



# SLOVENSKI STANDARD SIST EN 16105:2023

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SIST EN 16105:2011

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**Barve in laki - Laboratorijska metoda za ugotavljanje sproščanja reguliranih nevarnih snovi iz premazov ob občasnem stiku z vodo**

Paints and varnishes - Laboratory method for determination of release of regulated dangerous substances from coatings in intermittent contact with water

Beschichtungsstoffe - Laborverfahren zur Bestimmung der Freisetzung von Substanzen aus Beschichtungen in intermittierendem Kontakt mit Wasser

Peintures et vernis - Méthode de laboratoire pour la détermination de la libération de substances dangereuses réglementées provenant de revêtements en contact avec l'eau par intermittence

**Ta slovenski standard je istoveten z: EN 16105:2023**

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87.040            Barve in laki    Paints and varnishes

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EUROPEAN STANDARD

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English Version

Paints and varnishes - Laboratory method for  
determination of release of regulated dangerous  
substances from coatings in intermittent contact with  
water

Peintures et vernis - Méthode de laboratoire pour la  
détermination de la libération de substances  
dangereuses réglementées provenant de revêtements  
en contact avec l'eau par intermittence

Beschichtungsstoffe - Laborverfahren zur Bestimmung  
der Freisetzung von Substanzen aus Beschichtungen in  
intermittierendem Kontakt mit Wasser

This European Standard was approved by CEN on 25 December 2022.

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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 16105:2023) has been prepared by Technical Committee CEN/TC 139 “Paints and Vanishes” the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by July 2023, and conflicting national standards shall be withdrawn at the latest by July 2023.

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 16105:2011.

The main changes compared to the previous edition are as follows:

- the Scope has been amended;
- in 6.3.1 tolerances have been added;
- normative references have been updated.

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.

EN 16105:2023 (E)

## Introduction

Leaching of substances from coatings into water needs to be quantified to enable an environmental risk assessment for the use of substances in coating materials. Substances can be leached from coatings, particularly by driving rain, and transferred into the environment.

iTeh STANDARD PREVIEW  
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SIST EN 16105:2023

<https://standards.iteh.ai/catalog/standards/sist/4b044273-781e-4af0-891b-3b34a873ff88/sist-en-16105-2023>

## 1 Scope

This document specifies a laboratory method to determine the leaching behaviour of substances from coatings into water over defined time intervals.

The release of substances from coatings under natural conditions cannot be determined with this method.

This method can be applied to renders, when condition (4) of the Scope of CEN/TS 16637-1 is fulfilled.

(4) It is assumed that intermittent contact with water (e.g. exposure to rainwater) is tested — by convention — as permanent contact. For some coatings, (e.g. some renders with organic binders according to EN 15824) in intermittent contact to water, physical and chemical properties might be altered in permanent contact with water. These products are not covered by the Technical Specification CEN/TS 16637-1 since the test method in CEN/TS 16637-2 is not appropriate for these construction products.

## 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 23270, *Paints and varnishes and their raw materials - Temperatures and humidities for conditioning and testing (ISO 3270)*

EN ISO 15528, *Paints, varnishes and raw materials for paints and varnishes - Sampling (ISO 15528)*

## 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

#### **substance**

single chemical element or compound, or a complex structure of compounds, that is contained in the coating and can potentially be extracted from the coating via water contact

### 3.2

#### **target substance**

substance of interest which has to be defined

Note 1 to entry: One or more target substances may be defined, which shall be quantified in the merged eluates and for which results shall be given according to Clause 6. For example, biocides can be the target substances (see Annex B).

**EN 16105:2023 (E)****3.3****biocide**

additive added to a coating material to prevent organisms responsible for microbiological degradation from attacking a substrate, a coating material or a film thereof

Note 1 to entry: A list of biocides is given in Annex I and IA of the Biocidal Products Directive 98/8/EC (Directive 98/8/EC of the European Parliament and of the Council of 16 February 1998 concerning the placing of biocidal products on the market – BPD).

[SOURCE: EN ISO 4618:2014, 2.27 modified: Note 1 to entry has been added]

**3.4****coating**

layer formed from a single or multiple application of a coating material to a substrate

Note 1 to entry: The use of the term “coating” for “coating material” is deprecated.

[SOURCE: EN ISO 4618:2014, 2.50.1]

**3.5****coating material**

product, in liquid, paste or powder form, that, when applied to a substrate, forms a layer possessing protective, decorative and/or other specific properties

[SOURCE: EN ISO 4618:2014, 2.51]

**3.6****test specimen**

body to be tested consisting of substrate with coating

**3.7****emission**

release of substances from a coating, which pass through the external surface of the coating under specific conditions into the environment

Note 1 to entry: The emission is expressed in units of released mass per surface area, i.e. milligrams per square metre.

**3.8****leaching**

release of substances from a coating, which pass through the external surface of the coating under specific conditions into water

Note 1 to entry: The leaching is expressed in units of released mass per surface area, i.e. milligrams per square metre.

**3.9****immersion**

exposure of test specimen to the leachant



### 3.10 immersion cycle

*i*

sequence consisting of 1 h immersion, 4 h drying and 1 h immersion

Note 1 to entry: *i* is the running number of immersion cycles.

