SLOVENSKI STANDARD

SIST ENV 852:2002

01-junij-2002

Cevni sistemi iz polimernih materialov za transport pitne vode - Vrednotenje migracije - Navodilo za razlago laboratorijsko pridobljenih migracijskih vrednosti

Plastics piping systems for the transport of water intended for human consumption - Migration assessment - Guidance on the interpretation of laboratory derived migration values

Kunststoff-Rohrleitungssysteme für den Transport von Wasser für den menschlichen Verzehr - Bewertung der Migration - Anleitung für die Beurteilung von aus Laborversuchen abgeleiteten Migrationswerten

Systemes de canalisations plastiques pour le transport d'eau destinée a la consommation humaine - Evaluation de la migration - Guide d'interprétation des valeurs de migration déterminées en laboratoire

Ta slovenski standard je istoveten z: **ENV 852:2001**

ICS:

13.060.20	Pitna voda	Drinking water
23.040.20	Cevi iz polimernih materialov	Plastics pipes

SIST ENV 852:2002 **en**

EUROPEAN PRESTANDARD

PRÉNORME EUROPÉENNE

EUROPÄISCHE VORNORM

ENV 852

August 2001

ICS 67.250; 83.140.30

English version

Plastics piping systems for the transport of water intended for human consumption - Migration assessment - Guidance on the interpretation of laboratory derived migration values

Kunststoff-Rohrleitungssysteme für den Transport von Wasser für den menschlichen Verzehr - Bewertung der Migration - Anleitung für die Beurteilung von aus Laborversuchen abgeleiteten Megrationswerten

This European Prestandard (ENV) was approved by CEN on 22 July 2001 as a prospective standard for provisional application.

The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into a European Standard.

CEN members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

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

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Ref. No. ENV 852:2001 E

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Foreword

This European Prestandard has been prepared by Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems", the secretariat of which is held by NEN

ENV 852 includes the following annexes:

Annex A, which is normative, describes alternative schedules for the migration periods.

Annex B, which is informative, describes approaches for the determination of the operational factor.

Annex C, which is informative, describes an example of the determination of a conversion factor, *F*, for pipes, fittings and joints.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This document was prepared initially by CEN/TC 155/WG 2 as a standard to complement EN 852-1 (which later became EN ISO 8795). Because of various developments relating to the regulatory content, it is not now the intention to issue it as a standard. However, it is proposed to produce it as an ENV. The main objective of this is to make the information available as quickly as possible to interested groups, particularly those involved in designing the regulatory framework of harmonised standards, such as the European Acceptance Scheme (EAS).

EN ISO 8795 provides instructions on how to produce a migration liquid and how to calculate a migration value (M) after analysis of a migrating substance. However, EN ISO 8795 does not give information on :

1) number of successive migration periods to be carried out;
2) how to interpret M values calculated from successive migration periods;
3) a method for converting the calculated *M* values into values that reflect field use conditions;
4) acceptance criteria for the duplicate *M* values obtained by testing in accordance with EN ISO 8795.

This information is included in this document (ENV 852). In the case of the conversion of *M* values (point 3), two factors have been considered:

a) a geometrical factor F_g , which is a property of the product;

b) an operational factor F_o, which is calculated from the residence time of the water in contact with the product. The values of F_o quoted in this document are based on certain assumptions and/or risk analysis. These are explained in the document.

1 Scope

This Prestandard is applicable to plastics pipes, joints and fittings to be used for the transport of water intended for human consumption and raw water used for the manufacture of water intended for human consumption.

It gives guidance on:

1) number of successive migration periods to be carried out;
2) how to interpret M values calculated from successive migration periods;
3) a method for converting M values into values that reflect field use conditions;
4) acceptance criteria for the duplicate M values obtained by testing in accordance with EN ISO 8795.

2 Normative references

This European Prestandard 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 Prestandard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN ISO 8795 *Plastics piping systems for the transport of water intended for human consumption — Migration assessment — Determination of migration values of plastics pipes and fittings and their joints (ISO 8795:2001)*

3 Terms, definitions and symbols

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

3.1 Terms and definitions

3.1.1 Terms and definitions related to acceptance limits

3.1.1.1
concentration acceptance limit (C_{al})
concentration of a constituent which shall not be exceeded

It is expressed in milligrams per litre (mg/l).

NOTE The limit is specified elsewhere, e.g. in national regulations.

