ILNAS

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

ILNAS-EN 16637-1:2023

Construction products: Assessment of release of dangerous substances - Part 1: Guidance for the determination of leaching tests and additional testing

Bauprodukte - Bewertung der Freisetzung von gefährlichen Stoffen - Teil 1: Leitfaden für die Festlegung von Auslaugprüfungen und zusätzlichen

Produits de construction - Évaluation du relargage de substances dangereuses - Partie 1 : Guide pour la spécification des essais de lixiviation et des étapes

11/2023

National Foreword

This European Standard EN 16637-1:2023 was adopted as Luxembourgish Standard ILNAS-EN 16637-1:2023.

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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 16637-1

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English Version

Construction products: Assessment of release of dangerous substances - Part 1: Guidance for the determination of leaching tests and additional testing steps

Produits de construction - Évaluation du relargage de substances dangereuses - Partie 1 : Guide pour la spécification des essais de lixiviation et des étapes supplémentaires d'essai

Bauprodukte - Bewertung der Freisetzung von gefährlichen Stoffen - Teil 1: Leitfaden für die Festlegung von Auslaugprüfungen und zusätzlichen Prüfschritten

This European Standard was approved by CEN on 30 July 2023.

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 CEN-CENELEC 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 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 16637-1:2023) 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 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 May 2024 and conflicting national standards shall be withdrawn at the latest by May 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 CEN/TS 16637-1:2018.

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

— transfer of technical specification into a European Standard;

— addition of guidance on how to identify and handle unexpected test results and how to recognize heterogeneous products (see Annex G);

— updating of normative and informative cross-references.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

This document deals with the determination and use of test methods for leaching of construction products taking specific situations into account. It specifies preconditions under which leaching tests for monolithic products and for granular products need to be selected.

EN 16637, *Construction products: Assessment of release of dangerous substances*, consists of the following parts:

— *Part 1: Guidance for the determination of leaching tests and additional testing steps;*

— *Part 2: Horizontal dynamic surface leaching test;*

— *Part 3: Horizontal up-flow percolation test.*

Background information on characterization of leaching behaviour of construction products can be found in Technical Reports provided by CEN/TC 351 (i.e. CEN/TR 16098 [1], CEN/TR 16496 [2]).

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 organizations 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 European Standards EN 16637-1, EN 16637-2 and EN 16637-3 are developed to assess the release of regulated dangerous substances (RDS) from construction products into soil, surface water and groundwater in the framework of Mandate M/366. The horizontal test methods developed under the Mandate M/366 are intended to be used to show compliance with notified regulations. The tests cover the release of substances from construction products and in particular, those that are regulated in notified regulations in one or more EU Member States.

EN 16637-1 specifies how the CEN Technical Product Committees and EOTA experts should determine the appropriate leaching test for the determination of the release of RDS from a construction product into soil, surface water and groundwater. EN 16637-1 gives background information for CEN Technical Product Committees on the following aspects:

— description of the intended conditions of use of the construction product (e.g. above ground exposed to the precipitation, or shielded from direct infiltration, in surface or groundwater) with respect to the release of RDS into soil, surface water and groundwater;

— identification of main release mechanisms, and the appropriate leaching test for a given construction product.

EN 16637-2 specifies a horizontal test to assess surface dependent release from monolithic, plate-like or sheet-like construction products (tank test).

EN 16637-3 specifies a horizontal test to assess release from granular construction products.

The test methods can be used for both steps in the hierarchy (type testing (TT) and factory production control (FPC)) and form the reference tests for the intended uses and conditions specified in EN 16637-1. In this hierarchy of testing conditionally “indirect tests” can be used, but are not specified.

The release of substances upon contact with water results in a potential risk to the environment during the intended use of construction products. The intent of these tests is to identify the leaching behaviour of construction products and thereby allow assessments of the release of RDS from such products to soil, surface water and groundwater under intended conditions of use in relation to CE marking and assessment and verification of constancy of performance.

