

**Vattenförsörjning – Materials påverkan på
dricksvatten – Färg och grumlighet –
Del 1: Provningsmetod**

**Influence of materials on water intended for
human consumption – Organic materials –
Determination of colour and turbidity of water
in piping systems –
Part 1: Test method**

Europastandarden EN 13052-1:2001 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 13052-1:2001.

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**Influence of materials on water intended for human consumption
- Organic materials - Determination of colour and turbidity of
water in piping systems - Part 1: Test method**

Influence des matériaux sur l'eau destinée à la
consommation humaine - Matériaux organiques -
Evaluation de la couleur et de la turbidité de l'eau dans les
réseaux de conduites - Partie 1: Méthode d'essai

Einfluss von Werkstoffen auf Wasser für den menschlichen
Gebrauch - Organische Werkstoffe - Bestimmung von
Färbung und Trübung von Wasser in
Rohrleitungssystemen - Teil 1: Prüfverfahren

This European Standard was approved by CEN on 17 August 2001.

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 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 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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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

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EN 13052-1:2001 (E)

Foreword

This European Standard 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 2002, and conflicting national standards shall be withdrawn at the latest by March 2002.

This European Standard has been prepared by CEN/TC 164 "Water supply" in co-operation with CEN/TC 155 "Plastics piping systems and ducting systems" and consists of two parts:

Part 1: Test method;

Part 2: Interpretation of laboratory values relative to field-use conditions.

This standard is part 1. It contains the two following annexes.

Annex A, which is informative, describes an arrangement for flushing large diameter pipes.

Annex B, which is informative, summarizes schematically the relationship between the various stages of the document.

The material- dependent parameters and/or performance requirements are incorporated into the Product Standards, for example the System Standards for plastics piping systems.

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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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 materials, it is recalled to mind that, while awaiting the adoption of verifiable European acceptance criteria, such as proposed in a future *European Acceptance Scheme*, national regulations remain in force.

EN 13052-1:2001 (E)

1 Scope

This standard specifies a method for determining the colour and turbidity of test waters after their contact with the organic materials used in piping systems. The term 'products' comprises pipes, fittings, ancillaries including their coatings and joints.

The test method described in this standard is applicable to products to be used under various conditions for the transport of water intended for human consumption and raw water used for the manufacture of water intended for human consumption. Coatings or protective layers on products which are not intended to be in contact with these types of water are not covered by this method.

This standard specifies the test method comprising a set of procedures with and without a disinfection pretreatment and possible temperatures for the test waters. The use of the disinfection pretreatment and the choice of the test temperature are dependant on the relevant national regulations and/or the system or product standards.

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 ISO 7027:1999, *Water quality - Determination of turbidity (ISO 7027:1999)*.

EN ISO 7393-2:2000, *Water quality – Determination of free chlorine and totalchlorine - Part 2: Colorimetric method using N, N-diethyl-1, 4-phenylenediamine for routine control purposes (ISO 7393-2:1985)*.

EN ISO 7887:1994, *Water quality - Examination and determination of colour (ISO 7887:1994)*.

3 Terms and definitions

For the purpose of this standard the following terms and definitions apply:

3.1

colour

optical property that causes the changing of the spectral composition of transmitted visible light measured at three wavelengths (see clause 3 of EN ISO 7887:1994)

3.2

turbidity

reduction of transparency of a liquid caused by the presence of undissolved matter (see clause 3 of EN ISO 7027:1999 as a source of this definition)

3.3

reference water

water complying with the following requirements without and with addition of 1 mg/l chlorine

- for colour : spectral absorption coefficient less than $0,1 \text{ m}^{-1}$;

- for turbidity : FNU < 0,1

3.4

test waters

water used for testing purposes as described in 5.2.2 and 5.2.3

3.5

migration water

test water (see 3.4) which has been in contact with a test piece under specified conditions

3.6

blank water

test water (see 3.4) which has been kept at the same specified conditions as migration water but without contact with the test piece(s)

3.7

flushing water

tapwater distributed by a public supplier

3.8

disinfection treatment water

water containing chlorine as described in 5.1.2

3.9

fitting, ancillary

complete functional unit made up of one or more components and materials, parts of which are in contact with drinking water, e.g. taps, valves, water filters

