SLOVENSKI STANDARD
SIST EN 15031:2006

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Kemikalije, ki se uporabljajo za pripravo bazenske vode - Strjevanje na osnovi aluminija

Chemicals used for treatment of swimming pool water - Aluminium based coagulants

Produkte zur Aufbereitung von Schwimm- und Badebeckenwasser - Flockungsmittel auf Aluminiumbasis

Produits chimiques utilisés pour le traitement de l'eau des piscines - Coagulants a base d'aluminium

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English Version

Chemicals used for treatment of swimming pool water - Aluminium based coagulants

Produits chimiques utilisés pour le traitement de l'eau des piscines - Coagulants à base d'aluminium

Produkte zur Aufbereitung von Schwimm- und Badebeckenwasser - Flockungsmittel auf Aluminiumbasis

This European Standard was approved by CEN on 13 April 2006.

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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Foreword

This document (EN 15031:2006) 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of an identical text or by endorsement, at the latest by November 2006, and conflicting national standards shall be withdrawn at the latest by November 2006.

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

Introduction

In respect of potential adverse effects on the quality of water for swimming pools, caused by the products covered by this European Standard:

a) this European Standard provides no information as to whether the products 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 these products remain in force.

NOTE 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.

1 Scope

This European Standard is applicable to aluminium based coagulants (aluminium sulfate, aluminium chloride (monomeric), aluminium chloride hydroxide (monomeric), aluminium chloride hydroxide sulfate (monomeric), sodium aluminate and polyaluminium chloride hydroxide and polyaluminium chloride hydroxide sulfate) used directly or for the production of formulations for treatment of water for swimming pools.

It describes the characteristics of aluminium based coagulants and specifies the requirements and the corresponding test methods for aluminium based coagulants. It gives information on their use in swimming pool water treatment. It also determines the rules relating to safe handling and use (see annex B).

2 Normative references

The following referenced documents are 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 878 *Chemicals used for treatment of water intended for human consumption - Aluminium sulfate.*

EN 881 *Chemicals used for treatment of water intended for human consumption - Aluminium chloride (monomeric), aluminium chloride hydroxide (monomeric) and aluminium chloride hydroxide sulfate (monomeric).*

EN 882 *Chemicals used for treatment of water intended for human consumption - Sodium aluminate.*

EN 883 *Chemicals used for treatment of water intended for human consumption - Polyaluminium chloride hydroxyde and polyaluminium chloride hydroxyde sulfate.*

EN 1302 *Chemicals used for treatment of water intended for human consumption-Aluminium based coagulants - Analytical methods.*

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

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

The identification, the commercial form, the physical properties and the chemical properties are given in the relevant sub-clauses of EN 878, EN 881, EN 882 and EN 883.

4 Purity criteria

4.1 General

This European Standard specifies the minimum purity requirements for aluminium based coagulants used for the treatment of water for swimming pools. Limits are given for impurities commonly present in the products. 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 these products should check the national regulations in order to clarify whether they are of appropriate purity for treatment of water for swimming pools, taking into account water quality, required dosage, contents of other impurities and additives used in these products not stated in these product standards.

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 concentration of active matter (aluminium ion content) in the manufactured product expressed in grams per kilogram of product shall be within ± 3 % of the manufacturer's declared values.

NOTE The concentration of water-soluble aluminium in commercial products varies. Typical values are given in Table 1.

Table 1-Typical values

Product	Commercial form	Al g/kg of product
Aluminium sulfate	Solid	72 to 91
	Solution	32 to 44
Sodium aluminate	Solid	225 to 238
	Solution	100 to 132
Aluminium chloride[a)] Aluminium chloride hydroxide[a)] Aluminium chloride hydroxide sulfate[a)]	Solution	30 to 124
	Solid	30 to 254
Polyaluminium chloride hydroxide[b)]	Solution	30 to 124
Polyaluminium chloride hydroxide sulfate[b)]	Solid	30 to 254
a) The commercial products vary in the proportions of chloride and sulfate ions. The relative basicity of these products, expressed as the mole ratio OH/3Al, shall be less than or equal to 0,35. b) The commercial products vary in the proportions of chloride and sulfate ions. The relative basicity of these products, expressed as the mole ratio OH/3Al, shall be greater than 0,35.		

