



SLOVENSKI STANDARD

SIST EN 13370:2004

01-januar-2004

Nadomešča:
SIST ENV 13370:2002

Karakterizacija odpadkov - Analiza izlužkov - Določevanje amoniaka, AOX, prevodnosti, Hg, fenolnega indeksa, celotnega organskega ogljika (TOC), lahko sprostljivega (CN)-, F-

Characterization of waste - Analysis of eluates - Determination of Ammonium, AOX, conductivity, Hg, phenol index, TOC, easily liberatable CN-, F-

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Charakterisierung von Abfällen - Chemische Analyse von Eluaten - Bestimmung von Ammonium, AOX, Leitfähigkeit, Hg, Phenolindex, TOC, leicht freisetzbarem CN-, F-

[SIST EN 13370:2004](#)

Caractérisation des déchets - Analyse chimique des éluats - Détermination de l'ammonium, des AOX, de la conductivité, du Hg, de l'indice phénol, du COT, des CN- aisément libérables et des F-

Ta slovenski standard je istoveten z: EN 13370:2003

ICS:

13.030.20 Tekoči odpadki. Blato Liquid wastes. Sludge

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EUROPEAN STANDARD

EN 13370

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2003

ICS 13.030.99

Supersedes ENV 13370:2001

English version

Characterization of waste - Analysis of eluates - Determination of Ammonium, AOX, conductivity, Hg, phenol index, TOC, easily liberatable CN^- , F^-

Caractérisation des déchets - Analyse chimique des éluats
- Détermination de l'ammonium, des AOX, de la
conductivité, du Hg, de l'indice phénol, du COT, des CN^-
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Charakterisierung von Abfällen - Chemische Analyse von
Eluaten - Bestimmung von Ammonium, AOX, Leitfähigkeit,
Hg, Phenolindex, TOC, leicht freisetzbarem CN^- , F^-

This European Standard was approved by CEN on 25 March 2003.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 13370:2003) 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 December 2003, and conflicting national standards shall be withdrawn at the latest by December 2003.

This document supersedes ENV 13370:2001.

Annex A is informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

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EN 13370:2003 (E)**Introduction**

This standard is intended to be used for the characterization of waste as defined in the Council Directive 75/442/EEC on waste, as amended by Council Directive 91/156/EEC of 18th March 1991, and national regulations, whose final destination for disposal is landfill.

It deals with the determination of conductivity and chemical constituents which have been extracted by leaching of waste samples for example using EN 12457 Characterisation of waste - Leaching - Compliance test for leaching of granular waste materials and sludges – Part 1 - 4.

This European Standard together with EN 12506 is intended to define analytical methods for eluates. A large number of compounds can interfere with the determination of the parameters concerned. These potential interferences are listed in the individual standards in question.

For the analytical determinations ENV ISO 13530 and EN ISO/IEC 17025 should be considered.

1 Scope

This European Standard specifies methods for the determination of the parameters Ammonium, AOX, conductivity, Hg, phenol index, TOC, easily liberatable CN, F in aqueous eluates for the characterization of waste.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

| | |
|-------------------|---|
| EN 1483 | Water quality - Determination of mercury |
| EN 1484 | Water analysis - Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC) |
| EN 1485 | Water quality - Determination of adsorbable organically bound halogens (AOX) |
| EN 27888 | Water quality - Determination of electrical conductivity (ISO 7888:1985) |
| EN ISO 5667-3 | Water quality - Sampling - Part 3: Guidance on the preservation and handling of samples (ISO 5667-3:1994) |
| EN ISO 10304-1 | Water quality - Determination of dissolved fluoride, chloride, nitrite, orthophosphate, bromide, nitrate and sulfate ions, using liquid chromatography of ions - Part 1: Method for water with low contamination (ISO 10304-1:1992) |
| EN ISO 14402 | Water quality - Determination of the phenol index by flow analysis (FIA and CFA)(ISO 14402:1999) |
| EN ISO 14403:1998 | Water quality – Determination of total cyanide and free cyanide by continuous flow analysis.(ISO 14403:2002) |

| | |
|--------------|---|
| EN ISO 11732 | Water quality - Determination of ammonium nitrogen by flow analysis (CFA and FIA) and spectrometric detection |
| ISO 6439 | Water quality - Determination of phenol index - 4-Aminoantipyrine spectrometric methods after distillation |
| ISO 6703-2 | Water quality - Determination of cyanide - Part 2: Determination of easily liberatable cyanide |
| ISO 7150-1 | Water quality - Determination of ammonium – Part 1: Manual spectrometric method |
| ISO 10359-1 | Water quality - Determination of fluoride - Part 1: Electrochemical probe method for potable and lightly polluted water |

3 Terms and definitions

For the purposes of this European Standard the following terms and definitions apply:

3.1

sample

portion of material selected from a larger quantity of material

3.2

eluate

solution obtained by a leaching test

3.3

laboratory sample

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

3.4

test sample; analytical sample

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

3.5

test portion; analytical portion

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

NOTE 1 The test portion can be taken from the laboratory sample directly if no preparation of sample is required (e. g. with liquids), but usually it is taken from the prepared test sample.