3.10

product

a manufactured item, in its finished form

3.11

sample

one or more units, or specified quantity, drawn from a batch or lot, selected at random for inspection, e.g. in a laboratory

3.12

specimen

a single sample of a product, to be prepared to obtain a single test result

3.13

test piece

the specimen or portion which is conditioned, treated or otherwise prepared to be tested to obtain a single test result

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4 Principle

Following a defined pretreatment procedure of flushing, stagnation with or without disinfection and then prewashing, the surface of the test pieces, exposed in practice to drinking water, is brought into contact with test waters.

The migration procedure is carried out three times on the same test piece under specified conditions as follows :

Test pieces are put in contact with chlorinated and unchlorinated waters for 72 h at 23 °C, or put in contact with unchlorinated water for 24 h at specified temperature in the range 60 °C to 85 °C.

After this contact, the migration water is assessed for colour and turbidity.

Additional information is given in the relevant product standard, system standards or in a future European Acceptance Scheme concerning:

- the temperature to be used in the test,
- the need for a disinfection pretreatment,
- the need to carry out a 23 °C test, using chlorinated water, for products being tested at elevated temperatures.

5 Reagents

5.1 Disinfection reagents

5.1.1 Sodium hypochlorite solution, prepared from a commercial solution of sodium hypochlorite (NaOCl) and having a known concentration of about 0,1 % by mass of free chlorine determined in accordance with EN ISO 7393-2:2000.

This sodium hypochlorite solution is unstable and shall be prepared on the day of use.

5.1.2 Disinfection treatment water, shall consist of a batch of reference water (see 5.3.3) with a free chlorine content of (50 ± 5) mg/l as Cl₂ after addition of sodium hypochlorite solution (see 5.1.1).

5.2 Waters to be used for testing

5.2.1 Reference water shall be without colour and turbidity.

5.2.2 Test water without chlorine content, shall consist of a batch of reference water (see 5.3.3) used for contact with test piece(s) and preparation of the blank water.

5.2.3 Test water with chlorine content, shall consist of a batch of reference water (see 5.3.3) with a free chlorine content of $(1 \pm 0,2)$ mg/l after addition of sodium hypochlorite solution (see 5.1).

5.3 Cleaning liquids for apparatus

- biodegradable detergent;

- hydrochloric acid, 2 mol/l (analytical grade) ;
- nitric acid, 10 % or 1,5 mol/l (analytical grade);
- hydrogen peroxide, 3 % vol/vol (analytical grade).

6 Apparatus

6.1 Apparatus for migration assessment

The following equipment shall be used:

6.1.1 Vessels, containers, connectors and stoppers, made of materials which do not affect the colour and turbidity assessment under the specified test conditions, such as glass, polytetrafluorethylene (PTFE) or stainless steel.

NOTE The material PTFE should only be used when there is a small contact area with the test water. Thus PTFE is unsuitable for containers.

6.1.2 Equipment, capable of maintaining the test temperature within ± 2 °C, for the duration of the test.

6.2 Apparatus for colour and turbidity assessment

The following apparatus shall be used:

6.2.1 Apparatus for colour analysis complying with the requirements of EN ISO 7887:1994, clause 3.5.

6.2.2 Apparatus for turbidity analysis complying with the requirements of EN ISO 7027:1999, 6.3.

7 Samples of product and test pieces

7.1 General

7.1.1 Sampling of products shall be performed in accordance with the relevant product standard, system standard or the national regulations when applicable.

7.1.2 If it is necessary to store samples before testing, they shall be protected from contamination. If the manufacturer provides written storage instructions they shall be followed.

The samples shall be stored in their original form as delivered.

Where appropriate, storage containers shall be cleaned using the same procedures as are used for the test containers.

7.1.3 The test pieces shall be prepared such that only the surface intended to come into contact with drinking water is exposed to the test waters (see 5.2.1 and 5.2.2). Where the composition of the test piece is homogeneous, it is acceptable to immerse the whole test piece in the test water.