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**Proizvodi za pripravo pitne vode - Z železom prevlečen granulat aluminijevega oksida**

Products used for treatment of water intended for human consumption - Iron-coated granular activated alumina

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Eisenumlagertes granuliertes aktiviertes Aluminiumoxid

Produits utilisés pour le traitement de l'eau destinée à la consommation humaine - Alumine active en grains revetue de fer

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**Ta slovenski standard je istoveten z: EN 14369:2003**

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**ICS:**

13.060.20	Pitna voda	Drinking water
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**SIST EN 14369:2004****en**

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EUROPEAN STANDARD

EN 14369

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2003

ICS 71.100.80

English version

## Products used for treatment of water intended for human consumption - Iron-coated granular activated alumina

Produits utilisés pour le traitement de l'eau destinée à la consommation humaine - Alumine active en grains revêtue de fer

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Eisenumlagertes granuliertes aktiviertes Aluminiumoxid

This European Standard was approved by CEN on 1 September 2003.

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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 Management Centre has the same status as the official versions.

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## Foreword

This document (EN 14369:2003) 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of an identical text or by endorsement, at the latest by May 2004, and conflicting national standards shall be withdrawn at the latest by May 2004.

Annex A is informative.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, 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:

- a) 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;
- 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 standard 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 European Standard is subject to regulation or control by National Authorities.

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## 1 Scope

This European Standard is applicable to iron-coated granular activated alumina used for treatment of water intended for human consumption. It describes the characteristics of iron-coated granular activated alumina and specifies the requirements and the corresponding test methods for iron-coated granular activated alumina. 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 (including amendments).

EN 12901:1999, *Products used for the treatment of water intended for human consumption - Inorganic supporting and filtering materials – Definitions.*

EN 12902, *Products used for the treatment of water intended for human consumption - Inorganic supporting and filtering materials - Methods of test.*

ISO 9277, *Determination of the specific surface area of solids by gas adsorption using the BET method.*

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## 3 Terms, definitions and symbols

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For the purposes of this European Standard, the terms, definitions and symbols given in EN 12901:1999 apply.

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## 4 Description

### 4.1 Identification

#### 4.1.1 Chemical name

Aluminium oxide (partially hydroxylated) coated with iron.

#### 4.1.2 Synonym or common name

None.

#### 4.1.3 Chemical formula

$\text{Al}_2\text{O}_{(3-x)}(\text{OH})_{2x} + \text{Fe}(\text{OH})_3$       x ranges from almost zero to 0,80.

**EN 14369:2003 (E)****4.1.4 CAS Registry number<sup>1)</sup>**

Activated alumina : 1344-28-1.

Iron(III) sulfate : 10028-22-5.

**4.1.5 EINECS reference<sup>2)</sup>**

Activated alumina : 215-691-6.

Iron(III) sulfate : 233-072-9.

**4.2 Commercial form**

Iron-coated activated alumina is a granular product consisting of irregularly shaped (non-moulded) particles; the product is available in different particle sizes.

**5 Physical properties****5.1 Appearance**

The product consists of brown particles of irregular shape. The product shall be generally homogeneous and shall be visibly free of extraneous matter.

**5.2 Particle size distribution**

The particle size distribution shall be described by either,

a)

- effective size ( $d_{10}$ ) with a maximum deviation of  $\pm 5$  %;
- uniformity coefficient ( $U$ ) less than 1,5;
- minimum size ( $d_1$ ) with a maximum deviation of  $\pm 5$  %.

or

b) particle size range and mass fraction of oversize and undersize particles; see A.2.2.1.

The proportion of oversize plus undersize particles shall not exceed a mass fraction of 15 % and not more than a mass fraction of 5 % shall be undersized.

NOTE 1 The particle size can decrease during transportation and handling.

NOTE 2 Other values can be necessary for certain applications.

<sup>1)</sup> Chemical Abstracts Service Registry Number.

<sup>2)</sup> European Inventory of Existing Commercial Chemical Substances.



### 5.3 Bulk density packed

The bulk density (packed) shall be greater than 600 kg/m<sup>3</sup>.

## 6 Chemical properties

This European Standard specifies the minimum purity requirements for iron-coated granular activated alumina used for the treatment of water intended for human consumption. 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 1 Users of this product should satisfy themselves that it is of appropriate purity for treatment of water intended for human consumption, taking into account raw water quality, contents of other impurities and additives used in the products not stated in the product standard, and other relevant factors.

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

NOTE 2 After filling, washing and commissioning of a filter system producing drinking water, iron-coated activated alumina should not increase the concentrations of chemical parameters (see [1]).

NOTE 3 Water extractable substances, determined in accordance with the method for granular materials given in EN 12902, can be used to estimate the leaching of the chemicals specified in EN 12902.

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## 7 Specific properties

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The surface area shall be not less than 200 m<sup>2</sup>/g.

## 8 Test methods

### 8.1 Sampling

Prepare the laboratory sample required by the relevant procedures described in EN 12902.

### 8.2 Analysis

#### 8.2.1 Particle size distribution

The particle size distribution shall be determined on samples taken at the point of manufacture using the method of test given in EN 12902.

#### 8.2.2 Bulk density packed

The bulk density packed shall be determined in accordance with EN 12902.

#### 8.2.3 Surface area

The surface area shall be determined by the BET method, degassing at a maximum of 200 °C, in accordance with ISO 9277.