SLOVENSKI STANDARD
SIST EN 16123:2013

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Karakterizacija odpadkov - Navodilo za izbiro in uporabo rešetalnih metod

Characterization of waste - Guidance on selection and application of screening methods

Charakterisierung von Abfall - Leitfaden für Auswahl und Anwendung von Screening-Verfahren

Caractérisation des déchets - Lignes directrices relatives au choix et à l'application des méthodes de dépistage

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Foreword

This document (EN 16123:2013) has been prepared by Technical Committee CEN/TC 292 “Characterization of waste”, 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of an identical text or by endorsement, at the latest by August 2013, and conflicting national standards shall be withdrawn at the latest by August 2013.

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.

The standardization of the selection and application of screening methods is obligatory to make such methods available to legislation. In addition to common laboratory methods, which are standardized individually, a framework approach is chosen for screening methods. The application of screening methods within this framework guarantees the reliability of results required by legal regulations.

In order to fulfil legal requirements, it is of high importance to document all decision steps of method selection, the applicability testing, the application of the method and the evaluation.

This European Standard refers to the use of screening methods on solid materials (waste) as sample matrix; the corresponding standard for water is ISO 17381.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document provides guidance on the use of screening methods for waste characterisation. One field of application of screening methods is “on-site verification” as recommended in the Landfill Directive (1999/31/EC) and the Landfill Decision (2003/33/EC).

Screening methods are of increasing interest in processes such as entrance control because, in addition to standardized methods, they allow fast verification of the documented waste characteristics.

1 Scope

This European Standard gives guidance on the selection and application of screening methods for waste characterisation. The aim of this document is to set up criteria as to when the different kinds of screening methods may be applied for the analysis of a certain parameter in waste and which steps are required to prove their suitability.

This document does not recommend any particular screening method, but confirms the principles of its selection and application.

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 16192, *Characterization of waste — Analysis of eluates*

3 Terms and definitions

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

3.1
reference method
method which is performed in accordance with national or international Standards and is not necessarily comparable with screening methods

3.2
on-site verification
third level of inspection according to the Landfill Directive and the Landfill Decision to ensure that the waste accepted at a landfill is the same as described in the accompanying documents and that it is in accordance with the basic characterisation and/or compliance testing

3.3
screening
application of any analytical semi-quantitative method for exploratory analysis

3.4
screening method
method which is used (often on-site) to quickly explore a given area or test a set of samples and obtain data on sample characteristics

[SOURCE: ISO 12404, modified]

4 Principles

This standard defines the whole process from the selection of the screening method, applicability, fit-for-purpose testing, fulfilment of the acceptance criteria, quality control, and documentation of the measurement results.

5 Typical areas for application of screening methods

5.1 General

Screening methods constitute a useful addition to standard procedures in the following areas.

5.2 Support of sampling/sample preparation processes

Screening methods may be used for:

— selection of the most suitable analytical method (concentration range, interferences);

— pre-selection of samples for analysis in the laboratory;

— provision of information about accompanying compounds relevant for sample preparation.

5.3 On-site verification

Characteristics of sampled waste are verified, e.g. during transport or at the entrance of waste treatment plants and landfills.

5.4 Monitoring of processes

Screening methods can be used:

— to monitor and control processes (e.g. success of treatment processes);

— to perform quality control on a treatment plant.

5.5 Identification of homogeneity/heterogeneity of bulk material

Screening methods may be applied to measure “leading” parameters in huge charges of waste to identify whether the material is homogenous or not.

5.6 Survey of contaminated sites (hot spot identification)

Screening methods are useful to identify contaminated areas in contamination-suspected sites.

5.7 Identification of sources of contamination

Screening methods can be useful to identify the source of a contaminant or content in a material stream.

5.8 Safety issue

Screening methods can be used to detect potentially toxic compounds (e.g. gases, radioactivity, explosives) which may be hazardous to the personnel taking and processing samples.

6 Selecting a screening method

6.1 Selection criteria

The following selection criteria should be taken into consideration when selecting the appropriate method. The different criteria shall be weighted depending on the intended application. The decision-making process and the results have to be documented by the user (see flowchart in Annex A and documentation aid in Annex B).

Prerequisites are:

— one known parameter or a set of known parameters;

— aim of determination;

— matrix (solid/liquid waste).

6.1.1 Sampling/sample pretreatment/preparation

— direct measurement (e.g. handheld XRF-systems);

— pretreatment/preparation (e.g. extractions, separation) particularly for solid waste.

Most screening methods require the provision of the analyte in an extract/eluate, which therefore requires sample pretreatment. Pretreatment shall be carried out in accordance with EN 16192.

If sample preparation is necessary, follow the principles of EN 15002 taking into account CEN/TR 16130.

6.1.2 Parameter definition

— individual species (e.g. total Fe, Fe^{2+}, Fe^{3+});

— group parameters (e.g. total organic carbon (TOC), absorbable organically bound halogens (AOX));

— in the case of on-site verification, the parameters are typically defined by declaration or based on the experience of the staff.

6.1.3 Field of application

— specified decision value (e.g. limit value, target value);

— concentration range;

— matrix;

— method limitations/interferences.

6.1.4 Boundary conditions

— rapidity (in relation to aim of determination);

— mobility;

— costs;

— quality target of analysis;

- frequency of use (continuous, once only);
- qualification of staff;
- legal stipulations;
- availability and/or ease of acquisition;
- infrastructural conditions.

6.2 Fit-for-purpose test

In a second step, after passing these selection steps in 6.1, the selected method has to pass a fit-for-purpose test as described in Clause 8.

In case of frequently repeated tasks, the most suitable screening method should be identified and applied, the necessary equipment kept ready and the procedure documented in a standard operation procedure. Selection and fit-for-purpose testing has therefore to be performed only once.

6.3 Quality targets

The general quality target of analytical questions is its ability to establish the relationship between the analytical result and its confidence interval on the one hand, and the decision values on the other. This relationship with the decision values means that the analytical method to be used is subject to requirements regarding the quality of the analytical results. These requirements are task-related and shall be defined before the screening method is applied. The definition of these quality targets forms the basis for the selection of the appropriate method.

7 Applicability conditions for screening methods

7.1 General

Availability of complete information on a screening method of choice is a prerequisite of applicability. This clause deals with the most important points that should be apparent from the accompanying documentation of a method. All information, either supplied or separately obtainable (enclosed leaflet, application documents, etc.) shall be easily comprehensible and should be written in understandable language.

7.2 Field of application

- parameters (e.g. total Fe, Fe^{2+}, Fe^{3+});
- measurement range/graduation; “zero” may not be stated for the lower limit of the operating range;
- matrix;
- matrix interferences, measures to be taken for their prevention or elimination;
- temperature range, pH range, other physical conditions;
- storage and shelf life of the reagents.

7.2.1 Principle of the measurement

- chemical reaction or physical concept.