

Teknisk specifikation

SIS-CEN/TS 16675:2014

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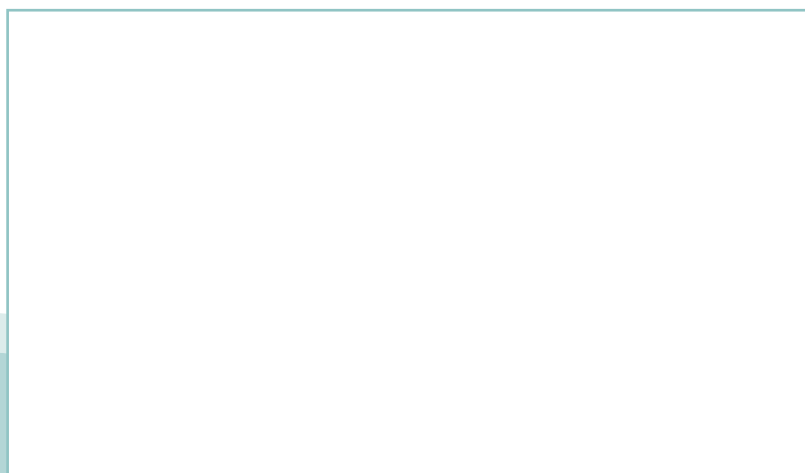
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Karaktärisering av avfall – Testmetoder för bestämning av monolitisk status hos avfall

Characterisation of waste – Test methods for the determination of the monolithic status of waste



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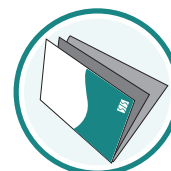
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TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

CEN/TS 16675

September 2014

ICS 13.030.10

English Version

**Characterisation of waste - Test methods for the determination
of the monolithic status of waste**

Caractérisation des déchets - Vérification du caractère
monolithique d'un déchet

Charakterisierung von Abfällen - Prüfverfahren für die
Bestimmung der monolithischen Eigenschaften von
Abfällen

This Technical Specification (CEN/TS) was approved by CEN on 18 February 2014 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.

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Foreword

This document (CEN/TS 16675:2014) has been prepared by Technical Committee CEN/TC 292 "Characterization of waste", the secretariat of which is held by NEN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Introduction

Disposal of some types of waste requires stabilisation/solidification to reduce the impact and/or comply with regulatory requirements. The characterisation 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 stabilised/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 stabilised/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 pressurise 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 Technical Specification provides methods, which can be used to assess the monolithic character of a stabilised/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 stabilised/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 stabilised/solidified waste may vary, depending on the scenario to be addressed or it may 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 stabilised/solidified waste materials.

This Technical Specification 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 or disintegration;
- test to determine expansion;
- test to determine the content of organic matter;
- test to determine freeze/thaw effects.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 13137, *Characterization of waste - Determination of total organic carbon (TOC) in waste, sludges and sediments*

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

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

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

CEN/TS 15863, *Characterisation of waste - Leaching behaviour test for basic characterisation - Dynamic monolithic leaching test with periodic leachant renewal, under fixed test conditions*

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

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.

3.1
dry matter
w_{dm}
mass fraction of a sample excluding water expressed as a percentage by mass calculated by determination of dry residue or water content

[SOURCE: EN 14346]

3.2
dry residue
w_{dr}
remaining mass fraction of a sample after a drying process at 105 °C

[SOURCE: EN 14346]

3.3
eluate
solution recovered from 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****ww**

mass fraction of water in a sample determined by Karl-Fischer-titration

[SOURCE: EN 14346]

3.13**waste monolith**

waste delivered as bulky forms of specified minimum dimensions retaining its form in the landfill over a specified timeframe

Note 1 to entry: It may generally not be necessary to test a few waste monoliths disposed amongst granular waste, as their contribution to the landfill leachate quality will be marginal.

4 Principle

The selection of methods to be used to assess the monolithic character of a specific waste material provided in this document shall address the conditions imposed by the relevant landfill scenario(s). In general, there is an intention to produce a monolithic waste form which will maintain its integrity under specified conditions over a specified time span for the landfill. The following procedures allow assessment of the monolithic character of a waste sample of regular shape in order to enable selection of appropriate test methods and interpretation models for the determination of the release of substances from the waste under landfilling conditions. Some of the procedures may also be used to determine if the waste material fulfils applicable geotechnical requirements for landfilling. If for some reason one or more of the procedures are not considered necessary for a specific purpose, the justification for that shall be given in the test report.