



SLOVENSKI STANDARD

SIST EN 12903:2003

01-oktober-2003

Nadomešča:
SIST EN 12903:2000

Izdelki, ki se uporabljajo za pripravo pitne vode – Aktivno oglje v prahu

Products used for treatment of water intended for human consumption - Powdered activated carbon

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Pulver-Aktivkohle

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Produits utilisés pour le traitement de l'eau destinée a la consommation humaine - Charbon actif en poudre

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ICS:

13.060.20	Pitna voda	Drinking water
71.100.80	Kemikalije za čiščenje vode	Chemicals for purification of water

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en

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EUROPEAN STANDARD

EN 12903

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2003

ICS 71.100.80

Supersedes EN 12903:1999

English version

Products used for treatment of water intended for human consumption - Powdered activated carbon

Produits utilisés pour le traitement de l'eau destinée à la consommation humaine - Charbon actif en poudre

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This European Standard was approved by CEN on 20 February 2003.

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 Management Centre 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 12903:2003) 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 October 2003, and conflicting national standards shall be withdrawn at the latest by October 2003.

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.

This document supersedes EN 12903:1999.

Significant technical differences between this edition and EN 12903:1999 are as follows:

- a) modifications of limit values for As, Ni, Pb and Sb in line with the EU Directive 98/83/EC (see [1]);
- b) deletion of reference to EU Directive 80/778/EEC of 15 July 1980.

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 European Standard:

- a) this European 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.

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1 Scope

This European Standard is applicable to powdered activated carbon used for treatment of water intended for human consumption. It describes the characteristics of powdered activated carbon and specifies the requirements and the corresponding test methods for powdered activated carbon. 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 treatment of water intended for human consumption - Inorganic supporting and filtering materials – Definitions*.

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

EN ISO 787-11, *General methods of test for pigments and extenders - Part 11: Determination of tamped volume and apparent density after tamping (ISO 787-11:1981)*.

3 Terms and definitions

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

4 Description

4.1 Identification

4.1.1 Chemical name(s)

Carbon.

4.1.2 Synonym or common names

Activated coal, activated charcoal, active carbon.

4.1.3 Chemical formula

C (elementary).

4.1.4 CAS Registry Number ¹⁾

7440-44-0.

1) Chemical Abstracts Service Registry Number.

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4.1.5 EINECS reference ²⁾

231-153-3.

4.2 Commercial form

Powdered activated carbon is available in many grades, differing in adsorption characteristics, porosity, particle size and purity.

5 Physical properties

5.1 Appearance

The product is a black powder.

5.2 Particle size distribution

5.2.1 Particle size

At least 95 percent by mass (% (*m/m*)) shall have a particle size less than 150 μm .

NOTE Other values can be necessary for certain applications. The particle size distribution is commonly specified as 95 % (*m/m*) less than a given particle size.

The particle size distribution shall be within the manufacturer's declared values.

5.2.2 Oversize and undersize particles

The proportion of oversize and undersize particles shall be within the manufacturer's declared values.

5.3 Bulk density packed

The bulk density packed shall be within $\pm 10\%$ of the value specified by the manufacturer or supplier.

NOTE The bulk density packed of powdered activated carbon is typically in the range 200 kg/m^3 to 750 kg/m^3 .

6 Chemical properties

6.1 General

Powdered activated carbon is manufactured by controlled oxidation, by means of steam or chemicals, from carbonaceous raw materials including coconut, wood, peat or coal. The raw materials shall be stated by the manufacturer.

High internal porosity results in adsorptive properties and, depending on the raw material and the manufacturing process, it can have acid or basic properties. It is a reducing agent with catalytic properties. Activated carbon can react with oxidants to form carbon dioxide.

The carbon content of the commercial product does not affect adsorption characteristics.

2) European Inventory of Existing Commercial Chemical Substances.

6.2 Purity criteria

6.2.1 General

This European Standard specifies the minimum purity requirements for powdered activated carbon 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 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, required dosage, 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 water-extractable substances 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.

6.2.2 Impurities and main by-products

The product shall conform to the requirements specified in Table 1.

Table 1 - Main impurities and by-products
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Impurity	Limit in % (m/m) ^{a)}
Ash ^{b)}	max. 15
Water ^{c)} (at the time of packing) ^{d)}	max. 5
Water-soluble material	max. 3
Zinc	max. 0,002
a) Expressed on a dry basis except for water content. b) Some products incorporate minerals to reduce dust formation; for such products a higher limit for ash might be necessary. c) Certain applications require a higher water content to avoid dust formation; for such products a higher limit might be necessary. d) The water content can increase after packing ; e.g. during transportation.	