ILNAS

Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN 14944-1:2023

Influence of cementitious products on water intended for human consumption - Test methods - Part 1: Influence of factory made

Influence des produits à base de ciment sur l'eau destinée à la consommation humaine - Méthodes d'essai - Partie 1 : Influence des produits à base de ciment

Einfluss von zementgebundenen Produkten auf Wasser für den menschlichen Gebrauch - Prüfverfahren - Teil 1: Einfluss fabrikmäßig hergestellter

10/2023

National Foreword

This European Standard EN 14944-1:2023 was adopted as Luxembourgish Standard ILNAS-EN 14944-1:2023.

Every interested party, which is member of an organization based in Luxembourg, can participate for FREE in the development of Luxembourgish (ILNAS), European (CEN, CENELEC) and International (ISO, IEC) standards:

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EUROPEAN STANDARD EN 14944-1

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English Version

Influence of cementitious products on water intended for human consumption - Test methods - Part 1: Influence of factory made cementitious products on organoleptic parameters

Influence des produits à base de ciment sur l'eau destinée à la consommation humaine - Méthode d'essai - Partie 1: Influence des produits à base de ciment fabriqués en usine sur les paramètres organoleptiques

Einfluss von zementgebundenen Produkten auf Wasser für den menschlichen Gebrauch - Prüfverfahren - Teil 1: Einfluss fabrikmäßig hergestellter zementgebundener Produkte auf organoleptische Parameter

This European Standard was approved by CEN on 2 July 2023.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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European foreword

This document (EN 14944-1:2023) 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 April 2024, and conflicting national standards shall be withdrawn at the latest by April 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14944-1:2006.

In comparison with EN 14944-1:2006, the following changes have been made:

— provisions for testing the influence of materials on the migration of organic substances (TOC) have been added;

— the test method for TON /TFN according to EN 1622 has been specified according to the revised EN 1420;

— requirements for disinfection (preconditioning with 50 mg/L chlorine) have been removed;

— a procedure for extending the number of migration periods has been included.

This document describes a test method to determine the influence(s) of factory-made cement based products on organoleptic parameters and the migration of organic substances (TOC) in water intended for human consumption.

This document will result in one of a series of standards that support standards for the approval of products and materials in contact with water intended for human consumption.

This document is part of a series dealing with the influence of cement based and associated non-cement based products/materials on water intended for human consumption, including:

— *Part 1: Influence of factory-made cement based products on organoleptic parameters and migration of organic substances (TOC)*

— *Part 2: Influence of site-applied cement based materials and associated non-cement based products/materials on organoleptic parameters and migration of organic substances (TOC)*

— *Part 3: Migration of substances from factory-made cement based products*

— *Part 4: Migration of substances from site-applied cement based materials and associated non-cement based products/materials*

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

1 Scope

This document specifies a method to determine the influence of factory-made cement based products on the odour, flavour, colour, turbidity and total organic carbon (TOC) of test waters after contact with the products.

This document is applicable to factory-made cement based products, e.g. cement mortar linings to metallic pipes, tanks, concrete pipes, etc. intended to be used for the transport and storage of water for human consumption, including raw water used for the production of drinking water.

NOTE Tests with the specified test water will not necessarily be representative of materials used in different kinds of waters and especially very soft waters.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 196-1, *Methods of testing cement - Part 1: Determination of strength*

EN 1420:2016, *Influence of organic materials on water intended for human consumption - Determination of odour and flavour assessment of water in piping systems*

EN 1484, *Water analysis - Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC)*

EN 1622:2006, *Water quality - Determination of the threshold odour number (TON) and threshold flavour number (TFN)*

EN 1015-2, *Methods of test for mortar for masonry - Part 2: Bulk sampling of mortars and preparation of test mortars*

EN 1015-11, *Methods of test for mortar for masonry - Part 11: Determination of flexural and compressive strength of hardened mortar*

EN 10088-1:2014, *Stainless steels - Part 1: List of stainless steels*

EN 12350-1, *Testing fresh concrete - Part 1: Sampling and common apparatus*

EN 12390-1, *Testing hardened concrete - Part 1: Shape, dimensions and other requirements for specimens and moulds*

EN 12390-2, *Testing hardened concrete - Part 2: Making and curing specimens for strength tests*

EN 27888, *Water quality - Determination of electrical conductivity (ISO 7888)*

EN ISO 3696:1995, *Water for analytical laboratory use - Specification and test methods (ISO 3696:1987)*

EN ISO 7027-1:2016, *Water quality - Determination of turbidity - Part 1: Quantitative methods (ISO 7027-1:2016)*

EN ISO 7393-1, *Water quality - Determination of free chlorine and total chlorine - Part 1: Titrimetric method using N, N-diethyl-1,4-phenylenediamine (ISO 7393-1)*

EN ISO 7393-2, *Water quality - Determination of free chlorine and total chlorine - Part 2: Colorimetric method using N,N-dialkyl-1,4-phenylenediamine, for routine control purposes (ISO 7393-2)*

EN ISO 7887:2011, *Water quality - Examination and determination of colour (ISO 7887:2011)*

EN ISO 9963-2, *Water quality - Determination of alkalinity - Part 2: Determination of carbonate alkalinity (ISO 9963-2)*

EN ISO 16264, *Water quality - Determination of soluble silicates by flow analysis (FIA and CFA) and photometric detection (ISO 16264)*

ISO 6058, *Water quality — Determination of calcium content — EDTA titrimetric method*

EN ISO 10523, *Water quality - Determination of pH (ISO 10523)*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp/

— IEC Electropedia: available at https://www.electropedia.org/

3.1
appropriate body
certification body, inspection body or test laboratory, as relevant to a particular requirement

3.2
associated non-cement based product
product which is applied to the surface of a cement based product, directly or indirectly, during manufacture (or construction) and which either provides a porous seal to the product or which remains as a residue in contact with water, e.g. porous seal coats, formwork release agents and curing compounds

3.3
blank water
test water which has been kept at the same specified conditions as migration water but without contact with the test piece

3.4
cement based material
material that contains a hydraulic cement in sufficient proportion to act as the main binder by forming a hydrate structure which governs the performance of the material

3.5
cement based product
factory-made product containing a cement based material supplied in the hardened state with a formed surface prior to its incorporation into the construction works

3.6
colour of water
optical property that causes the changing of the spectral composition of transmitted visible light measured at three wavelengths

[SOURCE: EN ISO 7887:2011, 3.2]

3.7
demineralized water
water of which the mineral matter or salts have been removed by deionization

[SOURCE ISO 23321:2019, 3.1]

3.8
flavour
complex combination of the olfactory, gustatory, and trigeminal sensations perceived during tasting

Note 1 to entry: The flavour may be influenced by tactile, thermal, painful and/or kinaesthetic effects.

[SOURCE: ISO 5492:2008, 3.20[2]]

3.9
fresh concrete
concrete that is fully mixed and still in a condition capable of being compacted by the chosen method

3.10
fresh mortar
cement mortar that is fully mixed and still in a condition of being applied by the chosen method

3.11
migration water
test water which has been in contact with a test piece under specified conditions

[SOURCE: EN 1622:2006, 3.13]

3.12
nominal diameter
DN/ID
DN/OD
numerical designation of the size of a component, which is a whole number approximately equal to the actual dimensions in millimetres

Note 1 to entry: This applies to either the internal diameter (DN/ID) or the external diameter (DN/OD).

3.13
odour
sensation perceived by means of the olfactory organ in sniffing certain volatile substances

[SOURCE: ISO 5492:2008, 3.18]