SLOVENSKI STANDARD
SIST EN 17087:2019

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Gradbeni proizvodi - Ocenjevanje sproščanja nevarnih snovi - Priprava preskusnih vzorcev iz laboratorijskega vzorca za preskušanje sproščanja nevarnih snovi in njihovo analizo

Construction products - Assessment of release of dangerous substances - Preparation of test portions from the laboratory sample for testing of release and analysis of content

Bauprodukte - Bewertung der Freisetzung von gefährlichen Stoffen - Herstellung von Prüfmengen aus Laboratoriumsproben zur Analyse von Eluaten und Aufschlusslösungen

Produits de construction - Évaluation de l'émission de substances dangereuses - Préparation de prises d'essai à partir de l'échantillon pour laboratoire en vue des essais d'émission et d'analyse du contenu

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91.100.01	Gradbeni materiali na splošno	Construction materials in general

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Construction products: Assessment of release of dangerous substances - Preparation of test portions from the laboratory sample for testing of release and analysis of content

Produits de construction : Évaluation de l'émission de substances dangereuses - Préparation de prises d'essai à partir de l'échantillon pour laboratoire en vue des essais d'émission et d'analyse du contenu

Bauprodukte: Bewertung der Freisetzung von gefährlichen Stoffen - Herstellung von Prüfmengen aus der Laborprobe zur Prüfung der Freisetzung und zur Gehaltsanalyse

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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 17087:2019) 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of an identical text or by endorsement, at the latest by August 2019, and conflicting national standards shall be withdrawn at the latest by August 2019.

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.

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Introduction

In laboratory practice, very often different analytical procedures have to be applied to the laboratory sample that has been taken according to the sampling plan. For this purpose, subsampling needs to be applied in such a way that the different test portions are representative for the original laboratory sample with respect to the compounds of interest and the specific analytical procedures. Ensuring the laboratory sample and test portions are representative is of major importance to guarantee the quality and accuracy of analytical results. The representativeness of the laboratory sample is specified by the sampling plan. This European Standard specifies the correct sequence of operations to ensure the representativeness of the test portions.

NOTE This document is based on EN 15002 as developed by CEN/TC 292, for the preparation of test portions from the laboratory sample for the characterization of waste.

1 Scope

This document is applicable for the preparation of representative test portions from the laboratory sample that has been taken as specified in respective product standards and in CEN/TR 16220, prior to testing of release and analysis of content of construction products.

This document is intended to specify the sequence of operations and treatments to be applied to the laboratory sample in order to obtain suitable test portions in compliance with the specific requirements defined in the corresponding test methods and analytical procedures.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 14507:2003, *Soil quality — Pretreatment of samples for determination of organic contaminants*

3 Terms and definitions

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

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

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

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

3.1
construction product
any product or kit which is produced and placed on the market for incorporation in a permanent manner in construction works or parts thereof and the performance of which has an effect on the performance of the construction works with respect to the basic requirements for constructions works

Note 1 to entry: Often simply referred to as “products”. Construction products may be placed on the market e.g. as liquid, granular, monolithic, sheet-like, plate-like products, shaped products or powders. They can consist of a single material or of more than one material (composite products, complex products).

[SOURCE: EN 16687:2015, 2.1.1]

3.2
digest
solution resulting from acid digestion of a sample

[SOURCE: EN 16687:2015, 3.2.8]

3.3
drying
process of removing liquid from a sample

Note 1 to entry: For the purpose of test portion preparation, it can be useful to remove just the amount of liquid that could interfere with other processes involved (e.g. during crushing or milling). In order to minimize the alteration of the sample during test portion preparation, removing the total amount of liquid present in the sample is not necessarily needed.

3.4
homogenisation
process of combining of components, particles or layers into a more homogeneous state of the original samples (in the case of composite samples) or pre-treated fractions of samples in order to ensure equal distribution of substances in and properties of the sample

3.5
laboratory sample
sample or sub-sample(s) sent to or received by the laboratory

Note 1 to entry: When the laboratory sample is further prepared by subdividing, cutting, sawing, coring, mixing, drying, grinding, and curing or by combinations of these operations, the result is the test sample. When no preparation of the laboratory sample is required, the laboratory sample is the test sample. A test portion is removed from the test sample for the performance of the test/ analysis or for the preparation of a test specimen.

Note 2 to entry: The laboratory sample is the final sample from the point of view of sample collection but it is the initial sample from the point of view of the laboratory.

