



SLOVENSKI STANDARD SIST EN ISO 15175:2011

01-november-2011

Kakovost tal - Karakterizacija tal v zvezi z varstvom podzemne vode (ISO 15175:2004)

Soil quality - Characterization of soil related to groundwater protection (ISO 15175:2004)

Bodenbeschaffenheit - Ermittlung von Kennwerten des Bodens hinsichtlich des Wirkungspfad Boden - Grundwasser (ISO 15175:2004)

Qualité du sol - Caractérisation des sols en relation avec la nappe phréatique (ISO 15175:2004)

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ICS:

13.080.40	Hidrološke lastnosti tal	Hydrological properties of soils
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EUROPEAN STANDARD

EN ISO 15175

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2011

ICS 13.080.40

English Version

Soil quality - Characterization of soil related to groundwater protection (ISO 15175:2004)

Qualité du sol - Caractérisation des sols en relation avec la nappe phréatique (ISO 15175:2004)

Bodenbeschaffenheit - Ermittlung von Kennwerten des Bodens hinsichtlich des Wirkungspfad Boden - Grundwasser (ISO 15175:2004)

This European Standard was approved by CEN on 3 June 2011.

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Foreword

The text of ISO 15175:2004 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 15175:2011 by Technical Committee CEN/TC 345 "Characterization of soils" 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of an identical text or by endorsement, at the latest by December 2011, and conflicting national standards shall be withdrawn at the latest by December 2011.

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INTERNATIONAL
STANDARD

ISO
15175

First edition
2004-05-15

**Soil quality — Characterization of soil
related to groundwater protection**

*Qualité du sol — Caractérisation des sols en relation avec la nappe
phréatique*

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ISO 15175:2004(E)

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ISO 15175:2004(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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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ISO 15175 was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 7, *Soil and site assessment*.

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Soil quality — Characterization of soil related to groundwater protection

1 Scope

This International Standard provides guidance on the principles behind, and main methods for, the evaluation of sites, soils, and soil materials in relation to their role as a source of contamination of groundwater and their function in transporting, degrading and transforming contaminants. It identifies and lists relevant monitoring strategies, methods for sampling, soil processing and analytical methods.

This International Standard is applicable to the evaluation of the impact of contaminants on groundwater in relation to

- drinking water quality,
- irrigation water quality,
- industrial use,
- natural base flow.

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2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6341, *Water quality — Determination of the inhibition of the mobility of Daphnia magna Straus (Cladocera, Crustacea) — Acute toxicity test*

ISO 6468, *Water quality — Determination of certain organochlorine insecticides, polychlorinated biphenyls and chlorobenzenes — Gas chromatographic method after liquid-liquid extraction*

ISO 6878, *Water quality — Spectrometric of phosphorus using ammonium molybdate*

ISO 7150-1, *Water quality — Determination of ammonium — Part 1: Manual spectrometric method*

ISO 7150-2, *Water quality — Determination of ammonium — Part 2: Automated spectrometric method*

ISO 7888, *Water quality — Determination of electrical conductivity*

ISO 7890-1, *Water quality — Determination of nitrate — Part 1: 2,6-Dimethylphenol spectrometric method*

ISO 7890-2, *Water quality — Determination of nitrate — Part 2: 4-Fluorophenol spectrometric method after distillation*

ISO 7890-3, *Water quality — Determination of nitrate — Part 3: Spectrometric method using sulfosalicylic acid*

ISO 7981-2, *Water quality — Determination of six specified polynuclear hydrocarbons (PAH) — Part 2: Determination of six PAH by high-performance liquid chromatography with fluorescence detection after liquid-liquid extraction*

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ISO 8165-1, *Water quality — Determination of selected monovalent phenols — Part 1: Gas chromatographic method after enrichment by extraction*

ISO 8245, *Water quality — Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC)*

ISO 9001:2000, *Quality management systems — Requirements*

ISO 9562, *Water quality — Determination of adsorbable organically bound halogens (AOX)*

ISO 9964-1, *Water quality — Determination of sodium and potassium — Part 1: Determination of sodium by atomic absorption spectrometry*

ISO 9964-2, *Water quality — Determination of sodium and potassium — Part 2: Determination of potassium by atomic absorption spectrometry*

ISO 9964-3, *Water quality — Determination of sodium and potassium — Part 3: Determination of sodium and potassium by flame emission spectrometry*

