



**SLOVENSKI STANDARD**  
**oSIST prEN 17332:2022**  
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**Gradbeni proizvodi - Ocenjevanje sproščanja nevarnih snovi - Analiza organskih snovi v izlužkih**

Construction products: Assessment of release of dangerous substances - Analysis of organic substances in eluates

Bauprodukte: Bewertung der Freisetzung von gefährlichen Stoffen - Analyse von organischen Stoffen in Eluaten

Produits de construction - Évaluation de l'émission de substances dangereuses - Analyse des substances organiques dans les éluats

**Ta slovenski standard je istoveten z: prEN 17332**

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**ICS:**

13.020.99	Drugi standardi v zvezi z varstvom okolja	Other standards related to environmental protection
91.100.01	Gradbeni materiali na splošno	Construction materials in general

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## Construction products: Assessment of release of dangerous substances - Analysis of organic substances in eluates

Produits de construction - Évaluation de l'émission de  
substances dangereuses - Analyse des substances  
organiques dans les éluats

Bauprodukte: Bewertung der Freisetzung von  
gefährlichen Stoffen - Analyse von organischen Stoffen  
in Eluaten

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 351.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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## European foreword

This document (prEN 17332:2022) has been prepared by Technical Committee CEN/TC 351 “Construction products - Assessment of release of dangerous substances”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede CEN/TS 17332:2019.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association.

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**prEN 17332:2022 (E)****Introduction**

This document deals with the determination of organic substances in eluates which have been obtained by leaching of construction products.

Following an extended evaluation of available methods for content and eluate analysis in construction products (CEN/TR 16045 [1]) it was concluded that eluate analysis methods are very similar to analytical methods used to determine organic substances in water. The present document is similar in structure to EN 16192 [2].

This standard is part of a modular horizontal approach and belongs to the analytical step. An overview of all modules which belong to a chain of measurement and the manner how modules are selected is given in CEN/TR 16220 [3].

In the growing amount of product and sector-oriented test methods it was recognized that many steps in test procedures are or could be used in test procedures for many products, materials and sectors. It was supposed that, by careful determination of these steps and selection of specific questions within these steps, elements of the test procedure could be described in a way that can be used for all materials and products or for all materials and products with certain specifications.

In this context a horizontal modular approach is adopted in CEN/TC 351. "Horizontal" means that the methods can be used for a wide range of materials and products with certain properties. "Modular" means that a test standard developed in this approach concerns a specific step in assessing a property and not the whole "chain of measurement" (from sampling to analyses). A beneficial feature of this approach is that "modules" can be replaced by better ones without jeopardizing the standard "chain".

The use of modular horizontal standards implies the drawing of test schemes as well. Before executing a test on a certain material or product to determine certain characteristics, it is necessary to draw up a protocol in which the adequate modules are selected and together form the basis for the entire test procedure.

This module relates to prEN 16637-1 [4], prEN 16637-2, and prEN 16637-3.

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## 1 Scope

This document specifies existing methods for the determination of specific organic substances in aqueous eluates from leaching of construction products.

The following parameters are covered: pH, electrical conductivity, biocides, bisphenol A, BTEX, dioxins and furans, DOC, epichlorohydrin, mineral oil, nonylphenols, PAH, PBDE, PCB, dioxin-like PCB, PCP, phenols and phthalates.

NOTE 1 Methods still under development or available at national level only are listed in Annex B for certain amines, AOX, and biocidal and plant protection products.

NOTE 2 Methods that have not been validated for aqueous eluates from leaching of construction products, because no suitable material was available at the time of the robustness validation, only are listed in Annex B. This applies to organotin compounds.

The methods in this document come from different fields, mainly the analysis of water, and are applicable for the eluates from construction products. They are validated for eluates of the product types listed in Annex A.

NOTE 3 Construction products include, e.g. mineral-based products, bituminous products, wood-based products, polymer-based products and metals. This document includes analytical methods for all matrices except metals.

The selection of the method to be applied is based on the product matrix and the required sensitivity.

