SLOVENSKI STANDARD
oSIST prEN ISO 25177:2018

01-februar-2018

Kakovost tal - Terenski opis tal (ISO/DIS 25177:2018)

Soil quality - Field soil description (ISO/DIS 25177:2018)

Bodenbeschaffenheit - Bodenbeschreibung im Felde (ISO/DIS 25177:2018)

Qualité du sol - Description du sol sur le terrain (ISO/DIS 25177:2018)

Ta slovenski standard je istoveten z: **prEN ISO 25177**

ICS:

13.080.05	Preiskava tal na splošno	Examination of soils in general

oSIST prEN ISO 25177:2018 **en,fr,de**

DRAFT INTERNATIONAL STANDARD

ISO/DIS 25177

ISO/TC **190**/SC **1** Secretariat: **AFNOR**

Voting begins on: **2017-12-29**

Voting terminates on: **2018-03-23**

Soil quality — Field soil description

Qualité du sol — Description du sol sur le terrain

ICS: 13.080.01

This document is circulated as received from the committee secretariat.

ISO/CEN PARALLEL PROCESSING

Reference number
ISO/DIS 25177:2017(E)

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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.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 25177 was prepared by Technical Committee ISO/TC 190, *SOIL QUALITY*, Subcommittee SC 1, Evaluation of criteria, terminology and codification.

This second/third/... edition cancels and replaces the first/second/... edition (), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

Introduction

Traditionally descriptions of soils and their environment were carried out as parts of soil survey and soil inventory, the purpose of which was to describe the pedogenetic context of the soil and assess applied aspects, principally agronomic potentials.

Today many soil observations are made as part of much wider or smaller environmental studies, and they might include analysis for objectives such as:

— the identification of human influences on the soils, particular attention being paid to the negative effects of these influences (for example, contamination with possible hazardous substances and physical deterioration);

— land protection within the context of "sustainable" agriculture;

— the assessment of the fate of contaminants introduced into the soil;

— the assessment of the consequences resulting from changes in the use of the soil;

— setting up monitoring programs for specific purposes (observation of changes of soil properties in time) ;

— the development of spatial data bases (used in the context of GIS) aimed at facilitating the geographical representation of these ;

— and many other uses.

The text was originally based on aspects of the traditional approach to soil description [for example the Guidelines for soil description FAO Rome (2006) and the soil type classification from the World Reference Base for Soil Resources (WRB). Soil descriptions and further soil data are used and reused for a variety of purposes.

For more multiple use of soil decrypted data the standard can be used with other (common and public) standards. Some types of soil information, specifically soil contamination data and data on human made and exogenous material were not available in former versions and have been introduced in this version.

The general framework of this International Standard stayed the same. New e.g. are the references to the ISO 18400-series (see figure 1), observations for contamination and description of artificial material and soil layers.

This International Standard has been developed within the framework of ISO/TC 190, *Soil quality* The description of soils and sites is often accompanied by field and laboratory measurements. Some field measurement observations are included.

The quality of field soil descriptions do very much depend on the knowledge and especially the experience of the person who describes in the field. Most field observations are estimations, sometimes with the help of some reference figures and devices like colour-charts, magnifiers, sieves, scatter diagrams.

Depending on the object of the investigation, desired elements of interest are observed and noted. Even within a specific field of interest the investigation project can require a more or less detailed description.

