

ICS 71.100.80

English Version

Chemicals used for treatment of swimming pool water - Chlorine

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

Produkte zur Aufbereitung von Schwimm- und
Badebeckenwasser - Chlor

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Foreword

This document (EN 15363:2007) 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of an identical text or by endorsement, at the latest by May 2008, and conflicting national standards shall be withdrawn at the latest by May 2008.

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.

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Introduction

In respect of the potential adverse effects on the quality of swimming pool water 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 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. The use of the product covered by this document is subject to regulation or control by National Authorities.

1 Scope

This document is applicable to chlorine used for the treatment of swimming pool water. It describes the characteristics of chlorine and specifies the requirements and the corresponding test methods for chlorine. It provides information on its use in swimming pool water treatment and determines the rules relating to safe handling and use of chlorine (see Annex B).

2 Normative references

The following referenced document is indispensable for the application 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 937, *Chemicals used for the treatment of water intended for human consumption – Chlorine*

3 Description

For the identification, commercial form, physical properties and the chemical properties see the relevant sub-clauses of EN 937.

4 Purity criteria

4.1 General

This document specifies the minimum purity requirements for chlorine used for the treatment of swimming pool water. 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, this shall be notified to the user and when necessary to relevant authorities.

NOTE Users of the product should check national regulations in order to clarify whether it is of appropriate purity for the treatment of swimming pool water, taking into account water quality, required dosage, and contents of other impurities and additives used in the product not stated in the product document.

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 other impurities, by-products or additives being present, this shall be notified to the user.

4.2 Composition of commercial product

The product shall contain at least a mass fraction of 99,5 % of chlorine.

4.3 Impurities and main by-products

The content of nitrogen trichloride (NCl_3) and moisture shall conform to the requirements specified in EN 937.

4.4 Chemical parameters

The content of mercury for each type of product shall conform to the requirements specified in EN 937.

NOTE Cyanides, pesticides and polycyclic aromatic hydrocarbons are not by-products of the manufacturing process and therefore not relevant.

5 Test methods

The methods for sampling and analysis are those specified in EN 937.

6 Labelling - Transportation - Storage

6.1 Means of delivery

Chlorine shall be delivered in transportable pressure equipment (cylinders, pressure drums, tanks, portable tanks).

In order that 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.

6.2 Risk and safety labelling according to the EU Directives ¹⁾

The following labelling requirements shall apply to chlorine at the date of the publication of this document.

Symbols and indications of danger:

- T: Toxic.
- N: Dangerous for the environment.

Nature of special risks attributed to dangerous substances:

- R 23: Toxic by inhalation;
- R 50: Very toxic to aquatic organisms;
- R 36/37/38: Irritating to eyes, respiratory system and skin;

Safety advice concerning dangerous substances:

- S 45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible);
- S 61: Avoid release to the environment - Refer to special instructions / safety data sheet;
- S 7/9: Keep container tightly closed and in a well-ventilated place.

6.3 Transportation regulations and labelling

Chlorine is listed as UN Number ²⁾ 1017 for gaseous phase.

¹⁾ See [1].

²⁾ United Nations Number.

RID ³⁾ ADR ⁴⁾: class 2, classification code 2TC.

IMDG ⁵⁾: class 2.

IATA ⁶⁾: Not permitted unless special authority agreement.

6.4 Marking

The marking shall include the following:

- name "chlorine", trade name, grade and type;
- net mass;
- name and address of supplier and/or manufacturer;
- labelling as a biocidal product pursuant to Article 20 of the Directive 98/8/EC concerning the placing of biocidal products on the market;
- statement "this product conforms to EN 15363".

6.5 Storage

6.5.1 General

Dry chlorine shall be stored under pressure in mild steel. The dew point of the gas shall be at least - 40 °C.

The filling ratio of a container shall not exceed 1,25 kg/dm³. Storage tanks shall be protected from direct sunlight, the temperature of the container not exceeding 50 °C.

6.5.2 Long term stability

Stable.

6.5.3 Storage incompatibilities

Refer to EN 937.

³⁾ Regulations concerning International carriage of Dangerous goods by rail.

⁴⁾ European Agreement concerning the international carriage of Dangerous goods by Road.

⁵⁾ International Maritime transport of Dangerous Goods.

⁶⁾ International Air Transport Association.

Annex A (informative)

General information on chlorine

A.1 Origin

A.1.1 Raw materials

Chlorine is manufactured from a sodium chloride solution.

A.1.2 Manufacturing process

Electrolysis of alkaline metal chlorides (generally in the form of a solution).

A.2 Use

A.2.1 Function

Disinfectant, oxidizing polluting matter introduced to the pool water by bathers.

A.2.2 Form in which the product is used

It is used as delivered (see A.2.4)

A.2.3 Treatment dose

The treatment dose depends on the composition of swimming pool water, subject to national regulations and depending on the required free chlorine concentration in the swimming pool water.

A.2.4 Means of application

Only vacuum chlorinators should be used and a separate chlorine-gas room having special fittings will always have to be provided for safety reasons.

An automatic chlorine cylinder switchover system should be provided to prevent any interruption in the chlorination (in particular due to chlorine cylinders becoming empty).

As a result of adding chlorine gas, hydrochloric acid is formed in the water and the resulting acidity causes a drop in the pH value. To avoid any undesirable drop in this value if the acidity is low, the chlorine solution may be fed through a reaction vessel filled with calcium carbonate (e.g. high-purity marble or Jurassic limestone).

A.2.5 Secondary effects

The secondary effects include the following:

- decrease in pH due to generation of hydrochloric acid;
- formation of chloramines (combined chlorine) and organo-chlorinated by-products such as trihalomethanes, depending on swimming pool water quality.

A.2.6 Removal of excess product

The most practical method is the use of a reducing agent such as an aqueous solution of a sulfite compound. Other methods use activated carbon or hydrogen peroxide.

Annex B (normative)

General rules relating to safety

B.1 Rules for safe handling and use

The supplier shall provide current safety instructions.

B.2 Emergency procedures

B.2.1 General

To ensure that chlorine is handled safely, all manufacturers of chlorine possess an emergency instructions file which includes safety.

WARNING: The user should request the safety instructions from the supplier and read them before using chlorine.

The user will inform the local health authorities and fire brigade of its storage capacities. The following information is only a very brief summary of actions to be taken in case of emergency.

B.2.2 First aid

In case of contact with skin, wash immediately with plenty of water. Seek medical advice.

In case of inhalation of gas, allow the victim to rest in fresh air. Other medical care can be necessary. Seek medical attention immediately.

B.2.3 Spillage

Put on breathing apparatus. Isolate contaminated area by means of water curtains. Call local fire brigade.

B.2.4 Fire

Chlorine is not flammable. Storage cylinders or chlorine containing pipes can burst when exposed to a fire, causing toxic emanations.

Bibliography

- [1] 67/548/EEC: Council Directive of 27th June 1967 on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances and its amendments and adaptations.