[SOURCE: EN 16687:2015, 3.2.1]

3.6
moderately volatile organic compounds
organic compound having a boiling point above 180 °C (at a pressure of 101 kPa)

Note 1 to entry: This definition includes:

a) mineral oil;

b) most polycyclic aromatic hydrocarbons (PAH) (see ISO 13859);

c) polychlorobiphenyls (PCB) (see ISO 10382);

d) organochlorine pesticides (see ISO 10382).

[SOURCE: EN 15002:2015, 2.7]

3.7
monolithic construction product
product which has certain minimum dimensions and physical and mechanical properties that ensure its integrity over a certain period of time in the intended conditions of use

Note 1 to entry: Monolithic products are usually tested by a dynamic surface leaching test.

[SOURCE: EN 16687:2015, 2.2.4]

3.8
particle size reduction
mechanical decrease of the particle size of the sample by milling, grinding, crushing or cutting

Note 1 to entry: For a monolithic construction product, the application of a jaw crusher is generally preferred.

3.9
sample
portion of material selected from a larger quantity of material

Note 1 to entry: The manner of selection of the sample should be described in a sampling plan.

[SOURCE: EN 16687:2015, 3.1.5]

3.10
sub-sample
sample obtained by procedures in which the items of interest are randomly distributed in parts of equal or unequal size

Note 1 to entry: A sub-sample may be:

a) portion of the sample obtained by selection or division;

b) the final sample of multistage sample-preparation.

3.11
sub-sampling
process of selecting one or more sub-samples from a sample

3.12
test portion; analytical portion
amount of the test sample taken for testing/ analysis purposes, usually of known weight or volume

EXAMPLE 1 A bag of aggregates is delivered to the laboratory (the laboratory sample). For test purposes a certain amount of the aggregate is dried, the result is the test sample. Afterwards the column for a percolation test is filled with a test portion of dried aggregate.

EXAMPLE 2 A piece of flooring is delivered to the laboratory (the laboratory sample). For the purpose of digestion a certain amount is size reduced, the result is the test sample. From the size-reduced test sample a test portion is taken to execute the digestion. If the digest is to be analysed afterwards e.g. by ICP-MS, the whole amount of the digest is the test sample, the amount taken for the analytical procedure, the test portion.

[SOURCE: EN 16687:2015, 3.2.3]

3.13
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]

3.14
volatile inorganic compounds
inorganic compounds that can be lost by heating during sample preparation

Note 1 to entry: Examples of volatile inorganic compounds are mercury, arsenic, cadmium and thallium.

3.15
volatile organic compounds
VOC
all volatile organic compounds eluting with a retention range between and including n-hexane and n-hexadecane a capillary gas chromatographic column

Note 1 to entry: The measurement is carried out using a capillary column coated with 5 % phenyl/95 % methylpoly-siloxane.

Note 2 to entry: This definition corresponds to volatile organic compounds with a boiling point in the range of approximately 68 °C to 287 °C.

Note 3 to entry: Other definitions are given by the World Health Organization (WHO, 1987) or ISO 16000-6:2011.

[SOURCE: EN 16687:2015, 2.3.4]

4 Principle

The laboratory sample of the construction product is divided into sub-samples to get representative test portions for different measurements of substances or parameters. For this purpose methods are described for:

— homogenization (manual, mechanical);

— drying (air drying, oven drying, freeze drying, chemical drying);

— particle size reduction (crushing/grinding, freeze crushing, milling, cutting, freeze cutting);

— sub-sampling (manual, mechanical).

Different methods are applicable depending on the construction product being granular or monolithic. Also different methods are applicable according to the matrix of the construction product (for example mineral, plastic, wood) and to the volatility of the compounds to be analysed.

5 Equipment

For the purpose of preparation of test portions from the laboratory samples appropriate equipment shall be chosen depending on the procedures selected according to Annex A.

An informative list of appropriate equipment for the sample treatment procedures is given in Annex C.

All glassware and devices that come in contact with the sample shall be made out of suitable material, chemically compatible with the sample, selected in order to minimize contamination of samples (e.g. plastic materials for inorganic elemental analysis, quartz or glass for volatile and organic analytes).

6 Interferences and sources of error

In case of granular materials, the (sub)-sample shall be re-homogenized after any operation that has potentially resulted in segregation of different sized particles.

A monolithic construction product is tested as a monolith, but due to heterogeneity a test portion is possibly not fully representative. An option is to use more pieces to constitute a test portion.

Care shall be taken to avoid loss of material and contamination of the sample via the air, by dust, by the use of the apparatus (e.g. from the ambient laboratory atmosphere or between samples stored or processed close to one another).