

Chemicals used for treatment of water intended for human consumption — Copper sulfate

The European Standard EN 12386:1998 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 12386:1998.

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 international/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 objection were as follows.

- a) No information has been provided on the preparation of the test solution or the calculation of the result for the determination of iron, in order to apply the method referred to in 5.2.2.4 which is intended for the analysis of water.
- b) The requirements for toxic substances in Table 2 are expressed in milligrams per kilogram of the product whereas the results of the determinations described in 5.2.3 will be in micrograms per litre of test solution.
- c) The standard additions technique is unnecessary for the determination of arsenic, antimony and selenium because any matrix interference is removed by conversion of the elements to gaseous hydrides.

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) Regulations 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 10, an inside back cover and a back cover.

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English version

Chemicals used for treatment of water intended for human consumption — Copper sulfate

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine — Sulfate de cuivre

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch — Kupfersulfat

This European Standard was approved by CEN on 26 September 1998.

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CEN

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

Central Secretariat: rue de Stassart 36, B-1050 Brussels

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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 April 1999, and conflicting national standards shall be withdrawn at the latest by April 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.

Contents

	Page
Foreword	2
Introduction	3
1 Scope	3
2 Normative references	3
3 Description	3
3.1 Identification	3
3.2 Commercial form	3
3.3 Physical properties	3
3.4 Chemical properties	4
4 Purity criteria	4
4.1 Composition of commercial product	4
4.2 Impurities and main by-products	4
4.3 Toxic substances	4
5 Test methods	4
5.1 Sampling	4
5.2 Analyses	4
6 Labelling — Transportation — Storage	8
6.1 Means of delivery	8
6.2 Risk and safety labelling according to the EU Directives	8
6.3 Transportation regulations and labelling	8
6.4 Marking	8
6.5 Storage	8
Annex A (informative) General information on copper sulfate	9
Annex B (normative) General rules relating to safety	9
Annex C (informative) Routine method for the determination of copper in copper sulfate pentahydrate	9
Annex D (informative) Bibliography	10

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 characteristics of this product remain in force.

1 Scope

This European Standard is applicable to copper (II) sulfate pentahydrate used for treatment of water intended for human consumption. It describes the characteristics of copper (II) sulfate pentahydrate and specifies the requirements and the corresponding test methods for copper (II) sulfate pentahydrate. 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 3165, *Sampling of chemical products for industrial use — Safety in sampling*.

ISO 4793, *Laboratory sintered (fritted) filters — Porosity grading, classification and designation*.

ISO 5993, *Sodium hydroxide for industrial use — Determination of mercury content — flameless atomic absorption spectrometric method*.

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

ISO 6332, *Water quality — Determination of iron — Spectrometric method using 1,10-phenanthroline*.

ISO 6353-1, *Reagents for chemical analysis — Part 1: General test methods*.

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

Copper (II) sulfate pentahydrate.

3.1.2 Synonym or common names

Copper vitriol, blue vitriol, cupric sulfate.

3.1.3 Relative molecular mass

Pentahydrate: 249,69.

3.1.4 Empirical formula

$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$.

3.1.5 Chemical formula

$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$.

3.1.6 CAS Registry number¹⁾

Anhydrous form: 7758-98-7.

Pentahydrate: 7758-99-7.

3.1.7 EINECS reference²⁾

231-847-6 (anhydrous form).

3.2 Commercial form

The product is a powder or crystals.

3.3 Physical properties

3.3.1 Appearance and odour

The product is a powder or crystals, with a deep blue colour and no odour.

3.3.2 Density

The density of the pentahydrate is 2,28 g/cm³ at 20 °C.

3.3.3 Solubility in water

The solubility of the pentahydrate is 266 g/l at 20 °C.

3.3.4 Vapour pressure

Not applicable.

3.3.5 Boiling point at 100 kPa³⁾

Not applicable.

3.3.6 Melting point

The product decomposes above 300 °C.

3.3.7 Specific heat

Not known.

3.3.8 Viscosity, dynamic

Not applicable.

3.3.9 Critical temperature

Not applicable.

3.3.10 Critical pressure

Not applicable.

¹⁾ Chemical Abstracts Service Registry number.

²⁾ European Inventory of Existing Commercial Chemical Substances.

³⁾ 100 kPa = 1 bar.