

# SVENSK STANDARD

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### **Vattenförsörjning – Invändig utrustning – Justerbara kemikaliedoseringsystem – Krav på prestanda, säkerhet och provning**

### **Water conditioning equipment inside buildings – Adjustable chemical dosing systems – Requirements for performance, safety and testing**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 15848**

February 2010

ICS 13.060.20; 91.140.60

English Version

## Water conditioning equipment inside buildings - Adjustable chemical dosing systems - Requirements for performance, safety and testing

Appareils de traitement d'eau à l'intérieur des bâtiments -  
Systèmes de dosage chimique ajustables - Exigences de  
performance, de sécurité et essais

Anlagen zur Behandlung von Trinkwasser innerhalb von  
Gebäuden - Einstellbare Dosiersysteme - Anforderungen  
an Ausführung, Sicherheit und Prüfung

This European Standard was approved by CEN on 9 January 2010.

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## Foreword

This document (EN 15848:2010) 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of an identical text or by endorsement, at the latest by August 2010, and conflicting national standards shall be withdrawn at the latest by August 2010.

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.

**NOTE** Products intended for use in water supply systems should comply, when existing, with national regulations and testing arrangements that ensure fitness for contact with drinking water.

On April 2006, EC Commission set up a revised mandate (M/136) asking CEN to propose harmonised product standards and support standards for test methods which could be used for assessing the fitness for contact with drinking water. In parallel, EC Commission has launched processes for a regulation of construction products (CPR) to be substituted to CP directive (89/106/EC) and for the revision of drinking water directive (98/83/EC).

If relevant, when the outputs of these processes are known, European product standards will be amended by the addition of an Annex Z under Mandate M136 which will contain formal references to the applicable requirements. Until such amendments, the current national regulations remain applicable.

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, Croatia, 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.

## 1 Scope

This European Standard specifies definitions, principles of construction (but not dimensions) and design, requirements on performance and operation as well as methods for testing the performance of adjustable chemical dosing systems for conditioning water intended for human consumption inside buildings (see [1]) which are permanently connected to the mains supply.

The concentration in the treated water of the active chemical(s) as well as of any other ingredient or minor component (including possible contaminants) should not exceed the parametric values laid down in the existing legislation in the Member States for the water intended for the human consumption, as implemented by the national authorities.

## 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 55011, *Industrial, scientific and medical (ISM) radio-frequency equipment — Electromagnetic disturbance characteristics — Limits and methods of measurement (CISPR 11:2003 + A1:2004, modified)*

EN 60204-1, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005, modified)*

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

EN 60335-2-41, *Household and similar electrical appliances — Safety — Part 2-41: Particular requirements for pumps (IEC 60335-2-41:2002)*

EN ISO 12100-1, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*

## 3 Terms and definitions

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

### 3.1

#### **adjustable dosing system**

device used for the controlled addition of chemicals in concentrations that can be adjusted on the installation site

### 3.2

#### **working range**

range of treated water flow rates between which the dosing system provides the required accuracy of concentration of the chemicals within limits of concentration and pressure drop prescribed by the manufacturer.

NOTE The working range covers the range between the upper and lower working limits.

### 3.3

#### **dosing agent**

active chemical substance for conditioning water intended for human consumption



## **4 Design requirements**

### **4.1 General**

The dosing system shall function to maintain a specific concentration of the chemical in the treated water.

### **4.2 Dosing system components**

A dosing system comprises the following elements:

- a) storage tank or chemical container which contains the chemical as a liquid that will be dosed into the water pipe;
- b) suction device which comprises a suction hose and a foot valve;
- c) low level detection avoiding the pump to work when storage is empty;
- d) dosing pump that pumps the chemical as a liquid from the storage tank or container and doses it into the main water flow;
- e) overpressure valve as safety apparatus to avoid overpressure in the injection device;
- f) injection device which comprises the hose between the pump and the mains, the injection valve and the backflow preventer;
- g) water meter in the main water flow which transmits a control signal to the dosing pump.

### **4.3 Materials of construction**

Parts in contact with drinking water shall comply with national regulations.

The temperature resistance of the injection system shall be specified.

