

**Chemicals used for treatment of water intended for
human consumption - Manganese dioxide**

This document is a preview generated by EVS

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13752:2012 sisaldab Euroopa standardi EN 13752:2012 ingliskeelset teksti.	This Estonian standard EVS-EN 13752:2012 consists of the English text of the European standard EN 13752:2012.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 15.08.2012.	Date of Availability of the European standard is 15.08.2012.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 71.100.80

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Aru 10, 10317 Tallinn, Eesti; www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:
Aru 10, 10317 Tallinn, Estonia; www.evs.ee; phone 605 5050; e-mail info@evs.ee

English Version

Chemicals used for treatment of water intended for human consumption - Manganese dioxide

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Dioxyde de manganèse

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Mangandioxid

This European Standard was approved by CEN on 13 July 2012.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms, definitions and symbols.....	6
4 Description	6
4.1 Identification.....	6
4.1.1 Chemical name.....	6
4.1.2 Synonym or common names.....	6
4.1.3 Chemical formula.....	6
4.1.4 CAS Registry number	7
4.1.5 EINECS reference	7
4.2 Commercial form	7
5 Physical properties.....	7
5.1 Appearance	7
5.2 Particle size distribution	7
5.3 Density	8
5.3.1 Bulk density loose	8
5.3.2 Bulk density packed	8
6 Chemical properties	8
7 Specific properties.....	8
8 Test methods.....	8
8.1 Sampling	8
8.2 Analysis	8
8.2.1 Particle size distribution	8
8.2.2 Bulk density loose	8
8.2.3 Bulk density packed	9
8.2.4 Oxidation capacity	9
9 Labelling, transportation and storage	10
9.1 Means of delivery.....	10
9.2 Labelling according to the EU legislation	11
9.3 Transportation regulations and labelling.....	11
9.4 Marking	11
9.5 Storage.....	12
9.5.1 Long term chemical stability	12
9.5.2 Storage incompatibility	12
Annex A (informative) General information on manganese dioxide.....	13
A.1 Origin	13
A.1.1 Raw material.....	13
A.1.2 Manufacturing process	13
A.2 Typical properties	13
A.2.1 Chemical composition	13
A.2.2 Mechanical strength	14
A.2.3 Alternative description of particle size distribution.....	14
A.2.4 Absolute density	14
A.3 Use	15

A.3.1	Function.....	15
A.3.2	Method of use	15
A.3.3	Oxidation capacity.....	15
A.3.4	Specific amount.....	15
A.3.5	Means of application	15
A.3.6	Secondary effects.....	16
A.4	Hydraulic characteristics.....	16
A.4.1	Interstitial volume.....	16
A.4.2	Head loss in filtration	16
A.4.3	Expansion in up-flow washing.....	16
Annex B	(normative) General rules relating to safety.....	17
B.1	Rules for safe handling and use	17
B.2	Emergency procedures.....	17
B.2.1	First aid.....	17
B.2.2	Spillage.....	17
B.2.3	Fire	17
Bibliography		18

Foreword

This document (EN 13752:2012) 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 February 2013, and conflicting national standards shall be withdrawn at the latest by February 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 13752:2009.

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:

- 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 manganese dioxide used for treatment of water intended for human consumption. It describes the characteristics of manganese dioxide and specifies the requirements and the corresponding test methods for manganese dioxide. It gives information on its use in water treatment. Two classes of product are specified: Class 1 with hardness greater than or equal to 6 Mohs, Class 2 with hardness less than 6 Mohs.

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 385, *Laboratory glassware – Burettes (ISO 385)*

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

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

3 Terms, definitions and symbols

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

4 Description

4.1 Identification

4.1.1 Chemical name

Manganese dioxide.

4.1.2 Synonym or common names

Manganese(IV) oxide, pyrolusite.

4.1.3 Chemical formula

MnO₂.

NOTE Manganese dioxide used as a catalytic filtering medium is a natural ore, usually pyrolusite. Manganese dioxide ores differ widely in their chemical composition depending on their origin. Most are composed of manganese dioxide together with silica, alumina, iron oxide and numerous other elements present in varying proportions which might affect mechanical strength.