

4.2 Commercial form

The product is supplied as an aqueous solution with an available (active) chlorine concentration up to a mass fraction of 18 %. For safe handling and use and emergency procedures of sodium hypochlorite, refer to Annex B.

4.3 Physical properties

4.3.1 Appearance and odour

The product is a clear yellowish-green solution with a faint chlorinous odour.

4.3.2 Density

The density of the product varies between 1,13 g/ml and 1,30 g/ml at 20 °C.

4.3.3 Solubility in water

The product is capable of being mixed with water in any proportion.

4.3.4 Vapour pressure

Approximately 2,5 kPa at 20 °C.

4.3.5 Boiling point at 100 kPa

Not applicable.

NOTE 100 kPa = 1 bar.

4.3.6 Crystallization and freezing point

At approximately -10 °C, crystallization of $NaOCl.6H_2O$ starts.

Freezing of the concentrated product takes place between -20 °C and -30 °C.

4.3.7 Specific heat

The specific heat is 3,48 kJ/(kg.K) for a solution with an available active chlorine concentration of mass fraction between 14 % and 15 %.

4.3.8 Viscosity (dynamic)

2,6 mPa s at 20 °C.

4.3.9 Critical temperature

Not applicable.

4.3.10 Critical pressure

Not applicable.

4.3.11 Physical hardness

Not applicable.

4.4 Chemical properties

The product is an alkaline solution with a pH value greater than 11 at 20 °C.

It reacts with acids and acidic salts to form chlorine.

Vigorous reactions occur with reducing chemicals. It is a strong oxidant ($E°_{Red}$ for (ClO^-) = 0,89 V).

$$ClO^- + 2H^+ + 2e^- \rightarrow Cl^- + H_2O$$

For additional information on sodium hypochlorite, see Annex A.

5 Purity criteria

5.1 General

This document specifies the minimum purity requirements for sodium hypochlorite 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 can be present and, if so, the user, and when necessary the relevant authorities, shall be notified.

Users of the product should check the national regulations to clarify whether it is of appropriate purity for treating water for swimming pools, taking into account raw water quality, required dosage, contents of other impurities and additives used in the product that are 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 the presence of significant amounts of impurities, by-products or additives, the user shall be notified.

5.2 Composition of commercial product

Sodium hypochlorite is available only in solutions with concentrations up to 18 % active chlorine at the time of delivery by the producer. Common concentrated products contain a minimum of 12 % active chlorine. Diluted solutions are also available.

The concentration of sodium hypochlorite shall be equal to or greater than the value specified by the manufacturer.

5.3 Impurities and main by-products

The product contains sodium chloride (NaCl) in equimolar amounts at minimum, and a small portion of sodium hydroxide (NaOH), which keeps the product alkaline. Therefore, a small amount of sodium carbonate (Na_2CO_3) can also be present.

The sodium chlorate ($NaClO_3$) content shall not exceed a mass fraction of 5,4 % of available chlorine at the time of delivery by the producer. The product shall be visibly free from deposits or suspended matter.

NOTE Sodium chlorate is a by-product of the manufacturing process and can be formed during storage (see 7.5.1).

5.4 Chemical parameters

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

Table 1 — Chemical parameters

Parameter		Limit in mg/kg of available chlorine	
		Type 1	Type 2
Arsenic (As)	max.		
Antimony	max.		
Cadmium (Cd)	max.		
Chromium (Cr)	max.		
Lead (Pb)	max.		
Mercury (Hg)	max.		
Nickel (Ni)	max.		
Selenium	max.		
Sodium bromate [a]	max.		
NOTE Cyanide, which does not exist in a strong oxidising medium such as sodium hypochlorite, is not a relevant chemical parameter. Pesticides and polycyclic aromatic hydrocarbons are not by-products of the manufacturing process. For parametric values of sodium hypochlorite on trace metal content in drinking water, see [2].			
[a] Sodium bromate is a by-product of the manufacturing process.			

6 Test methods

The methods for sampling and analysis shall be those specified in EN 901.

7 Labelling - Transportation - Storage

7.1 Means of delivery

Sodium hypochlorite shall be delivered in:

a) containers of polyethylene or polyvinyl chloride (PVC) with external glass fibre reinforcement (GFR);

b) steel tank wagons lined with rubber or coated with suitable plastics.

The containers shall be closed in such a manner so that no pressure can build up inside and no liquid can escape. The closure shall be protected from unintentional opening.

To ensure the purity of the product is not affected, 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.