SLOVENSKI STANDARD

SIST EN 13443-1:2003+A1:2007

01-december-2007

Oprema, ki se uporablja za pripravo pitne vode v stavbah - Mehanski filtri - 1. del: Filtri za izloļ itev delcev z velikostjo 80 Õm do 150 Õm - Zahteve za delovanje, varnost in preskuġanje

Water conditioning equipment inside buildings - Mechanical filters - Part 1: Particle rating 80 µm to 150 µm - Requirements for performances, safety and testing

Anlagen zur Behandlung von Trinkwasser innerhalb von Gebäuden - Mechanisch wirkende Filter - Teil 1: Filterfeinheit 80 µm bis 150 µm - Anforderungen an Ausführung, Sicherheit und Prüfung

Appareils de traitement d'eau a l'intérieur des bâtiments - Filtres mécaniques - Partie 1: Particules de dimension comprise entre 80 µm et 150 µm - Exigences de performances et de sécurité, essais

Ta slovenski standard je istoveten z: **EN 13443-1:2002+A1:2007**

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13.060.20	Pitna voda	Drinking water
91.140.60	Sistemi za oskrbo z vodo	Water supply systems

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EUROPEAN STANDARD

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EN 13443-1:2002+A1

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English Version

Water conditioning equipment inside buildings - Mechanical filters - Part 1: Particle rating 80 µm to 150 µm - Requirements for performances, safety and testing

Appareils de traitement d'eau à l'intérieur des bâtiments - Filtres mécaniques - Partie 1: Particules de dimension comprise entre 80 µm et 150 µm - Exigences de performances et de sécurité, essais

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This European Standard was approved by CEN on 23 October 2002 and includes Amendment 1 approved by CEN on 9 August 2007.

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

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Contents

Foreword

This document (EN 13443-1:2007+A1:2007) 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of an identical text or by endorsement, at the latest by March 2008, and conflicting national standards shall be withdrawn at the latest by March 2008.

This document supersedes EN 13443-1:2002.

This document includes Amendment 1, approved by CEN on 2007-08-09.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ⟩A1⟨ ⟩A1⟨.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland 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 standard:

1) 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;

2) 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.

1 Scope

Part 1 of this European Standard applies to mechanical filters for drinking water installations inside buildings, of nominal size from DN 15 to DN 100, minimum nominal pressure PN10, particle rating of 80 µm to 150 µm, and [A1] maximum [A1] design temperature of 30 °C. It specifies requirements relating to the construction and mode of operation of filters and describes relevant methods of testing. It only concerns units which are permanently connected to the mains supply at the point of entry into the building.

Part 2 of this European Standard ([A1] EN 13443-2:2005+A1 [A1]) is a separate document and deals with filters with a particle size limit less than 80 µm.

2 Normative references

[A1] 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. [A1]

EN 1333, *Flanges and their joints - Pipework components - Definition and selection of PN*

EN 1567, *Building valves - Water pressure reducing valves and combination water pressure reducing valves - Requirements and tests*

EN 1717, *Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow*

[A1] EN 15161, *Water conditioning equipment inside buildings — Installation, operation, maintenance and repair* [A1]

EN ISO 3822-3, *Acoustics - Laboratory tests on noise emission from appliances and equipment used in water supply installations - Part 3: Mounting and operating conditions for in-line valves and appliances (ISO 3822-3:1997)*

EN ISO 6509, *Corrosion of metals and alloys - Determination of dezincification resistance of brass (ISO 6509:1981)*

[A1] *deleted text* [A1]

[A1] ISO 2591-1, *Test sieving — Part 1: Methods using test sieves of woven wire cloth and perforated metal plate*

ISO 9276-1, *Representation of results of particle size analysis — Part 1: Graphical representation*

ISO 13320-1, *Particle size analysis — Laser diffraction methods — Part 1: General principles* [A1]

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1
[A1] drinking water [A1]
water intended for human consumption as defined in Directive 98/83/EC [A1] (see Annex A) [A1]

3.2
[A1] mechanical filter [A1]
[A1] appliance [A1] designed to remove undissolved substances from water, down to a specified particle size

3.3
filter element
part of a filter designed to ensure the retention of particles

3.4
grade of filtration
ability of a filter to retain particles and suspended matter of a given size range irrespective of the nature of the material used in the filter element, defined by the maximum and minimum filter particle rating

