

Chemicals used for treatment of water intended for human consumption — Sodium hydroxide

The European Standard EN 896:1998 has the status of a
British Standard

ICS 71.100.80

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National foreword

This British Standard is the English language version of EN 896:1998.

The UK participation in its preparation was entrusted to Technical Committee CII/59, Chemicals for drinking water treatment, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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

The United Kingdom did not support this standard at the CEN Enquiry stage and voted against its acceptance at the Formal Vote stage. The principal UK objections were as follows.

- a) The limits for sodium chloride and sodium chlorate in Table 1 are expressed as percentages of the sodium hydroxide content whereas the analytical methods described in annex B give the results as the percentage chloride content of the product and the sodium chlorate content in grams per litre in the measured test solution, respectively. Similarly, the limits for toxic substances in Table 2 are expressed as milligrams per kilogram of sodium hydroxide but the calculation described in **B.3.6.2** gives the results as milligrams per kilogram of the product and, for mercury, the result of the determination in accordance with ISO 5666-1 will be in micrograms per litre of test solution.
- b) In **B.2.3.2** the concentrations of sodium carbonate and sodium hydrogen carbonate in the eluant solution are not stated.
- c) There is confusion regarding the operation of the spectrometer used for the determinations of antimony, arsenic, cadmium, chromium, lead, nickel and selenium. The parameters and operating conditions are specified in Table B.3 but the instructions in **B.3.5.4.1** require the parameters to be set in accordance with the operating manual of the instrument's manufacturer. If there are any conflicts between these two requirements, the BSI technical committee recommends that the parameters in question be set in accordance with the operating manual.

Additional information

Article 8 of the Council of the European Community Directive 80/778/EEC relating to the quality of water intended for human consumption requires Member States to ensure that substances used in the preparation of drinking water do not cause any contravention of the maximum admissible concentrations prescribed in annex 1 to the Directive.

This requirement is given effect in England and Wales by regulation 25 of the Water Supply (Water Quality) Regulation 1989 (similar provisions apply in Scotland and Northern Ireland). Regulation 25 makes provision for attaching conditions of use to chemicals which are authorized for use in public water supplies.

Details of conditions of use are contained in the Secretary of State's List of Approved Products published by the Drinking Water Inspectorate, Floor 2/A1, Ashdown House, 123 Victoria Street, London, SW1E 6DE.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled "International Standards Correspondence Index", or by using the "Find" facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 11 and a back cover.

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Descriptors: potable water, water treatment, chemical compounds, sodium hydroxide, description, physical properties, chemical properties, impurities, toxic substances, tests, labelling, storage, utilization

English version

Chemicals used for treatment of water intended for human consumption – Sodium hydroxide

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine – Hydroxyde de sodium

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch – Natriumhydroxid

This European Standard was approved by CEN on 22 July 1998.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard 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 February 1999, and conflicting national standards shall be withdrawn at the latest by February 1999.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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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 Standard:

- 1) this 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;
- 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.

1 Scope

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

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN ISO 3696, *Water for analytical laboratory use — Specification and test methods*. (ISO 3696:1987)

ISO 979, *Sodium hydroxide for industrial use — Method of assay*.

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

ISO 3196, *Sodium hydroxide for industrial use — Determination of carbonates content — Titrimetric method*.

ISO 5666-1:1983, *Water quality — Determination of total mercury by flameless atomic absorption spectrometry — Part 1: Method after digestion with permanganate — peroxodisulfate*.

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

ISO 8213, *Chemical products for industrial use — Sampling techniques — Solid chemical products in the form of particles varying from powders to coarse lumps*.

3 Description

3.1 Identification

3.1.1 Chemical name

Sodium hydroxide.

3.1.2 Synonym or common name

Caustic soda.

3.1.3 Relative molecular mass

40.

3.1.4 Empirical formula

NaOH.

3.1.5 Chemical formula

NaOH.

3.1.6 CAS Registry Number¹⁾

1310-73-2.

3.1.7 EINECS reference²⁾

215-185-5.

3.2 Commercial forms

The product is available as flakes, pearls, solid, or as an aqueous solution of different concentrations.

3.3 Physical properties

3.3.1 Appearance

Solid: White, deliquescent.

Solution: Clear, slightly turbid colourless solution, slightly viscous.

3.3.2 Density

Solid: 2,1 g/cm³.

Bulk density of pearls: about 1,2 kg/dm³.

Solution of concentration of 50 % (m/m): 1,52 g/ml at 20 °C.

3.3.3 Solubility (in water)

Highly soluble at all temperatures above 20 °C (partial crystallization occurs above concentration 55 % (m/m) (see Figure 1).

3.3.4 Vapour pressure

Solution of concentration of 50 % (m/m):

- 120 Pa at 20 °C;
- 450 Pa at 40 °C;
- 5 000 Pa at 80 °C.

3.3.5 Boiling point at 100 kPa³⁾

About 145 °C for a solution of concentration of 50 % (m/m).

3.3.6 Crystallization point

+12 °C for a solution of concentration of 50 % (m/m) (see Figure 1).

¹⁾ Chemical Abstracts Service Registry Number.

²⁾ European Inventory of Existing Commercial Chemical Substances

³⁾ 100 kPa = 1 bar.