



# SLOVENSKI STANDARD SIST EN ISO 15799:2023

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**Kakovost tal - Navodilo za ekotoksikološko karakterizacijo tal in talnih materialov  
(ISO 15799:2019)**

Soil quality - Guidance on the ecotoxicological characterization of soils and soil materials  
(ISO 15799:2019)

Bodenbeschaffenheit - Anleitung zur ökotoxikologischen Charakterisierung von Böden  
und Bodenmaterialien (ISO 15799:2019)

Qualité du sol - Lignes directrices relatives à la caractérisation écotoxicologique des sols  
et des matériaux du sol (ISO 15799:2019)

**Ta slovenski standard je istoveten z: EN ISO 15799:2022**

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**ICS:**

13.080.99	Drugi standardi v zvezi s kakovostjo tal	Other standards related to soil quality
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EUROPEAN STANDARD

EN ISO 15799

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2022

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English Version

## Soil quality - Guidance on the ecotoxicological characterization of soils and soil materials (ISO 15799:2019)

Qualité du sol - Lignes directrices relatives à la caractérisation écotoxicologique des sols et des matériaux du sol (ISO 15799:2019)

Bodenbeschaffenheit - Anleitung zur ökotoxikologischen Charakterisierung von Böden und Bodenmaterialien (ISO 15799:2019)

This European Standard was approved by CEN on 9 October 2022.

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## European foreword

The text of ISO 15799:2019 has been prepared by Technical Committee ISO/TC 190 "Soil quality" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 15799:2022 by 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of an identical text or by endorsement, at the latest by April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

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**Endorsement notice**

The text of ISO 15799:2019 has been approved by CEN as EN ISO 15799:2022 without any modification.



INTERNATIONAL  
STANDARD

ISO  
15799

Second edition  
2019-03

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**Soil quality — Guidance on the  
ecotoxicological characterization of  
soils and soil materials**

*Qualité du sol — Lignes directrices relatives à la caractérisation  
écotoxicologique des sols et des matériaux du sol*

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## ISO 15799:2019(E)

### 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](http://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](http://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 of 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 [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 4, *Biological characterization*.

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This second edition cancels and replaces the first edition (ISO 15799:2003), which has been technically revised. The main changes compared to the previous edition are as follows:

- standardized forms of recommended test systems in [Annex A](#) have been amended and updated (e.g. ISO 20963 deleted and ISO 18311, ISO 18187 added).

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](http://www.iso.org/members.html).

## Introduction

Most of the existing ecotoxicological test methods (biotests) that are being internationally harmonized were developed to describe the ecotoxic potential of a test substance when added to a soil/soil material. These methods can be used with some modifications for the ecotoxicological characterization of soils and soil materials with respect to their function depending on the intended use. For substances with properties resulting in toxic effects, biotests are a complement to conventional chemical analysis. Results from chemical analysis can be used for ecotoxicological assessments based on information on the substances identified, including properties of the chemicals, e.g. their bioaccumulation potential. This information is often scarce (if it exists at all) and it does not include possible interactions (synergy/antagonism) between chemicals and the complex soil matrix. Furthermore, an exhaustive identification and quantification of substances is impractical. Therefore, ecotoxicological testing of soils can be used for investigating the potential toxicity of complex chemical mixtures. The extrapolation from laboratory tests to field conditions requires adequate consideration of important environmental factors within the test conditions and the selection of suitable ecotoxicological end points.

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# Soil quality — Guidance on the ecotoxicological characterization of soils and soil materials

## 1 Scope

This document is one of a family of International Standards providing guidance on soils and soil materials in relation to certain functions and uses including conservation of biodiversity. It applies in conjunction with these other standards. It provides guidance on the selection of experimental methods for the assessment of the ecotoxic potential of soils and soil materials (e.g. excavated and remediated soils, refills, embankments) with respect to their intended use and possible adverse effects on aquatic and soil dwelling organisms.

NOTE This is a reflection of the maintenance of the habitat and retention function of the soil. In fact, the methods listed in this document are suitable for usage in a TRIAD approach, i.e. for an ecological assessment of potentially contaminated soils (see ISO 19204).

This document does not cover tests for bioaccumulation.

The ecological assessment of uncontaminated soils with a view to natural, agricultural or horticultural use is not within the scope of this document. Such soils can be of interest if they can serve as a reference for the assessment of soils from contaminated sites.

The interpretation of results gained by applying the proposed methods is not in the scope of this document.

## 2 Normative references

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There are no normative references in this document.