### **4.4 Venting**

The dosing system shall be designed so that accumulation of air or other gases is prevented.

Compliance with this requirement shall be checked by examination of the detailed technical design documents supplied with the system.

### **4.5 Radio interference and electrical safety**

The dosing system shall conform to EN 12100-1, EN 12100-2, EN 55011, EN 60204-1, EN 60335-1 and EN 60335-2-41, following the provisions of Directive 89/336/EEC [2] and Directive 73/23/EEC [3].

### **4.6 Accessibility**

All parts which have to be accessed for replenishing of the dosing agent and for operation or servicing shall be easily accessible.

### **4.7 Nominal size**

If the dosing pump is controlled by signals from a water meter, the nominal size of its connection shall correspond to the flow rates given in Table 1. The inlet connection size of the water meter may be one size larger or smaller than the nominal size. For flange connections, the inlet flange shall conform to the nominal size.

**Table 1 — Upper limit flow rate values**

Nominal size DN of water meter		15	20	25	32	40	50	65	80	100
Upper limit of flow rate	l/s	0,35	0,63	1,0	1,6	2,53	3,89	6,67	10	15,56
	m <sup>3</sup> /h	1,27	2,27	3,6	5,8	9,1	14	24	36	56
NOTE These flow rates correspond to a velocity of approximately 2 m/s.										

#### 4.8 Manual mode

The dosing system shall have an indication when a manual mode is activated, for example, for maintenance.

### 5 Performance requirements

#### 5.1 Chemicals

The documentation shall define which chemicals are compatible with the dosing system and at which maximum concentration.

All the dosed chemicals shall conform to the relevant European Standards.

#### 5.2 Dosing system components

##### 5.2.1 Storage tank or chemical container

Materials selected for the manufacture of the dosing tank shall protect the contents against contamination or degradation by corrosion, light, dust, particles or any external pollutant. The design of the connection between the dosing tank and the dosing pump shall exclude any

- accidental contamination of the contents during either normal operation or chemical replacement;
- leakage of the chemical to the external environment of the system.

The normal working capacity of the chemical storage tank or container shall not exceed three months based on the minimum dosing rate for the designated chemical.

##### 5.2.2 Suction device

The suction device shall have a backflow preventer.

##### 5.2.3 Low level detection

The low level detection shall as a minimum stop the pump when the storage is empty.

##### 5.2.4 Dosing pump

The manufacturer shall specify the dosing pump operating characteristics (maximum volume per stroke at maximum and medium specified operating pressure), all of which shall be tested separately. Measurements shall be carried out in accordance with to 6.2. Parameters are given in Table 2.

**Table 2 — Test parameters**

<b>Stroke length of dosing pump</b> (%)	30	60	100
<b>Operating pressure</b> (MPa)	Maximum specified operating pressure		
	Medium specified operating pressure		

### 5.2.5 Overpressure valve

Overpressure valves are meant to avoid damage of the connection between the pump and the injecting point, if applicable.

### 5.2.6 Injection device

Injection devices shall be designed such that backflow of drinking water into the storage tank or chemical container is prevented.

### 5.2.7 Water meter

Water meters shall comply with the relevant European Standards.

## 5.3 Protection against overdosing

Dosing systems shall be designed so that overdosing due to siphonic action or gravity flow into the drinking water supply cannot occur under any operating conditions.

It shall be made sure with suitable techniques that setting parameters cannot be changed unauthorised or mistakenly, or be exceeded.

## 5.4 Working temperature range

The maximum temperature shall be at least 30 °C for the water and the ambient air, in which the dosing system including accessories and fittings shall operate correctly.

## 5.5 Pressure conditions

### 5.5.1 Nominal pressure and working pressure range

The manufacturer shall specify the minimum and maximum working pressures between which the dosing system including accessories and fittings will operate correctly at the maximum permissible water and ambient temperatures.

Testing shall be carried out in accordance with 6.3.

### 5.5.2 Effects of pressure on dosing

Water pressure variations may influence the dosing rate. The manufacturer's instructions shall specify any additional equipment which may be necessary to correct for any such pressure variations.