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Karaktärisering av avfall – Testmetoder för bestämning av monolitisk status hos avfall

Waste – Test methods for the determination of the monolithic status of waste to be landfilled

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TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

CEN/TS 16675

August 2018

ICS 13.030.10

Supersedes CEN/TS 16675:2014

English Version

**Waste - Test methods for the determination of the
monolithic status of waste to be landfilled**

Caractérisation des déchets - Méthodes d'essai pour la
détermination du statut monolithique d'un déchet

Abfälle - Prüfverfahren für die Bestimmung der
monolithischen Eigenschaften von Abfällen zur
Deponierung

This Technical Specification (CEN/TS) was approved by CEN on 7 May 2018 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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European foreword

This document (CEN/TS 16675:2018) has been prepared by Technical Committee CEN/TC 444 “Test methods for environmental characterization of solid matrices”, the secretariat of which is held by NEN.

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SIS-CEN/TS 16675:2018 (E)

Introduction

Landfilling of some types of waste requires stabilization/solidification to reduce the impact and/or comply with regulatory requirements. The characterization of waste is an essential step for the assessment of a potential final destination, especially in case of landfilling and associated potential hazards. Based on its properties, a stabilized/solidified waste material may be allocated to a landfill for granular waste or a landfill for monolithic waste. Information on certain physical properties of a given stabilized/solidified waste material is required to determine if it can be classified as a monolithic material and to select appropriate leaching test method(s) and landfilling options for that waste. This technical specification describes test methods applicable to assessment of these physical properties.

WARNING - Anyone dealing with waste and sludge analysis should be aware of the typical risks of that kind of material irrespective of the parameter to be determined. Waste and sludge samples may contain hazardous (e.g. toxic, reactive, flammable, infectious) substances, which can be liable to biological and/or chemical reaction. Consequently these samples should be handled with special care. Gases which may be produced by microbiological or chemical activity are potentially flammable and will pressurize sealed bottles. Bursting bottles are likely to result in hazardous shrapnel, dust and/or aerosol. National regulations should be followed with respect to all hazards associated with the methods in this technical specification.

1 Scope

This document provides methods, which can be used to assess the monolithic character of a stabilized/solidified waste, with respect to landfilling. Information on the monolithic character is required to enable the choice of appropriate leaching tests for determination of the release of different substances from stabilized/solidified waste under specified (landfilling) conditions.

This document includes several physical and/or chemical test methods each addressing different aspects of monolithic character. The selection of methods required for an assessment of the monolithic character of a stabilized/solidified waste may vary, depending on the scenario to be addressed or it can be specified in regulation.

Rather than describing the procedures and methods in detail this document refers to existing standards and provides some guidance on their use on stabilized/solidified waste materials.

This document does not address issues related to health and safety.

The following procedures and methods are included in this document:

- test to determine unconfined compressive strength;
- test to determine permeability;
- test to determine the loss of mass by dissolution;
- test to determine expansion;
- test to determine the content of organic matter;
- test to determine freeze/thaw effects.

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 12390-3, *Testing hardened concrete - Part 3: Compressive strength of test specimens*

EN 15002, *Characterization of waste - Preparation of test portions from the laboratory sample*

EN 15216, *Characterization of waste - Determination of total dissolved solids (TDS) in water and eluates*

CEN/TR 15177:2006, *Testing the freeze-thaw resistance of concrete - Internal structural damage*

EN 15863, *Characterization of waste - Leaching behaviour test for basic characterization - Dynamic monolithic leaching test with periodic leachant renewal, under fixed conditions*

CEN/TS 15864, *Characterization of waste - Leaching behaviour test for basic characterization - Dynamic monolithic leaching test with continuous leachant renewal under conditions relevant for specified scenario(s)*

EN 15936, *Sludge, treated biowaste, soil and waste - Determination of total organic carbon (TOC) by dry combustion*

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CEN ISO/TS 17892-11, *Geotechnical investigation and testing - Laboratory testing of soil - Part 11: Determination of permeability by constant and falling head (ISO/TS 17892-11)*

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 dry matter

w_{dm}

mass fraction of a sample excluding water expressed as mass fraction calculated by determination of dry residue or water content

[SOURCE: EN 15934:2012]

3.2 dry residue

w_{dr}

remaining mass fraction of a sample after a drying process at 105 °C under specified conditions

[SOURCE: EN 15934:2012]

3.3 eluate

solution obtained by a leaching test

3.4 laboratory sample

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

[SOURCE: IUPAC:1997]

Note 1 to entry: When the laboratory sample is further prepared (reduced) by subdividing, mixing, grinding 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 or for analysis. 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.

Note 2 to entry: Several laboratory samples could be prepared and sent to different laboratories or to the same laboratory for different purposes. When sent to the same laboratory, the set is generally considered as a single laboratory sample and is documented as a single sample.

3.5

leachant

liquid used in a leaching test

[SOURCE: EN 12457-1]

3.6

leaching test

test during which a material is put into contact with a leachant and some constituents of the material are extracted

[SOURCE: EN 12457-1]

3.7

monolithic waste

waste prepared with certain minimum dimensions and physical and mechanical properties that ensure its integrity over a certain period of time in the considered scenario

3.8

stabilised /solidified waste

waste stabilised / solidified by chemical and physical means to form a coherent body maintaining its integrity in the landfill over a specified timeframe

3.9

test portion

quantity of material of proper size for measurement of the concentration or other properties of interest removed from the test sample

[SOURCE: IUPAC:1997]

3.10

test portion of monolithic waste

specimen obtained either by moulding, by cutting or by coring and ready for the performance of a leaching test with a minimum dimension in all directions of 40 mm

Note 1 to entry: The test portion could be taken from the laboratory sample directly if no preparation of sample is required, but usually it is taken from the prepared test sample.

3.11

test sample

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

[SOURCE: IUPAC:1997]

3.12

water content

w_w

mass fraction of water in a sample determined by the method after drying at 105 °C or by Karl-Fischer-titration under specified conditions

[SOURCE: EN 15934:2012]