### 3.11 eluate

solution obtained by one immersion

### 3.12 merged eluate

solution obtained at a specific immersion cycle, consisting of the eluates of the two immersions

### 3.13 specific emission

*E*

released mass of a target substance from a coating through the surface during a specific immersion cycle

Note 1 to entry: The unit is mass per surface area, i.e. milligrams per square metre.

### 3.14 leachant

liquid that is brought into contact with the test specimen in the leaching procedure

Note 1 to entry: Standard leachant as specified in 4.1.

## 4 Reagents

### 4.1 Standard leachant

Deionised water with a pH-value of  $(6 \pm 1)$  and a water temperature of  $(23 \pm 2)$  °C shall be used.

## 5 Apparatus

### 5.1 General

Check the materials and equipment specified in 5.2.1 to 5.2.6 before use for proper operation and absence of interfering elements that might affect the results of the test.

The equipment specified in 5.2.2 to 5.2.5 shall also be calibrated.

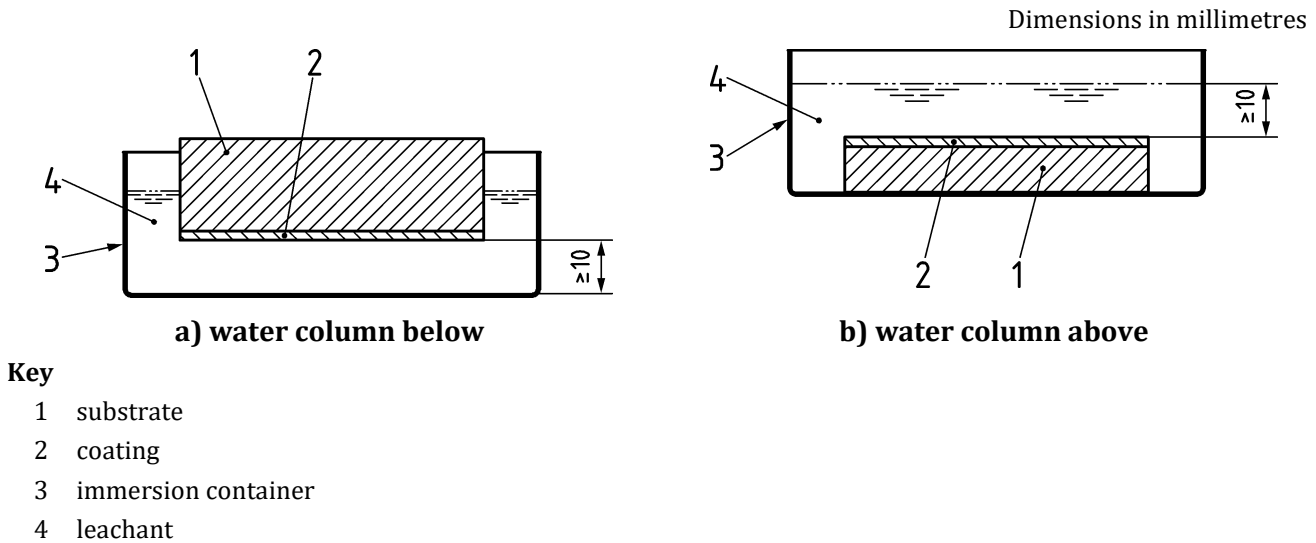
### 5.2 Equipment

#### 5.2.1 Immersion container

The container for immersion shall be made of a material inert to the target substances in the eluates (e.g. glass, PTFE coated). The immersion container shall be large enough to allow the test specimens to have the coated face completely exposed to water and contain 25 l water per square metre exposed face. The water column below (see Figure 1 a)) or above (see Figure 1 b)) the test surface shall be  $\geq 10$  mm.

NOTE For example, a test specimen of 100 cm<sup>2</sup> requires 250 ml water.

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**Figure 1 — Possible orientations of the test specimen in the immersion container during the immersion process**

### 5.2.2 Analytical balance

Analytical balance, with an accuracy of  $\pm 0,1$  g.

### 5.2.3 Device for measuring

Device for measuring sample dimensions, with an accuracy of  $\pm 1$  mm.

### 5.2.4 Measuring cylinders for volume determination

Measuring cylinders for volume determination, with 1 % accuracy.

### 5.2.5 pH meter

pH meter, with an accuracy of  $\pm 0,05$ .

### 5.2.6 Glass or plastic bottles

Glass or plastic bottles, e.g. glass, HDPE, PMMA, PTFE, PE, PET, PP, PVC.

Use bottles with an appropriate volume, and with screw cap, for eluate collection and preservation of merged eluates.

## 6 Test procedure

### 6.1 General considerations

Coatings are exposed under natural weather conditions to intermittent cycles of wetting (rainfall, thaw, condensate) and drying. To assess the leaching of substances from coatings, a wetting and drying method is described in this document. For this purpose, samples with coatings are immersed into water and dried in time intervals.

The water from each immersion cycle  $i$  is analysed to determine the concentration  $c_i$  of leached target substances.