3.5
minimum particle rating
number determining the particle size, in µm, of a material 90 % by mass of which is able to pass through the filter under test conditions

3.6
maximum particle rating
number determining the particle size, in µm, of a material 10 % by mass of which is able to pass through the filter under test conditions

3.7
filter surface velocity
flow rate divided by the filter surface area, expressed in $m^3/(h\ cm^2)$

3.8
nominal flow rate
clean filter flow rate at which either the pressure drop does not exceed a value of 50 kPa (0,5 bar), or the filter surface velocity does not exceed the maximum specified value, whichever is lower

4 Classification

4.1 Principle

Mechanical filters shall be designated by:

— nominal size DN;

— end connections;

— filter type;

— nominal pressure PN.

The designation shall be clearly identified on the manufacturer's rating plate or in the instruction manual. Examples are given in [A1] Annex A [A1].

4.2 Nominal size (DN)

The nominal size DN shall correspond to the flow rates in Table 2. The inlet connection of the filter may be DN or one size larger or one size smaller than the nominal size DN. In the case of flange connections the nominal size DN is determined by the DN of the inlet connection.

4.3 [A1] End connections [A1]

Examples of end connections are shown in [A1] Annex A [A1]. Combinations of two kinds of connections are possible.

4.4 [A1] Filter type [A1]

Filters conforming to this standard shall be presented as one of the following types:

— filters requiring single use filter elements;

— backwashing filters filter elements cleaned by backwashing (without any dismantling).

4.5 A1 Nominal pressure (PN) A1

The nominal pressure PN shall correspond to EN 1333.

5 A1 Materials (chemical and hygienic behaviour of materials) A1

The selection of materials shall be the responsibility of the manufacturer, provided that the complete filter satisfies the requirements of EN 1567.

NOTE The materials and coatings used should not contaminate or change the drinking water, when in normal or accidental contact up to the maximum designed temperature.

The requirements , with regard to the effects of materials on drinking water quality, are specified in national regulations.

The manufacturer shall state in his technical literature what materials and coatings are used. The materials, in particular copper alloys, shall conform to relevant national standards or recommendations. These references shall be stated.

Copper-zinc alloys containing more than 10 % zinc are subject to dezincification when submitted to water capable of dezincification. In countries where the use of products made of dezincification resistant material is required, the product have to guarantee a dezincification depth less than 200 µm in any direction. They have to be tested and marked in accordance with EN ISO 6509 and have to be marked in compliance with the indications under clause 9 of the present standard.

6 General design requirements

6.1 Backwashable filters

Backwashable filters shall be able to be cleaned without the aid of tools. No substances shall be allowed to penetrate into the drinking water supply as a result of the cleaning operation. After completion of backwashing, the original grade of filtration and pressure drop shall be recovered.

Backwashable filters shall be provided with a backwash water outlet, conforming to EN 1717.

It shall be possible to clean the filter mounted in any of the positions specified by the manufacturer with no interruption of filtered water supply during backwashing.

6.2 Single-use filters

Single use filters shall be designed in such a way that the filter elements can be replaced without any risk of contamination of the drinking water. It shall be possible to replace the filter mounted in any of the positions specified by the manufacturer.

Any tools used in this process shall not come into contact with drinking water and shall be provided by the manufacturer. If specific tools are necessary they shall be supplied by the manufacturer.

Replacement filter elements shall be single packaged to prevent contamination from outside.

6.3 Thermal stability

Filters shall be designed to withstand room and water temperatures of at least 30°°C.

7 Performances requirements

7.1 A1⟩ Bending strength of the body ⟨A1

When subjected to a bending moment in accordance with 8.2.1.2, there shall be no permanent deformation, fissures or ruptures.

7.2 A1⟩ Pressure strength of the filter housing ⟨A1

When subjected to a hydraulic test as defined in 8.2.2, there shall be no visible leakage or permanent deformation.

7.3 A1⟩ Pressure strength of the filter element ⟨A1

After being subjected to a differential pressure as described in 8.2.3.2, there shall be no visible deformation of the filter cartridge.

7.4 A1⟩ Dynamic pressure test ⟨A1

While subject to cyclic pressure test as described in 8.2.4 the filter hosing shall show no visible signs of leakage or permanent deformation.

7.5 A1⟩ Pressure drop ⟨A1

When subjected to the nominal flow rate as described in 8.3.1.2, the filter, with a clean element, shall not develop a pressure drop higher than 50 kPa.

