SLOVENSKI STANDARD
SIST EN ISO 12404:2021

01-november-2021

Nadomešča:
SIST EN 16123:2013
SIST EN ISO 12404:2015

Tla in odpadki - Navodilo za izbiro in uporabo presejalnih metod (ISO 12404:2021)

Soil and waste - Guidance on the selection and application of screening methods (ISO 12404:2021)

Boden und Abfall - Anleitung für die Auswahl und Anwendung von Screening-Verfahren (ISO 12404:2021)

Sol et déchets - Recommandations relatives à la sélection et à l'application des méthodes de diagnostic rapide (ISO 12404:2021)

Ta slovenski standard je istoveten z: **EN ISO 12404:2021**

ICS:

13.080.10	Kemijske značilnosti tal	Chemical characteristics of soils

SIST EN ISO 12404:2021 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 12404

June 2021

ICS 13.080.10

Supersedes EN 16123:2013, EN ISO 12404:2015

English Version

Soil and waste - Guidance on the selection and application of screening methods (ISO 12404:2021)

Sol et déchets - Recommandations relatives à la sélection et à l'application des méthodes de diagnostic rapide (ISO 12404:2021)

Boden und Abfall - Anleitung für die Auswahl und Anwendung von Screening-Verfahren (ISO 12404:2021)

This European Standard was approved by CEN on 16 May 2021.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword **3**

European foreword

This document (EN ISO 12404:2021) has been prepared by Technical Committee ISO/TC 190 "Soil quality" in collaboration with Technical Committee CEN/TC 444 “Environmental characterization of solid matrices” 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 2021, and conflicting national standards shall be withdrawn at the latest by December 2021.

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.

This document supersedes EN 16123:2013 and EN ISO 12404:2015.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 12404:2021 has been approved by CEN as EN ISO 12404:2021 without any modification.

INTERNATIONAL STANDARD

ISO 12404

Second edition
2021-06

Soil and waste — Guidance on the selection and application of screening methods

Sol et déchets — Recommandations relatives à la sélection et à l'application des méthodes de diagnostic rapide

Reference number
ISO 12404:2021(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ..... **v**
Introduction ..... **vi**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Principles **1**
5 Typical areas for application of screening methods **2**
5.1 General 2
5.2 Support of sampling/sample preparation processes 2
5.3 On-site verification 2
5.4 Monitoring of processes 2
5.5 Identification of homogeneity/heterogeneity of bulk material 2
5.6 Survey of contaminated sites (hot-spot identification) 2
5.7 Identification of sources of contamination 2
5.8 Monitoring of large areas 2
5.9 Safety issues 3
6 Selection of a screening method **3**
6.1 General objectives 3
6.2 Data quality objectives (DQOs) 4
6.3 Selection criteria 4
6.3.1 General 4
6.3.2 Sampling/sample pre-treatment/preparation 5
6.4 Checks for the selection of candidate methods 5
6.4.1 General 5
6.4.2 Parameter definition 5
6.4.3 Field of application 5
6.4.4 Method characteristics 5
6.4.5 Boundary conditions 6
6.5 Fit-for-purpose test 6
6.6 Quality targets 6
7 Applicability conditions for screening methods **7**
7.1 General 7
7.2 Performance requirements 7
7.3 Screening method applicability 8
7.3.1 General 8
7.3.2 Measurement conditions 8
7.3.3 Principle of the measurement 8
7.3.4 Instruction for method setup 8
7.3.5 Sampling and samples 9
7.3.6 Measurement steps 9
7.3.7 Statement of results 9
7.3.8 Sample and reagent disposal 9
7.3.9 Characteristic data of the method 9
8 Fit-for-purpose evaluation **10**
8.1 General 10
8.2 Accuracy testing 10
8.3 Exclusion of false negative results 10
8.4 Testing of individual comparability 11
9 Analytical acceptance criteria **11**
9.1 General 11
9.2 Starting criteria 11

9.3 Continuous criteria 11
10 Quality assurance **11**
11 Documentation **12**
Annex A (informative) **Example for the selection and application process of screening methods to soil contamination** **13**
Annex B (informative) **Typical results on finding hot spots by screening methods** **15**
Annex C (informative) **Decision making process** **17**
Annex D (informative) **Example of documentation aid/check list** **18**
Annex E (informative) **Statistical tool for individual comparability — Equality of results from reference method and screening method: Mean value t-test for real samples** **21**
Bibliography **23**

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 190, *Soil quality*, SC 3, *Chemical and physical characterization*.

This second edition cancels and replaces the first edition (ISO 12404:2011), which has been technically revised.

The main changes compared to the previous edition are as follows:

— The contents of ISO 12404:2011 and EN 16123:2013 were merged;

— The scope was widened to include waste;

— The document was developed parallel with CEN according to the Vienna Agreement;

— The text was editorially revised.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document provides guidance on the use of screening methods for soil, soil-like materials and waste characterization. Most of the following clauses are applicable to all matrices mentioned. However, a few subclauses are specific to either waste or soil, including soil-like material, only.

One field of application of screening methods is “on-site verification” as recommended in the European Landfill Directive (1999/31/EC) and the Landfill Decision (2003/33/EC).

Screening methods, which can be chemical, physical or biochemical in nature, can often be applied in a quick and simple manner. Performance of quick and simple tests can be used in the field (i.e. on-site) and, in some cases, are also applicable for laboratory use. They can indicate the presence or absence of an analyte or provide a qualitative estimate of a parameter such as a concentration or value, or generate a semi-quantitative result.

Screening methods are applicable to processes such as entrance control at waste disposal sites in conjunction with standardized methods, because they allow fast verification of the documented waste characteristics. They can also be used in similar way when soil or soil-like materials are to be reused in accordance with the guidance in ISO 15176.

Regarding soil, they can also be used to produce a spatial distribution of concentrations or values within a site, which can be supported by subsequent reference (laboratory-based) analysis. When used in this way, the purpose is generally to obtain information on target parameters or groups of parameters and the location of unusual concentrations, possibly prior to undertaking a more detailed study or investigation. In waste investigation, the location of samples is limited to an area where waste is dumped but confirmation of the spatial distribution is still one of the investigation purposes, especially when investigating soil-like material.

The use of screening methods usually increases the efficiency of a site investigation. Generally, many more samples can be analysed or checked and screened for target parameters and results generated faster than using conventional laboratory-based reference methods. Additionally, screening methods, particularly if carried out on-site, can offer an immediate decision-making opportunity which enables staff to direct their efforts more effectively to those areas where a more thorough investigation might need to be undertaken. Any required performance criteria prescribed for a parameter or group of parameters need to be known; this should include an estimate of the uncertainty of the results.

NOTE Although soil screening methods are most commonly used to determine contaminants (pollutants) in soils, for example in investigations of potentially contaminated sites, they can also be used to determine parameters in uncontaminated soils (e.g. agricultural soils). Thus, the word “contaminant” in this document can be construed to apply in any particular context to any relevant soil parameter (e.g. chemical, physical, biological).