## 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 12673, *Water quality — Gas chromatographic determination of some selected chlorophenols in water*

EN 14207, *Water quality — Determination of epichlorohydrin*

EN 15637, *Foods of plant origin — Determination of pesticide residues using LC-MS/MS following methanol extraction and clean-up using diatomaceous earth*

prEN 16637-2, *Construction products: Assessment of release of dangerous substances — Part 2: Horizontal dynamic surface leaching test*

prEN 16637-3, *Construction products: Assessment of release of dangerous substances — Part 3: Horizontal up-flow percolation test*

EN 16694, *Water quality — Determination of selected polybrominated diphenyl ether (PBDE) in whole water samples — Method using solid phase extraction (SPE) with SPE-disks combined with gas chromatography — mass spectrometry (GC-MS)*

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

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EN ISO 5667-3, *Water quality — Sampling — Part 3: Preservation and handling of water samples (ISO 5667-3)*

EN ISO 9377-2, *Water quality — Determination of hydrocarbon oil index — Part 2: Method using solvent extraction and gas chromatography (ISO 9377-2)*

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

EN ISO 14402, *Water quality — Determination of phenol index by flow analysis (FIA and CFA)(ISO 14402)*

EN ISO 15680, *Water quality — Gas-chromatographic determination of a number of monocyclic aromatic hydrocarbons, naphthalene and several chlorinated compounds using purge-and-trap and thermal desorption (ISO 15680)*

EN ISO 18856, *Water quality — Determination of selected phthalates using gas chromatography/mass spectrometry (ISO 18856)*

EN ISO 18857-2, *Water quality — Determination of selected alkylphenols — Part 2: Gas chromatographic-mass spectrometric determination of alkylphenols, their ethoxylates and bisphenol A in non-filtered samples following solid-phase extraction and derivatisation (ISO 18857-2)*

ISO 17858, *Water quality — Determination of dioxin-like polychlorinated biphenyls — Method using gas chromatography/mass spectrometry*

ISO 18073, *Water quality — Determination of tetra- to octa-chlorinated dioxins and furans — Method using isotope dilution HRGC/HRMS*

ISO 20595, *Water quality — Determination of selected highly volatile organic compounds in water — Method using gas chromatography and mass spectrometry by static headspace technique (HS-GC-MS)*

ISO 28540, *Water quality — Determination of 16 polycyclic aromatic hydrocarbons (PAH) in water — Method using gas chromatography with mass spectrometric detection (GC-MS)*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16687:2015 and the following apply.

ISO and IEC maintain terminological 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

#### **alternative method**

method calibrated against the reference test method used to determine a value of release/emission/content of substances directly correlating with the test results from the reference test method

Note 1 to entry: An alternative method can be, e.g. a modified reference test method or an indirect test method which is based on another test method. See also “indirect test”.

Note 2 to entry: In type testing reference test methods have always to be used.

[SOURCE: EN 16687:2015, 4.1.5]

### 3.2

#### **blank value**

test result obtained by carrying out the test procedure in the absence of a test portion

Note 1 to entry: A blank value is expressed in the same units as for presenting the test results as usual for that test.

[SOURCE: EN 16687:2015, 4.1.10]

### 3.3

#### **eluate**

solution obtained from a leaching test

[SOURCE: EN 16687:2015, 4.2.7]

### 3.4

#### **laboratory sample**

sample or subsample(s) sent to or received by the laboratory

[SOURCE: EN 16687:2015, 3.2.1]

### 3.5

#### **leaching test**

laboratory test for the determination of the release of matter from a construction product into water or an aqueous solution

### 3.6

#### **method detection limit**

##### **MDL**

smallest analyte concentration that can be detected with a specified analytical method including sample preparation with a defined statistical probability

[SOURCE: EN ISO 17294-1:2006, 3.12, modified – “including sample preparation” added, symbol replaced by abbreviation]

### 3.7

#### **sample**

portion of material selected from a larger quantity of material

[SOURCE: EN 16687:2015, 3.1.5]

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**prEN 17332:2022 (E)****3.8****test portion****analytical portion**

amount of the test sample taken for testing/analysis purposes, usually of known weight or volume

[SOURCE: EN 16687:2015, 3.2.3]

**3.9****test sample**

sample, prepared from the laboratory sample, from which test portions are removed for testing or analysis

[SOURCE: EN 16687:2015, 3.2.2]

**4 Abbreviations**

For the purposes of this document, the following abbreviations apply.

