
Vpliv kovinskih materialov na pripravo pitne vode - Dinamično preskuševališče za ocenjevanje izločanja kovin - 1. del: Načrtovanje in delovanje

Influence of metallic materials on water intended for human consumption - Dynamic rig test for assessment of metal release - Part 1: Design and operation

Einfluss metallischer Werkstoffe auf Wasser für den menschlichen Gebrauch - Dynamischer Prüfstandversuch für die Beurteilung der Abgabe von Metallen - Teil 1: Auslegung und Betrieb

Influence des matériaux métalliques sur l'eau destinée à la consommation humaine - Banc d'essai dynamique pour l'évaluation du relargage de métaux - Partie 1 : Conception et fonctionnement

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Contents

European foreword.....	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	7
4 Principle	9
5 Test rig	9
5.1 General.....	9
5.2 Test rig arrangement.....	10
5.3 Control line.....	10
5.4 Test lines	10
5.4.1 General.....	10
5.4.2 Materials in the form of pipes.....	10
5.4.3 Materials in the form of test pieces	10
6 Operating conditions	11
6.1 General.....	11
6.2 Conditioning.....	11
6.3 Fractional Sampling	11
6.3.1 General.....	11
6.3.2 Calculation and expression of results for fractional sampling.....	11
6.3.3 Requirements for the hydraulic function of the test rig	13
6.3.4 Determination of sampling volumes.....	13
6.4 Normal operation of the test rig	14
7 Test water	14
7.1 Composition	14
7.2 Check of test water.....	14
8 Sampling.....	15
8.1 General.....	15
8.2 Test water sampling.....	15
8.3 Sampling to determine metal release.....	15
8.4 Sampling volumes	16
8.4.1 General.....	16
8.4.2 Test lines with test pieces	16
8.4.3 Test pipes	16
9 Analysis.....	16
10 Expression of results.....	16
10.1 Metal concentrations after fixed stagnation time	16
10.2 Equivalent pipe concentration	16
10.3 Mean concentration after a given operating time	17
10.4 Presentation of the test results	17
11 Test report.....	18
Annex A (normative) Test rig components and assembly.....	20

A.1	Test rig.....	20
A.2	Test piece.....	23
A.3	Connecting piece	23
Annex B (normative)	Test rig flow regime	25
B.1	Test rig flow regime and sampling plan (24 h cycle).....	25
B.2	Test rig flow regime and sampling plan for 16 h stagnation time	26
Annex C (normative)	Test water monitoring and analysis - Data on test water composition	27
Annex D (informative)	Example of graphs for expression of results.....	29

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EN 15664-1:2026 (E)

European foreword

This document (EN 15664-1:2026) 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 October 2026, and conflicting national standards shall be withdrawn at the latest by October 2026.

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 15664-1:2008+A1:2013.

This document is one of a series of test methods which support associated product standards.

This document is Part 1 of a series dealing with the test method to determine the release of metals from metallic products into drinking water comprising:

— Part 1: Design and operation

— Part 2: Test waters

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.

Introduction

The main application of metallic materials in water supply is within the domestic installation. The test method given in this standard is designed to provide information on metal release over time from metallic materials into drinking water.

The test is based on a programme of alternating periods of once-through flow and stagnation in a rig, simulating the conditions in a domestic distribution system.

The test conditions are more relevant than conditions of continuous through-flow or sit and soak tests and are applicable to all metallic materials in distribution systems.

Internal corrosion of metallic products in water conveying systems generally leads to the build-up of layers, which might or might not be protective. The factors influencing corrosion are described in EN 12502-1. Type and rate of the production of corrosion products and the rate of metal release can depend on:

- characteristics of the metallic material;
- characteristics of the water;
- design and construction of the products and the complete system the products are installed in;
- tightness testing and commissioning of the system;
- operating conditions and duration of operation.

Corrosion product layers begin to form as soon as a metallic material comes into contact with water. Their properties depend on the factors noted above and for a given water/material combination especially on the operating conditions. It is not possible to reproduce the conditions of an actual installation in tests by constant once-through flow or circulation of water. The flow regime used in this test simulates the operating conditions in domestic drinking water installations where stagnation times of water considerably exceed the times of through-flow.

An assessment by testing is possible only if the influence of the flow regime and the operation period is taken into consideration. A compilation of data are needed which has been determined under defined conditions over a prolonged period of time. In most cases, metal release decreases with operation time. For some alloying elements and impurities, however, an increase in their release can be observed.

EN 15664-1:2026 (E)

1 Scope

This document specifies a procedure to determine the release of metals from metallic materials used in products intended to come into contact with drinking water¹.

The test can be used for three purposes:

- a) **To assess a material as a reference material for a new category** of materials by metal release testing using the results of several investigations in different waters covering a broad range of water compositions.
- b) **To assess a material for an existing category** for approval by way of metal release testing using the water defined in part 2, which exhibited the highest metal release when the reference material of the category was tested.
- c) **To obtain data on the interaction of local water with a material.**

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

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

EN 12502-1, *Protection of metallic materials against corrosion - Guidance on the assessment of corrosion likelihood in water distribution and storage systems - Part 1: General*

EN 25813, *Water quality - Determination of dissolved oxygen - Iodometric method (ISO 5813:1983)*

EN ISO 5814, *Water quality - Determination of dissolved oxygen - Electrochemical probe method (ISO 5814)*

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

EN ISO 6878, *Water quality - Determination of phosphorus - Ammonium molybdate spectrometric method (ISO 6878)*

EN ISO 8044, *Corrosion of metals and alloys - Vocabulary (ISO 8044)*

EN ISO 9963-1, *Water quality - Determination of alkalinity - Part 1: Determination of total and composite alkalinity (ISO 9963-1)*

EN ISO 10304-1, *Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1)*

¹ Water intended for human consumption is referred to as "drinking water" and means the same as the definition given at Article 2(1) of the Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the quality of water intended for human consumption. Luxembourg, Office for Official Publications of the European Communities 3 November 1998.

EN ISO 11885, *Water quality - Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (ISO 11885)*

EN 13443-1, *Water conditioning equipment inside buildings - Mechanical filters - Part 1: Particle rating 80 μm to 150 μm - Requirements for performances, safety and testing*

EN ISO 14911, *Water quality - Determination of dissolved Li^+ , Na^+ , NH_4^+ , K^+ , Mn^{2+} , Ca^{2+} , Mg^{2+} , Sr^{2+} and Ba^{2+} using ion chromatography - Method for water and waste water (ISO 14911)*

EN ISO 15586, *Water quality - Determination of trace elements using atomic absorption spectrometry with graphite furnace (ISO 15586)*

EN ISO 17294-1, *Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS) - Part 1: General requirements (ISO 17294-1)*

EN ISO 17294-2, *Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS) - Part 2: Determination of selected elements including uranium isotopes (ISO 17294-2)*

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

ISO 6059, *Water quality — Determination of the sum of calcium and magnesium — EDTA titrimetric method*

ISO 9297, *Water quality — Determination of chloride — Silver nitrate titration with chromate indicator (Mohr's method)*

ISO 9964-3, *Water quality — Determination of sodium and potassium — Part 3: Determination of sodium and potassium by flame emission spectrometry*

ISO 10523, *Water quality — Determination of pH*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 8044, EN 12502-1 and the following 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

metal release testing

test for accepting a material with restricted composition as reference material of a new category or for accepting a commercial alloy to an existing category

3.2

test rig

assembly of test lines, control lines and where necessary reference lines together with test water inlet and discharge arrangements (see Annex A, Figure A.1)

3.3

line

continuous part between a check valve and the corresponding flow regulator