3.1.1.2
migration acceptance limit (M_{al})
migration value for a constituent, which shall not be exceeded

It is expressed in milligrams per square decimetres per 24 h [mg/(dm^2 × 24 h)].

NOTE The value is either specified elsewhere e.g. in national regulations or calculated from a concentration acceptance limit C_{al} (see 3.1.1.1) and a conversion factor F (see 3.1.3.1)

3.1.2 Terms and definitions related to categorisation of pipe lines

3.1.2.1
domestic pipe line
pipe line between the service pipe line (see 3.1.2.2) and the tap. It is assumed to have a nominal size in the range 12 to 25 inclusive

3.1.2.2
service pipe line
pipe line between the distribution pipe line (see 3.1.2.3) and the domestic pipe line (see 3.1.2.1). It is assumed to have a nominal size in the range 32 and 90 inclusive

3.1.2.3
distribution pipe line
pipe line between a trunk main (see 3.1.2.4) and several service pipe lines (see 3.1.2.2). It is assumed to have a nominal size in the range 100 to 280 inclusive

3.1.2.4
trunk main
pipe line which transports water from the water works to the distribution pipe line (see 3.1.2.3). It is assumed to have a nominal size of 300 and larger

3.1.3 Terms and definitions related to conversion factors

3.1.3.1
conversion factor (*F*)
factor used to convert an experimentally derived migration value $\overline{M}^{T}_{24;n}$ (see 3.2) to $C_{f;n}$ (see 3.1.3.2)

It is expressed in days and decimetres to power minus one (day/dm).

3.1.3.2
field concentration ($C_{f;n}$)
calculated concentration of a particular constituent under assumed conditions of field use for migration period *n*

It is expressed in milligrams per litre (mg/l).

3.1.3.3
geometrical factor (F_g)
relationship between the surface area of a component of a pipe line in contact with the water and the volume of the water contained by that component (see 5.2.1)

It is expressed in decimetres to the power minus one (dm^{-1}).

3.1.3.4
operational factor (F_o)
time the water is assumed to be in contact with the component in practice (see 5.2.3)

It is expressed in days.

3.1.4 Terms and definitions related to products

3.1.4.1
fitting
component, other than a pipe which is used in a pipe line (e.g. bends, tees, end caps, valves)

3.1.4.2
joint
connection between the ends of two components, which includes the method of sealing

3.1.4.3
nominal size (DN)
numerical designation of the size of the pipe, fitting or joint, which is whole number approximately equal to the actual dimensions in millimetres (mm) as specified in the relevant System Standard

3.1.5
water
water intended for human consumption or raw water used for the manufacture of water intended for human consumption

3.2 Symbols

n : The sequence number of the migration period (see clause 5);

$M_{24;n}^{T}$: Migration value *M* at the temperature *T* in degrees Celsius, for the migration time 24 h and the migration period *n*. It is expressed in milligrams per square decimetres per 24 h [mg/(dm^2 × 24 h)];

$\overline{M}_{24;n}^{T}$: The arithmetic mean value of the results of the duplicate test pieces $M_{24;n}^{T}$.

4 Principle

A maximum of ten migrations is specified.

For assessment purposes the first three and the last three migrations are used.

A procedure for the interpretation of successive migrations is provided.

Procedures are given for the conversion of laboratory derived migration values to values based on assumed conditions of field use. These values can be compared with either a concentration acceptance limit or with a migration acceptance limit.

5 Field use

5.1 General

The concentration $C_{f;n}$ shall be calculated using equation (1):

$$C_{f,n} = F \times \overline{M}_{24;n}^{T} \quad (1)$$

where:

$C_{f;n}$ is the calculated concentration of a particular constituent under assumed conditions of field use in milligrams per litre for migration period n;

F is the conversion factor in decimetres power minus one and days;

$\overline{M}_{24;n}^{T}$ is the arithmetic mean $M_{24;n}^{T}$ values in milligrams per square decimetre per 24 h (day), obtained by application of the relevant test methods and the assessment in accordance with 6.2.2.

5.2 Factors

5.2.1 Conversion factor

The conversion factor *F* shall be calculated using equation (2):

$$F = F_g \times F_o \quad (2)$$

where:

F is the conversion factor (see 3.1.3.1);

F_g is the geometrical factor (see 3.1.3.3);

F_o is the operational factor (see 3.1.3.4).

5.2.2 Geometrical factor

The geometrical factor F_g is defined by equation (3):

$$F_g = \frac{S}{V} \quad (3)$$