AED	Atomic emission detector
AOX	Adsorbable organically bound halogens
BTEX	Alkylated benzenes: sum of benzene, toluene, ethylbenzene and xylenes
CFA	Continuous flow analysis
DIBt	Deutsches Institut für Bautechnik (German Centre of Competence for Construction, <a href="http://www.dibt.de">www.dibt.de</a> )
DOC	Dissolved organic carbon
ECD	Electron capture detector
EOTA	European Organisation for Technical Assessment
FIA	Flow injection analysis
GC	Gas chromatography
HPLC	High performance liquid chromatography
	NOTE High pressure liquid chromatography is an (outdated) synonym.
LLE	Liquid-liquid extraction, also known as solvent extraction and partitioning
MS	Mass spectrometry; Mass selective detection
NP	Nonylphenol(s)
PAH	Polycyclic aromatic hydrocarbon(s)
PBDE	Polybrominated diphenyl ether(s)
PCB	Polychlorinated biphenyl(s)
PCP	Pentachlorophenol
SPE	Solid phase extraction
TOC	Total organic carbon
TR	Technical Report (ISO, CEN or EOTA)
TS	Technical Specification (ISO, CEN or EOTA)

## 5 Sample preparation

Laboratory samples for analysis are obtained according to leaching standards, such as prEN 16637-2 and prEN 16637-3, taking into account sample preservation requirements as specified in EN ISO 5667-3.

Precautions shall be taken before and during transport as well as during the time in which the samples are preserved in the laboratory before being analysed, to avoid alteration of the sample.

The eluate shall be analysed for the total content of substances of interest. If adsorption occurs between the preparation of the eluate and the analysis it is necessary to ensure by appropriate methods (e.g. redissolution) that the total content of the parameters of interest is determined. If the eluate results from a procedure including 0,45 µm membrane filtration analytical results refer to the content dissolved by the leaching process.

Eluates are susceptible to be changed to different extents as a result of physical, chemical or biological reactions which can take place between the time of leaching and the analysis. It is therefore essential to take the necessary precautions to minimize these reactions and in the case of many parameters to analyse the eluate sample with a minimum of delay. The maximum delay is given in EN ISO 5667-3 or in the respective analytical standards.

Split the eluate in an adequate number of test samples for different chemical analyses and preserve them according to the requirements in the analytical standards or EN ISO 5667-3. If required a specific test sample may be an untreated aliquot of the laboratory sample for the determination of pH and electrical conductivity.

## 6 Blank determination

The blank contribution of the applied analytical procedures shall be determined as described in the analytical standards and considered in the calculation of the results when appropriate.

## 7 Interferences

A large number of compounds can interfere with the determination of the parameters concerned. These potential interferences are listed in the individual standards in question.

Several types of interference effects can contribute to inaccuracies in the determination of the various parameters, especially at low concentrations. These potential interference effects are listed in the individual standards and shall be considered separately for each analytical technique.

Chemical interferences are characterized by molecular compound formation, ionization effects, solute vaporization, precipitation and effects of decomposition of organic matter. Addition of buffer and/or preservation methods can reduce these effects.

Physical interferences can be caused by changes of viscosity and surface tension.

## 8 Selection of the suitable test method

Select the appropriate standardized test method listed in Table 1 according to the type of construction product eluate, the concentration range of the parameter of interest and the expected interferences. General parameters like pH and electrical conductivity shall be determined using the methods described in EN ISO 10523 and EN 27888, respectively. pH shall be determined as soon as possible after preparation of the eluates and prior to sample pre-treatment. In case of collection of eluates over a long period of time, the time between completing eluate collection and pH measurement shall not exceed 18 hrs (overnight).