SLOVENSKI STANDARD

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Oprema za pripravo pitne vode v stavbah - Elektrolizno doziranje z aluminijevimi anodami - Zahteve za izvedbo, varnost in preskušanje

Water conditioning equipment inside buildings - Electrolytic treatment systems with aluminium anodes - Requirements for performance, safety and testing

Anlagen zur Behandlung von Trinkwasser innerhalb von Gebäuden - Elektrolytische Dosierungsanlagen mit Aluminiumanoden - Anforderungen an Ausführung und Sicherheit, Prüfung

Appareils de conditionnement d'eau a l'intérieur des bâtiments - Installations électrolytiques avec anodes en aluminium - Exigences de performances, de sécurité et d'essais

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This European Standard was approved by CEN on 14 November 2003.

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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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Foreword

This document (EN 14095:2003) 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of an identical text or by endorsement, at the latest by June 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

Annex A is informative.

This document includes a bibliography.

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.

Introduction

In respect to potential adverse effects of the quality of water intended for human consumption, caused by the product covered by this standard:

a) 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;

b) it should be noted that, while awaiting the adoption of verifiable European criteria, existing regulations concerning the use and/or the characteristics of this product remain in force.

1 Scope

This European Standard applies to electrolytic dosing systems for conditioning water intended for human consumption inside buildings and based on dissolution of aluminium anodes (with imposed DC current). It specifies constructional (but not dimensional) and operational requirements. It describes relevant methods for testing performance and safety. It only concerns units which are permanently connected to the mains supply.

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 573-3, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 3: Chemical composition*.

EN 602, *Aluminium and aluminium alloys — Wrought products — Chemical composition of semi products used for the fabrication of articles for use in contact with food*.

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

EN 12499, *Internal cathodic protection of metallic structures*

prEN 12897, *Water supply - Specification for indirectly heated unvented (closed) storage water heaters.*

EN 55011, *Industrial, scientific and medical (ISM) radio-frequency equipment - Radio disturbance characteristics - Limits and methods of measurement (CISPR 11:1997, modified)*

EN 60335-1, *Household and similar electrical appliances - Safety - Part 1: General requirements (IEC 60335-1:2001, modified*

ISO 7858-1, *Measurement of water flow in closed conduits -- Combination meters for cold potable water -- Part 1: Specifications*

ISO 7858-2, *Measurement of water flow in closed conduits -- Combination meters for cold potable water -- Part 2: Installation requirements*

3 Terms and definitions

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

3.1
conditioning of water intended for human consumption
modification of the characteristics of drinking water for a special purpose within the limits stipulated in the Directive 98/83/EEC, adopted in national legislation of the Member States

3.2
anode
electrode connected to the positive (+) output from the direct current generator

3.3
anode lifetime
time interval between replacements of the aluminium anodes

3.4
cathode
electrode connected to the negative (-) output from the direct current generator

3.5
direct current generator
device which supplies low voltage direct current to the anodic dissolution of the aluminium anodes

3.6
hydrated aluminium oxide
dosing agent first reaction product, which is formed by the dissolution of the aluminium anodes as a function of the Direct Current with water

3.7
conditioning tank
vessel in which the anodic dissolution of the aluminium anodes occurs. It is located in the main hot water line after re-heating, in front of the distribution network which is to be protected

3.8
conditioning time
residence time of the conditioning tank. It is the volume of the conditioning tank divided by the cumulative flow rate of water

4 Materials design and requirements

4.1 Dosage of hydrated aluminium oxide

The reaction products of the aluminium anodes shall not give rise to concentrations beyond the limit in accordance with the National and European regulations concerning the quality of water intended for human consumption (e.g. EC. Directive 98/83/EEC) (see 4.4).

The maximum aluminium concentration (expressed as Al) shall not exceed 0,2 mg/l in cold water and 0,5 mg/l in heated water (see 4.2).

4.2 Direct current generator

The electrical apparatus, connections and mountings on site shall be in accordance with EN 60335-1. The Direct Current Generator with its connections to anodes, cathodes and other appliances shall be in accordance with EN 55011.

The DC output shall be controlled as a function of the water consumption.

The current shall be limited to ensure that the amount of dissolved aluminium concentration does not exceed the permitted value of the national regulations.

There shall be visual indication of the operating status of the DC generator.

The DC generator shall be designed to allow the summation of the necessary current demand for each treated water circuit.

4.3 Water meter

An impulse water meter (or impulse flow meter or inductive flow rate meter) in accordance with ISO 7858 (parts 1 and 2) shall be installed in-line in the cold water inlet in front of the conditioning tank to regulate the direct current, in accordance with variation in water flow.

Alternatively a water meter to measure the total consumption of the water conditioned and a flowmeter to give information to the DC generator shall be installed.

4.4 Anodes

The aluminium quality, which is used to manufacture the anodes shall be approved for contact with foodstuff according to EN 573-3 and EN 602.

4.5 Conditioning tank

4.5.1 Volume

The volume of the conditioning tank shall be sufficient to allow a conditioning time of at least 15 min.

4.5.2 Access

The tank shall be fitted with an access for maintenance applying Table 3 (class A) and Table 4 (class B) of prEN 12897.

4.5.3 Cathodic protection

If a complementary cathodic protection is necessary then the requirements of EN 12499 shall be observed.

4.5.4 Aeration and air release

The tank shall be fitted with an automatic corrosion resistant aeration and air release valve to conform to EN 12499.

4.5.5 Sludge drain

A ball valve shall be fitted at the lowest point of the conditioning tank. Its diameter shall be equal to the diameter of the water inlet but no more than DN 50 even if the water inlet diameter is larger. For a vertical tank, the sludge drain outlet shall be welded to the centre of the tank bottom. For a horizontal tank, the sludge drain fitting shall be welded to the bottom of the opposite side of the water inlet.

4.5.6 Heating coil

If there is a heating coil in the conditioning tank, the tubes must be widely spaced to avoid accumulation of sludge and scale. The tubes shall be positioned on a square centre configuration.

4.5.7 Back-flow protection

The tank shall be protected against back-flow of sludge into the supply system in accordance with EN 1717.