SLOVENSKI STANDARD
SIST EN 12911:2013

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Nadomešča:
SIST EN 12911:2006

Proizvodi, ki se uporabljajo za pripravo pitne vode - Glavkonit

Products used for treatment of water intended for human consumption - Manganese greensand

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Mangangrünsand

Produits utilisés pour le traitement de l'eau destinée à la consommation humaine - Sable vert manganisé

Ta slovenski standard je istoveten z: **EN 12911:2013**

ICS:

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

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EUROPEAN STANDARD

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English Version

Products used for treatment of water intended for human consumption - Manganese greensand

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Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Mangangrünsand

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Foreword

This document (EN 12911:2013) 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of an identical text or by endorsement, at the latest by November 2013, and conflicting national standards shall be withdrawn at the latest by November 2013.

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.

This document supersedes EN 12911:2006.

Significant technical difference between this edition and EN 12911:2006 is as follows:

— Updating of subclause 9.2 in line with current legislation.

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

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, the following statements apply:

— 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.

— 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 European Standard does not confer or imply acceptance or approval of the product in any of the Member States of the EU or EFTA. 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 manganese greensand used for the treatment of water intended for human consumption. It describes the characteristics of manganese greensand and specifies the requirements and the corresponding test methods for manganese greensand. It gives information on its use in water treatment.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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*

EN ISO 3696, *Water for analytical laboratory use — Specification and test methods (ISO 3696)*

ISO 6333, *Water quality — Determination of manganese — Formaldoxime spectrometric method*

ISO 9682-1:2009, *Iron ores — Determination of manganese content — Part 1: Flame atomic absorption spectrometric method*

3 Terms and definitions and symbols

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

4 Description

4.1 Identification

4.1.1 Chemical name(s)

Manganese oxide coated zeolite (glauconite).

NOTE The product is a preparation.

4.1.2 Synonym or common names

Manganese greensand, manganese zeolite, ferro-sand, greensand.

4.1.3 Chemical formula

Not applicable.

4.1.4 CAS Registry Number[1)]

Glauconite: 90387-66-9.

Manganese oxide: 1313-13-9.

4.1.5 EINECS reference[2)]

Glauconite: 291-341-6.

Manganese oxide: 215-202-6.

4.2 Commercial form

Manganese greensand is a granular product available in only one particle size range.

5 Physical properties

5.1 Appearance

The product comprises dry, sand-like, free flowing black granules. The particles are coated with a black manganese dioxide coating. The product has a granular shape, dense crystalline structure and a rough 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 using the test method given in EN 12902.

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

The particle size distribution shall be described by either:

a) effective size: (d_{10}) 0,30 mm to 0,35 mm with a maximum deviation of ± 0,03 mm;

   1) uniformity coefficient: (U) shall be less than 1,6;

   2) minimum size: (d_1) shall be at least 0,25 mm;

   3) maximum size: shall not exceed 1,25 mm;

or

b) by particle size range and by mass fraction of oversize and undersize particles.

The maximum permitted mass fractions of oversize and undersize are 5 %.

NOTE 2 Other values might be necessary for certain applications.

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1) Chemical Abstracts Service Registry Number.
2) European Inventory of Existing Commercial Chemical Substances.

5.3 Density (bulk density loose)

The bulk density loose shall be at least 1 300 kg/m^3.

6 Chemical properties

This European Standard specifies the minimum purity requirements for manganese greensand 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, the user, and when necessary the relevant authorities, shall be notified.

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 product not stated in this 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 the presence of significant amounts of impurities, by-products or additives being present, the user shall be notified.

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

Table 1 — Composition of commercial product

Parameters	Limit in mass fraction %
Manganese oxides (as Mn)[a]	0,2 to 0,8
Mass loss at 150 °C max.	6
Ignition loss at 650 °C max.	8
[a] The manganese in the product is present as a mixture of different oxides.	

NOTE 1 Acid-soluble material is not a relevant parameter for this product, which is not stable to acids and which will react with hydrochloric acid releasing chlorine gas.

After filling, washing and commissioning of a filter system producing drinking water, manganese greensand should not increase the concentrations of chemical parameters (see [1]).

NOTE 2 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.

7 Specific properties

The oxidation capacity of manganese greensand (regenerated form), expressed as grams of Mn per litre of packed product, shall be at least 0,7 g/l.

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.

8.2.2 Bulk density loose

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

8.2.3 Mass loss at 150 °C

8.2.3.1 General

The mass loss shall be determined by the method for water content, heating to 150 °C, in accordance with EN 12902.

8.2.3.2 Precision

The absolute difference between two single test results, obtained under repeatability conditions, shall not exceed the repeatability limit, r, in more than one in twenty cases.

$$r = 0{,}07 \times X_1 \quad (1)$$

where

X_1 is the measured value.

8.2.4 Ignition loss at 650 °C

8.2.4.1 Principle

The sample is heated to constant mass at 650 °C. It is assumed that water, including chemically bound water, is the only material present in the manganese greensand that is volatile at this temperature.

At 650 °C, the loss of water is practically complete.

8.2.4.2 Apparatus

Ordinary laboratory apparatus and glassware together with the following.

8.2.4.2.1 Muffle furnace, capable of being controlled at (650 ± 25) °C.

8.2.4.2.2 High temperature metal or ceramic crucible with lid.

8.2.4.2.3 Desiccator.

8.2.4.2.4 Analytical balance, having an accuracy of ± 0,1 mg.

8.2.4.3 Procedure

Ignite the crucible and the lid (8.2.4.2.2) in the muffle furnace at (650 ± 25) °C for 1 h. Place the crucible and the lid in the desiccator; cool to room temperature and weigh to the nearest 0,1 mg. Note the mass m_0.