This document does not address impact assessment. However, since the test methods described in the document may be used in the context of impact assessments and regulation based on impact assessments, some guidance on this issue is provided in this document in Annex A (informative).

In addition to existing validation results, in 2011 CEN/TC 351 began an extensive research program on robustness validation of the existing tank leaching and percolation tests. This was carried out by a consortium of European experts on 20 construction products to unify differences from the protocols of the different CEN Members and to check the influence of testing conditions on the test result (e.g. temperature, flow rate, renewal scheme). The results ([3], [4]) of the research program confirmed the robustness of the horizontal tests known from former works. Conclusions from the program have been implemented into the Technical Specifications for the test methods. The performance of the leaching tests regarding repeatability and reproducibility was deduced from a second validation step and respective data ([5], [6]) are included in EN 16637-2 and EN 16637-3.

1 Scope

This document allows the identification of the appropriate leaching test method for the determination of the release of RDS from construction products into soil, surface water and groundwater. This document provides a stepwise procedure for the determination of appropriate release tests, including:

a) determination of the test method based on general product properties;

b) choice of the test method using specific product properties.

Furthermore, this document gives general guidance for CEN Technical Product Committees and EOTA WGs on basic aspects (sampling, sample preparation and storage, eluate treatment, analysis of eluates and documentation) to be specified in the relevant product standards or ETAs.

Metallic products and coatings on metallic products are not considered in the determination scheme of this document since the test methods in EN 16637-2 (tank test) and EN 16637-3 (column test) are not appropriate for the testing of these construction products due to a different release mechanism (solubility control).

NOTE See Annex F.

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 [7]) in intermittent contact with water, physical and chemical properties might be altered in permanent contact with water. These products are not considered in the determination scheme of this document since the test method in EN 16637-2 is not appropriate for the testing of these construction products (in this case EN 16105 [8] might be an alternative method).

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 16637-2:2023, *Construction products: Assessment of release of dangerous substances — Part 2: Horizontal dynamic surface leaching test*

EN 16637-3:2023, *Construction products: Assessment of release of dangerous substances — Part 3: Horizontal up-flow percolation test*

EN 16687:2023, *Construction products: Assessment of release of dangerous substances — Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16687:2023 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 Sampling and products

3.1.1
compacted granular product
granular product with a low permeability, due to very small pores between the particles

Note 1 to entry: Compacted granular products are usually tested by a test method for granular construction products with low hydraulic conductivity, because the percolation test is not applicable due to the low permeability of the products (e.g. fine aggregates that do not allow significant percolation of water through the solid material in a regular percolation test). The compacted granular tank test may also apply to granular products to be placed in stagnant water or in use scenarios with very low flow gradients

[SOURCE: EN 16687:2023, 3.1.2.2 — modified: brackets and second sentence added to Note to Entry]

3.1.2
composite sample
average sample
aggregated sample
two or more increments, mixed together in appropriate proportions, either discretely or continuously, from which the mean value of a desired characteristic may be obtained

[SOURCE: EN 16687:2023, 3.2.1.1]

3.1.3
curing
hardening of freshly prepared mixtures under well-defined conditions (time, temperature, humidity, etc.) specified in harmonized product standards

[SOURCE: EN 16687:2023, 3.2.2.6]

3.1.4
curing time
minimal time defined necessary for curing before a release/emission test can be executed to obtain test results, that are relevant to in use conditions

[SOURCE: EN 16687:2023, 3.2.2.7 — modified: addition of “release/”]

3.1.5
granular product
product composed of solid particles with a particle size smaller than a specified size or grading

Note 1 to entry: Granular products are usually tested by a percolation test.

[SOURCE: EN 16687:2023, 3.1.2.1]

3.1.6
increment
portion of product collected by a single operation of a sampling device which will not be tested as a single entity, but will be mixed or combined with other increments in a composite sample

[SOURCE: EN 16687:2023, 3.2.1.2]