NOTE 2 A unit or increment of proper homogeneity, size and fineness, needing no further preparation, can be a test portion.

3.6

leachant

aqueous solution used in a leaching test

3.7

leaching test

laboratory test for the determination of the release of matter from a waste into water or an aqueous solution

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EN 13370:2003 (E)**4 Sample pre-treatment**

The eluate shall be analysed for its total content. If precipitation occurs between the preparation of the eluate and the analysis it is necessary to ensure by appropriate methods (e.g. redissolution, separate analysis of solution and precipitate) that the total content of the parameters of interest is determined. If the eluate results from a procedure including 0,45 µm membrane filtration analytical results refer to the content dissolved by the leaching process.

Eluates are susceptible to be changed to different extents as a result of physical, chemical or biological reactions which may take place between the time of leaching and the analysis. Conductivity shall be determined immediately after preparation of the eluates and prior to sample pre-treatment.

It is therefore essential to take the necessary precautions to minimize these reactions and in the case of many parameters to analyse the eluate sample with a minimum of delay. The maximum delay is given in EN ISO 5667-3 or in the analytical standards.

Precautions should be taken before and during transport as well as during the time in which the samples are preserved in the laboratory before being analysed, to avoid alteration of the test portion.

Split the eluate in an adequate number of test portions for different chemical analysis and preserve them according to the requirements in the analytical standards or EN ISO 5667-3.

One specific test portion may be an untreated aliquot of the laboratory sample for analysis of conductivity and fluoride.

For analysis of some parameters test portions need to be acidified.

NOTE 1 For safety reasons it is recommended to acidify the test portion under a hood as volatile toxic substances can be generated.

NOTE 2 In cases where high contents of soluble solids are leached, acidification of the eluates can lead to precipitation of salts. This can be avoided by dilution prior to acidification.

5 Blank determination

The blank contribution of the analysing procedures shall be determined as described in the analytical standards and considered in the calculation of the results when appropriate.

6 Interference

Several types of interference effects can contribute to inaccuracies in the determination of the various parameters, especially at low concentrations. These potential interference effects are listed in the individual standards and shall be considered separately for each analytical technique.

Chemical interference is characterized by molecular compound formation, ionization effects, solute vaporization, precipitation and effects of decomposition of organic matter. Addition of buffer and/or preservation methods may reduce these effects.

Physical interference can be caused by changes of viscosity and surface tension. They can cause significant inaccuracies especially in eluate samples containing high concentrations of acids and/or dissolved components. The colour or turbidity of eluates can cause interference in spectrometric determination.

Standard addition may be used to visualise and correct for interference effects (see ISO 8466-3).

7 Selection of the suitable test method

Select the appropriate standardized test method listed in Table 1 according to the type of waste eluate, the concentration range of the parameter of interest and the expected interference.

It is pointed out that the standardized test methods listed in Table 1 have primarily been developed for the analysis of water samples. They were validated in a new interlaboratory trial for a limited number of waste eluate matrices (see annex A) performed by CEN/TC 292. Their suitability for other waste eluates has to be checked in the laboratory performing the analysis.

If the methods referred to in Table 1 are found to be inappropriate by reason of, for example, detection limits, repeatability or interference, other methods validated for water analysis such as AFS, ICP-MS can be used. Their suitability for waste eluates has to be checked in the laboratory performing the analysis. The reason for the deviation shall be stated in the test report.

Table 1 — Parameters and test methods

| Parameter | Test method |
|------------------------------------|--|
| Ammonium | EN ISO 11732 ISO 7150-1 |
| AOX | EN 1485 |
| conductivity | EN 27888 |
| Hg | EN 1483 |
| phenol index | ISO 6439 EN ISO 14402 ^a |
| TOC | EN 1484 |
| CN ⁻ easily liberatable | ISO 6703-2 EN ISO 14403 ^b |
| F ⁻ | EN ISO 10304-1 ^c ISO 10359-1 |
| ^a | after distillation |
| ^b | free cyanide is equivalent to easily liberatable cyanide |
| ^c | for eluates with low organic contamination |

8 Expression of results

Specific instructions for the calculation of the results given in the individual analytical standards shall be strictly observed.

The results of the tests except for conductivity shall be expressed as a concentration of the constituents in the eluate, expressed in mg/l. The amount of constituent leached relative to the total mass of the sample, in mg/kg of dry matter, can be calculated using the liquid to solid ratio of the leaching test.