

SVENSK STANDARD

SS-EN 12907:2009

Fastställt/Approved: 2009-03-19

Publicerad/Published: 2009-04-23

Utgåva/Edition: 3

Språk/Language: engelska/English

ICS: 13.060.20; 71.100.80

Produkter för beredning av dricksvatten – Pyrolyserat kolmaterial

Products used for treatment of water intended for human consumption – Pyrolyzed coal material

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This standard supersedes the Swedish Standard SS-EN 12907, edition 2.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12907

March 2009

ICS 71.100.80

Supersedes EN 12907:2003

English Version

Products used for treatment of water intended for human consumption - Pyrolyzed coal material

Produits chimiques pour le traitement de l'eau destinée à la consommation humaine - Charbon pyrolysé

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Thermisch behandelte Kohleprodukte

This European Standard was approved by CEN on 9 February 2009.

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Foreword

This document (EN 12907:2009) 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of an identical text or by endorsement, at the latest by September 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.

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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.

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.

1 Scope

This European Standard is applicable to pyrolyzed coal material used for treatment of water intended for human consumption. It describes the characteristics of pyrolyzed coal material and specifies the requirements and the corresponding test methods for pyrolyzed coal material. It gives information on its use in water treatment.

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 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*

3 Terms and definitions

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

4 Description

4.1 Identification

4.1.1 Chemical name

Carbon (C).

4.1.2 Synonym or common names

None.

4.2 Commercial forms

Pyrolyzed coal material, according to this standard, is a thermally treated coal and is available in different particle size ranges.

5 Physical properties

5.1 Appearance

The product is a brown to black coloured dull granular material with spherical or angular shape, porous structure, and smooth texture.

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 determined on samples taken at the point of manufacture.

The particle size distribution shall be described by either:

a) effective size: (d_{10}) with a permitted tolerance of $\pm 5\%$;

uniformity coefficient: (U) shall be less than 1,5;

minimum size: (d_1) with a permitted tolerance of $\pm 5\%$;

b) or, by particle size range and by mass of oversize and undersize particles according to application:

the maximum permitted contents of oversize and undersize are mass fraction 5 % for application of the product as a filtration layer in multi-media filters and mass fraction 10 % for use in single media filters. For use as a support layer, maximum contents of oversize and undersize of mass fraction 15 % are acceptable. See A.2.3 for examples of available particle sizes that are used.

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

NOTE 2 Other values can be necessary for certain applications.

5.3 Density

5.3.1 Bulk density loose

The bulk density loose shall be in the range of 450 kg/m³ to 560 kg/m³.

5.3.2 Bulk density packed

The bulk density packed shall be in the range of 460 kg/m³ to 580 kg/m³.

6 Chemical properties

6.1 Composition of commercial product

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

Table 1 — Composition of commercial product

Parameter		Content of the commercial product in mass fraction %
C (water and ash free basis)	min.	85
Ash	max.	15
Volatile matter	max.	5

NOTE 1 Values of these parameters do not influence filtration properties, but give information about the source of pyrolyzed coal material.

NOTE 2 Further information is given in A.2.1.

6.2 Purity criteria

6.2.1 General

This European Standard specifies the minimum purity requirements for pyrolyzed coal material 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 the relevant authorities.

NOTE Users of this product should check the national regulations in order to clarify whether 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.

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.

6.2.2 Water-extractable substances

The product shall conform to the requirements specified in Table 2.

Table 2 — Water-extractable substances

Substance		Limit in the extraction water µg/l
Arsenic (As)	max.	10
Cadmium (Cd)	max.	0,5
Chromium (Cr)	max.	5
Mercury (Hg)	max.	0,3
Nickel (Ni)	max.	5
Lead (Pb)	max.	5
Antimony (Sb)	max.	3
Selenium (Se)	max.	3
Cyanide (CN)	max.	5
PAH ^a	max.	0,02
^a Polycyclic Aromatic Hydrocarbons: the sum of the detected concentrations of fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene.		

7 Specific properties

Pyrolyzed coal material is not an activated carbon but does show adsorption properties. Under defined conditions, it removes chlorine and ozone as well as organic matter.

8 Test methods

8.1 Sampling

Prepare the laboratory sample(s) 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 in accordance with EN 12902.