4.3 Impurities and main by-products

Impurities derived from the manufacturing or extraction processes include insoluble matter, trace metals and organic compounds. If iron is present, the products shall conform to the requirements specified in Table 2.

Table 2-Limits of impurities

Product	Grade	Impurity	Limit g/kg of Al
Aluminium sulfate	Iron free	Iron (Fe) max.	1,60
	Low iron	Iron (Fe) max.	1,60 <Fe ≤ 115
	All grades	Insoluble matter max.	23
Sodium aluminate		Iron (Fe) max.	0,8
		Insoluble matter (solid product) max.	8
Note: The value quoted for iron is both iron (II) and iron (III).			

4.4 Chemical parameters

The content of arsenic, cadmium, chromium, mercury, nickel, lead, antimony and selenium for each type of product shall conform to the requirements specified in EN 878, EN 881, EN 882 and EN 883.

NOTE Cyanide (CN^-) is usually not relevant because of the acidity of the products. Pesticides and polycyclic aromatic hydrocarbons are not relevant since the raw materials used in the manufacturing process are free of them.

5 Test methods

5.1 Sampling

5.1.1 Solid

Observe the general rules of ISO 3165 and take into account ISO 6206.

Prepare the laboratory sample(s) required by the relevant procedure described in ISO 8213.

5.1.2 Liquid

5.1.2.1 Sampling from drums and bottles

5.1.2.1.1 General

5.1.2.1.1.1 Mix the contents each container to be sampled by shaking the container, by rolling it or by rocking it from side to side, taking care not to damage the container or spill any of the liquid.

5.1.2.1.1.2 If the design of the container is such (for example, a narrow-necked bottle) that it is impracticable to use a sampling implement, take a sample by pouring after the contents have been thoroughly mixed. Otherwise, proceed as described in 5.1.2.1.1.3.

5.1.2.1.1.3 Examine the surface of the liquid. If there are signs of surface contamination, take samples from the surface as described in 5.1.2.1.2; otherwise, take samples as described in 5.1.2.1.3.

5.1.2.1.2 Surface sampling

Take a sample using a suitable ladle. Lower the ladle into the liquid until the rim is just below the surface, so that the surface layer runs into it. Withdraw the ladle just before it fills completely and allow any liquid adhering to the ladle to drain off. If necessary, repeat this operation so that, when the other selected containers have been sampled in a similar manner, the total volume of sample required for subsequent analysis is obtained.

5.1.2.1.3 Bottom sampling

Take a sample using an open sampling tube, or a bottom-valve sampling tube, suited to the size of container and the viscosity of the liquid.

When using an open sampling tube, close it at the top and then lower the bottom end to the bottom of the container. Open the tube and move it rapidly so that the bottom of the tube traverses the bottom of the container before the tube is filled. Close the tube, withdraw it from the container and allow any liquid adhering to the outside of the tube to drain off.

When using a bottom-valve sampling tube, close the valve before lowering the tube into the container and then proceed in a similar manner to that when using an open sampling tube.

5.1.2.2 Sampling from tanks and tankers

From each access point, take samples as follows:

a) from the surface of the liquid, using a ladle as described in 5.1.2.1.2;

b) from the bottom of the tank or tanker, using a sampling tube as described in 5.1.2.1.3 or using specially designed bottom-sampling apparatus;

c) from one or more positions, depending on the overall depth, between the bottom and the surface using a weighted sampling can.

5.2 Analyses

Use the relevant methods described in EN 1302.

6 Labelling - Transportation - Storage

6.1 Means of delivery

Solids: the products shall be delivered in suitable packages, paper or plastics bags

Liquids: the products shall be delivered in containers of corrosion-resistant materials suitable for the purpose.

NOTE The manufacturer can provide advice on suitable materials.

In order that the purity of the products is not affected, the means of delivery shall not have been used previously for any different product or it shall have been specially cleaned and prepared before use.

6.2 Risk and safety labelling in accordance with the EU directives [1]

The following labelling requirements shall apply to the following aluminium based coagulants at the date of the publication of this European Standard:

Aluminium sulfate:

a) solids, hydrated forms:

— symbols and indications of danger:

  — Xi: Irritant.

— nature of special risks attributed to dangerous substances:

  — R 41: Risk of serious damage to eyes.

— safety advice concerning dangerous substances:

  — S 22: Do not breathe dust;

  — S 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice;

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[1] See [1]