7.6 A1⟩ Filter surface velocity ⟨A1

The filter surface velocity shall not exceed 0,15 $m^3/(h\ cm^2)$ for backwashable filters and 0,025 $m^3/(h\ cm^2)$ for replaceable cartridge filters at the nominal flow rate.

7.7 A1⟩ Filter rating ⟨A1

When tested in accordance with 8.4.2, the maximum filter rating shall be between 100 A1⟩ µm ⟨A1 and 150 A1⟩ µm ⟨A1 and the minimum filter rating shall be between 80 A1⟩ µm ⟨A1 and 120 A1⟩ µm ⟨A1.

8 Performance tests

8.1 A1⟩ Test conditions ⟨A1

Tests shall be carried out with the filter in the horizontal position, except for special models. Unless otherwise specified tolerances shall be ± 5%. Unless otherwise stated tests shall be carried out at room temperature with water between 10 °C and 30 °C. If the designed water temperature is higher than 30 °C, the designed temperature shall be used for the test.

8.2 A1⟩ Mechanical performance ⟨A1

8.2.1 Bending strength of the body

8.2.1.1 Principle

The mechanical bending strength of the body is tested by a bending moment test, in which a force is applied for a predetermined period.

8.2.1.2 Test procedure

Fix the mechanical filter by one connection to a test apparatus as shown in Figure 1. Connect the other side to a metal tube and apply the appropriate force *F* in order to obtain the bending moment as given in Table 1.

Apply the bending moment for 30^{+10}_{0} *s*.

Table 1 — Nominal size vs. bending moment

Nominal size DN		15	20	25	32	40	50	65	80	100
Bending moment	Threaded and flanged ends	80	150	300	400	500	600	750	950	1300
(Nm)	Compression ends	50	85	125	160	200	300	-	-	-

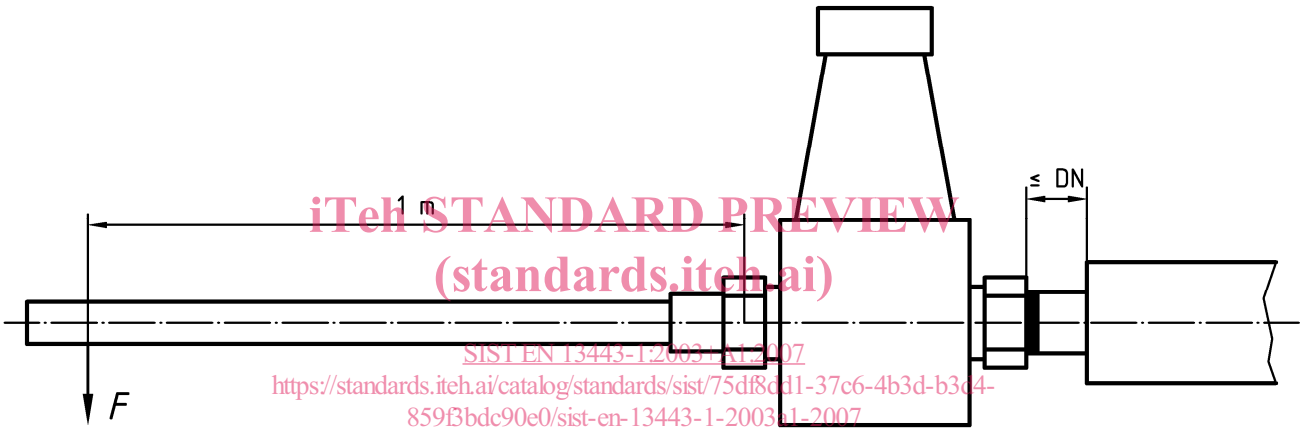

Figure 1 — Bending moment testing equipment

8.2.2 Static pressure strength and tightness of the filter

8.2.2.1 Principle

The pressure strength and water tightness of the filter shall be tested by applying a water pressure of 3 times the nominal pressure PN for a period of 10^{+2}_{0} min.

Those filter components which are subject to hydrostatic pressure shall be designed for a nominal pressure of not less than 1 000 kPa *deleted text*. According to EN 1567, the filters combined with pressure regulating valves shall be designed at a nominal pressure of not less than 1 600 kPa *deleted text*.

8.2.2.2 Test procedure

Install the filter in a test rig as shown in Figure 2. Increase the pressure to 3 times the nominal pressure PN. Maintain the pressure for 10^{+2}_{0} min.