ISO 10048, *Water quality — Determination of nitrogen — Catalytic digestion after reduction with Devarda's alloy*

ISO 10301, *Water quality — Determination of highly volatile halogenated hydrocarbons — Gas chromatographic methods*

ISO 10382, *Determination of organochlorine pesticides and polychlorinated biphenyls — gas chromatographic method with electron capture detection*

ISO 10390, *Soil quality — Determination of pH*

ISO 10523, *Water quality — Determination of pH*

ISO 10573, *Soil quality — Determination of water content in the unsaturated zone — Neutron depth probe method*

ISO 10693, *Soil quality — Determination of carbonate content — Volumetric method*

ISO 10694, *Soil quality — Determination of organic and total carbon after dry combustion (elementary analysis)*

ISO 11047, *Soil quality — Determination of cadmium, chromium, cobalt, copper, lead, manganese, nickel and zinc — Flame and electrothermal atomic absorption spectrometric methods*

ISO 11048, *Soil quality — Determination of water-soluble and acid-soluble sulfate*

ISO 11074-1, *Soil quality — Vocabulary — Part 1: Terms and definitions relating to the protection and pollution of the soil*

ISO 11074-4 *Soil quality — Vocabulary — Part 4: Terms and definitions relating to the rehabilitation of soils and sites*

ISO 11259, *Soil quality — Simplified soil description*

ISO 11260, *Soil quality — Determination of effective cation exchange capacity and base saturation level using barium chloride solution*

ISO 11261, *Soil quality — Determination of total nitrogen — Modified Kjeldahl method*

- ISO 11263, *Soil quality — Determination of phosphorus — Spectrometric determination of phosphorus soluble in sodium hydrogen carbonate solution*
- ISO 11264, *Soil quality — Determination of herbicides — Method using HPLC with UV detection*
- ISO 11265, *Soil quality — Determination of the specific electrical conductivity*
- ISO 11266, *Soil quality — Guidance on laboratory testing for biodegradation of organic chemicals in soil under aerobic conditions*
- ISO 11271, *Soil quality — Determination of redox potential — Field method*
- ISO 11272, *Soil quality — Determination of dry bulk density*
- ISO 11274, *Soil quality — Determination of the water retention characteristic — Laboratory methods*
- ISO 11275, *Soil quality — Determination of unsaturated hydraulic conductivity and water-retention characteristic — Wind's evaporation method*
- ISO 11277, *Soil quality — Determination of particle size distribution in mineral soil material — Method by sieving and sedimentation*
- ISO 11348-1, *Water quality — Determination of the inhibitory effect of water samples on the light emission of Vibrio fischeri (Luminescent bacteria test) — Part 1: Method using freshly prepared bacteria*
- ISO 11348-2, *Water quality — Determination of the inhibitory effect of water samples on the light emission of Vibrio fischeri (Luminescent bacteria test) — Part 2: Method using liquid-dried bacteria*
- ISO 11348-3, *Water quality — Determination of the inhibitory effect of water samples on the light emission of Vibrio fischeri (Luminescent bacteria test) — Part 3: Method using freeze-dried bacteria*
- ISO 11369, *Water quality — Determination of selected plant treatment agents — Method using high performance liquid chromatography with UV detection after solid-liquid extraction*
- ISO/TS 11370, *Water quality — Determination of selected organic plant treatment agents — Automated multiple development (AMD) technique*
- ISO 11464, *Soil quality — Pretreatment of samples for physico-chemical analyses*
- ISO 11423-1, *Water quality — Determination of benzene and some derivatives — Part 1: Head-space gas chromatographic method*
- ISO 11423-2, *Water quality — Determination of benzene and some derivatives — Part 2: Method using extraction and gas chromatography*
- ISO 11466, *Soil quality — Extraction of trace elements soluble in aqua regia*
- ISO 11905-1, *Water quality — Determination of nitrogen — Part 1: Method using oxidative digestion with peroxodisulfate*
- ISO/TR 11905-2, *Water quality — Determination of nitrogen — Part 2: Determination of bound nitrogen, after combustion and oxidation to nitrogen dioxide, using chemiluminescence detection*
- ISO 13536, *Soil quality — Determination of the potential cation exchange capacity and exchangeable cations using barium chloride solution buffered at pH = 8,1*
- ISO 13877, *Soil quality — Determination of polynuclear aromatic hydrocarbons — Method using high-performance liquid chromatography*

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ISO 13878, *Soil quality — Determination of total nitrogen content by dry combustion (“elemental analysis”)*