## 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:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1 Types of soil and other soil materials

#### 3.1.1 soil

upper layer of the Earth's crust composed of mineral particles, organic matter, water, air and organisms

[SOURCE: ISO 11074:2015, 2.1.11, modified — The definition has been slightly modified and the Note 1 to entry has been deleted.]

#### 3.1.2

##### soil material

material which includes *excavated soil* (3.1.3), dredged materials, manufactured soils, treated soils and fill materials

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### 3.1.3

#### **excavated soil**

any natural material excavated from ground including top-soil, sub-soil, altered parent rock and parent rock itself

Note 1 to entry: Excavated soil typically arises during construction works.

[SOURCE: ISO 15176:2002, 3.1.5]

### 3.1.4

#### **standard soil**

field collected soil whose main properties (e.g. pH, texture, organic matter content) are within a known range

Note 1 to entry: An example for standard soils is “Eurosoils” (see Reference [28]).

## 3.2 Terms relating to soil characteristics

### 3.2.1

#### **habitat function**

ability of *soils* (3.1.1)/*soil materials* (3.1.2) to serve as a habitat for microorganisms, plants, soil living animals and their interactions (biocenoses)

### 3.2.2

#### **retention function**

ability of *soils* (3.1.1)/*soil materials* (3.1.2) to adsorb *pollutants* (3.2.3) in such a way that they cannot be mobilised via the water pathway and translocated into the food chain

Note 1 to entry: The habitat and retention functions include the following soil functions according to ISO 11074:2015:

- control of substance and energy cycles as components of ecosystems;
- basis for the life of plants, animals and man;
- carrier of genetic reservoir;
- basis for the production of agricultural products;
- buffer inhibiting movement of water, contaminants or other agents into the ground water.

### 3.2.3

#### **pollutant**

substance which due to their properties, amount or concentration cause impacts on the soil function or soil use

Note 1 to entry: See also *contaminant* (3.2.4) and *potentially harmful substance* (3.2.5).

[SOURCE: ISO 11074:2015, 3.4.18, modified — Wording has been slightly modified and Note 1 to entry has been added.]

### 3.2.4

#### **contaminant**

substance or agent present in the *soil* (3.1.1) as a result of human activity

Note 1 to entry: There is no assumption in this definition that harm results from the presence of the contaminant: see also *pollutant* (3.2.3) and *potentially harmful substance* (3.2.5).

[SOURCE: ISO 15176:2002, definition 3.2.6, modified — The wording in the Note 1 to entry has been slightly modified.]

**3.2.5****potentially harmful substance**

substance which when present in sufficient concentration or amount may be harmful to humans or the environment

Note 1 to entry: It may be the result of human activity [*contaminant* (3.2.4)] or naturally occurring.

[SOURCE: ISO 15176:2002, 3.2.8, modified — A Note 1 to entry has been added.]

**3.3 Land and sites****3.3.1****re-use**

useful and harmless utilisation of soil materials

Note 1 to entry: In the context of this International Standard, re-use means the transfer of soil materials to another location for use in agriculture, horticulture, forestry, gardens, recreational areas and construction sites.

[SOURCE: ISO 15176:2002, 3.4.1]

**4 Field of application****4.1 Soils and areas of soil use where ecotoxicity tests should be considered**

Ecotoxicity tests should be considered in the following soils and areas of soil use:

- Assessment of the ability of a soil to sustain a natural biocenosis or agriculture.
- Assessment of the combined ecotoxicity of all bioavailable contaminants present in soils or soil materials.
- Assessment of the ecotoxicity of potentially harmful substances in cases where the soil/soil material can affect the ground and surface water.
- Identification of soils or soil materials (refills, embankments) with a low degree of contamination usually within a depth of 1 m, which can remain at the site without further treatment.
- Detection of potential ecotoxicity which could not be traced by chemical analysis.
- Monitoring and control of the success of soil treatment (off-site, on-site/*in situ*).
- Monitoring and control of soils/soil materials, which have been decontaminated and are to be applied at the surface.

**4.2 Soils and areas of soil use where ecotoxicological tests are not necessary**

Provided that groundwater contamination can be excluded, ecotoxicological testing is not necessary in the following cases.

- Contaminated soils which are classified as hazardous waste or can be characterized clearly by chemical/analytical parameters. In such cases, ecotoxicological testing may be useful for a final investigation after remediation and for process control during biological remediation.
- Commercially/industrially used areas with no prospect of horticultural/agricultural use.
- Soil materials or backfilled materials in an area which is to be effectively sealed by covering with buildings or other forms of low permeability cover such as concrete or tarmacadam or asphalt.