ISO 14154, *Soil quality — Determination of selected phenols and chlorophenols — gas chromatographic method*

ISO 14235, *Soil quality — Determination of organic carbon by sulfochromic oxidation*

ISO 14238, *Soil quality — Biological methods — Determination of nitrogen mineralization and nitrification in soils and the influence of chemicals on these processes*

ISO 14239, *Soil quality — Laboratory incubation systems for measuring the mineralization of organic chemicals in soil under aerobic conditions*

ISO 14254, *Soil quality — Determination of exchangeable acidity in barium chloride extracts*

ISO 14255, *Soil quality — Determination of nitrate nitrogen, ammonium nitrogen and total soluble nitrogen in air-dry soils using calcium chloride solution as extractant*

ISO 14256-2, *Soil quality — Determination of nitrate, nitrite and ammonium in field-moist soils by extraction with potassium chloride solution — Part 2: Automated method*

ISO 14507, *Soil quality — Pretreatment of samples for determination of organic contaminants*

ISO 14869-1, *Soil quality — Dissolution for the determination of total element content — Part 1: Dissolution with hydrofluoric and perchloric acids*

ISO 14869-2, *Soil quality — Dissolution for the determination of total element content — Part 2: Dissolution by alkaline fusion*

ISO 14870, *Soil quality — Extraction of trace elements by buffered DTPA solution*

ISO 14911, *Water quality — Determination of dissolved Li^+ , Na^+ , NH_4^+ , K^+ , Mn^{2+} , Ca^{2+} , Mg^{2+} , Sr^{2+} and Ba^{2+} using ion chromatography — Method for water and waste water*

ISO 15009, *Soil quality — Gas chromatographic determination of the content of volatile aromatic hydrocarbons, naphthalene and volatile halogenated hydrocarbons — Purge-and-trap method with thermal desorption*

ISO 15089, *Water quality — Guidelines for selective immunoassays for the determination of plant treatment and pesticide agents*

ISO 15178, *Soil quality — Determination of total sulfur by dry combustion*

ISO 15473: 2002, *Soil quality — Guidance on laboratory testing for biodegradation of organic chemicals in soil under anaerobic conditions*

ISO 15799, *Soil quality — Guidance on the ecotoxicological characterization of soils and soil materials*

ISO 15913, *Water quality — Determination of selected phenoxyalkanoic herbicides, including bentazones and hydroxybenzonnitriles by gas chromatography and mass spectrometry after solid phase extraction and derivatization*

ISO 16703, *Soil quality — Determination of content of hydrocarbon in the range C_{10} to C_{40} by gas chromatography*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

ISO 20279, *Soil quality — Extraction of thallium and determination by electrothermal atomic absorption spectrometry*

OIML R 112:1994, *High performance liquid chromatographs for measurement of pesticides and other toxic substances*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11074-1 and ISO 11074-4 and the following apply.

3.1

soil

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

[ISO 11074-1]

3.2

contaminant

substance or agent present in the soil as a result of human activity

cf. **pollutant** (3.8).

NOTE There is no assumption in this definition that harm results from the presence of the contaminant.

3.3

diffuse-source input

non-point-source input

input of a substance emitted from moving sources, from sources with a large area or from many sources

NOTE 1 The sources can be for example cars, application of substances through agricultural practices, emissions from town or region, deposition through flooding of a river

NOTE 2 Diffuse-source input usually leads to sites that are relatively uniformly contaminated. At some sites the input conditions may nevertheless cause a higher local input near the source or where atmospheric deposition/rain is increased.

3.4

groundwater

water which is being held in, and can usually be recovered from, an underground formation

3.5

hazard

property of a substance or material, or any action, which may cause an adverse effect on soil functions

3.6

percolating water

soil water that moves downward in the percolating space due to gravity, insofar as it is not groundwater

3.7

point-source input

input of a substance from a stationary discrete source of defined size

NOTE 1 The sources can be stack emissions, accidental spills, waste dumps, spills on industrial sites, major leaks from sewers and other pipelines.

NOTE 2 Point-source input can cause both locally contaminated sites and relatively uniformly contaminated sites.

[ISO 11074-1]

3.8

pollutant

substance or agent present in the soil (or groundwater) which due to its properties, amount or concentration causes adverse impacts on soil functions or soil use

NOTE Also described as those substances which due to their properties, amount or concentration cause impacts on soil functions or soil use.