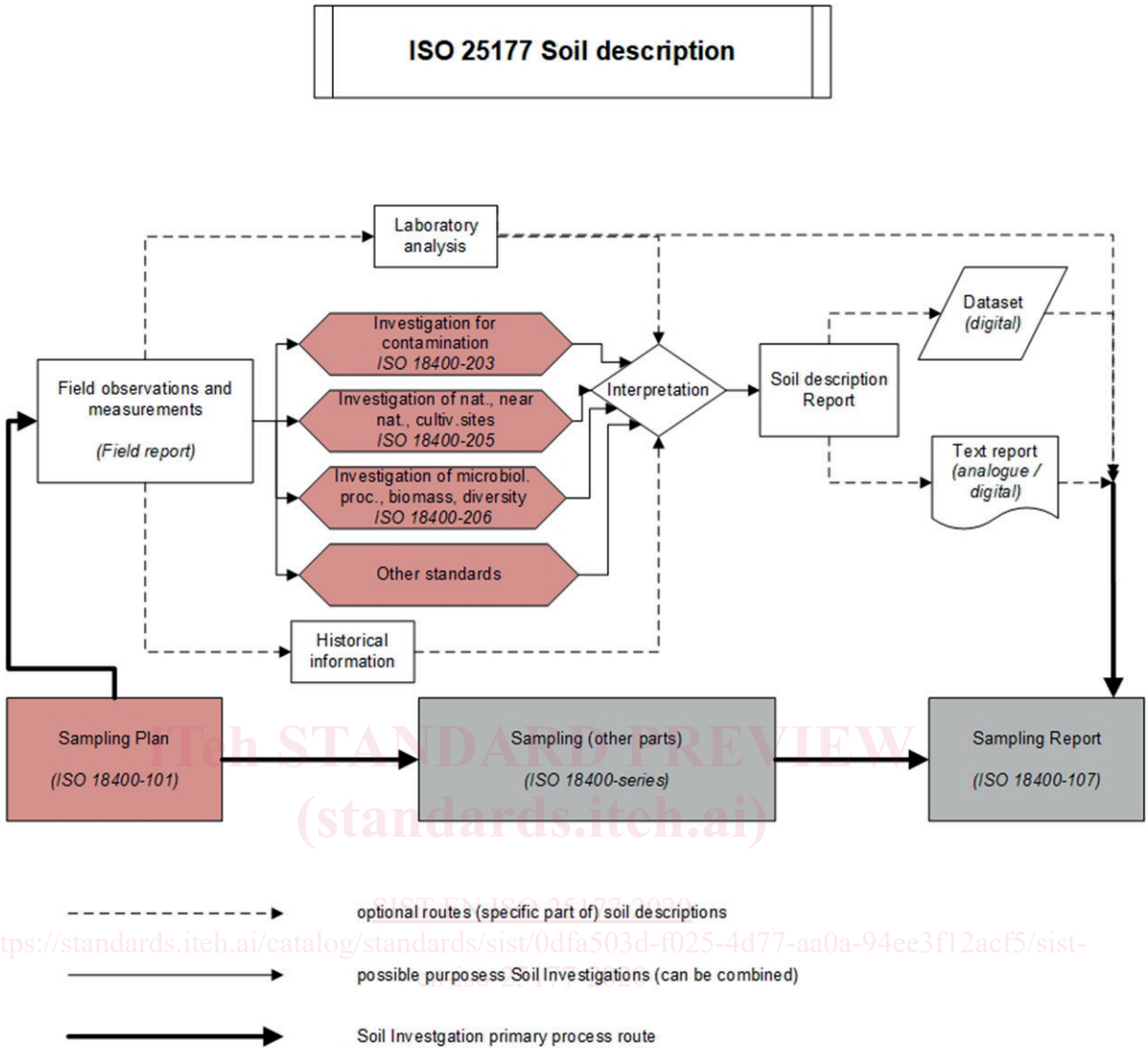

Figure 1 — Soil description process

Soil quality — Field soil description

1 Scope

This International Standard defines rules for describing soil and its environmental context at a given site. This standard describes soil description made in the field. Sites may be natural, near natural, urban or industrial. The soil observations and measurements can be made on a project site level, on a plot level, on layer of horizon level and on specific soil constituents.

To be used in soil investigations this International Standard also describes how to describe layers of artificial material or layers that were not modified by pedogenetic processes s. str. and how to describe coarse material of natural or artificial origin.

NOTE 1 It may not be possible or necessary to record data under all the headings listed in these descriptions.

NOTE 2 An overall guidance for presentation of information from soil surveys is given in ISO 15903.

NOTE 3 Sampling is done in respect to series ISO 18400.

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 3166-1:1997, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes*

ISO 3166-2:1998, *Codes for the representation of names of countries and their subdivisions — Part 2: Country subdivision code*

ISO 3166-3:1999, *Codes for the representation of names of countries and their subdivisions — Part 3: Code for formerly used names of countries*

ISO 14688-1:2002, *Geotechnical investigation and testing — Identification and classification of soil — Part 1: Identification and description*

ISO 14688-2:2004, *Geotechnical investigation and testing — Identification and classification of soil — Part 2: Principles for a classification*

ISO 18400-101, *Soil quality — Sampling — Part 101: Framework for the preparation and application of a sampling plan*

ISO 18000-103, *Soil quality -- Sampling - Part 103 - Safety*

ISO 18400-106, *Soil quality — Sampling — Part 106: Quality control and quality assurance*

ISO 18400-107, *Soil quality — Sampling — Part 107: Recording and reporting*

ISO 18400-203, *Soil quality -- Sampling - Part 203 - Investigation of potentially contaminated sites*

ISO 18400-204, *Soil quality — Sampling — Part 204: Guidance on sampling of soil gas*

ISO 18400-205, *Soil quality -- Sampling -- Part 205 - Guidance on the procedure for investigation of natural, near-natural and cultivated sites*

ISO 18400-206, *Soil quality -- Sampling -- Part 206 - Guidance on the collection, handling and storage of soil for the assessment of biological functional and structural endpoints in the laboratory*

ISO 28258:2013, *Soil quality — Digital exchange of soil-related data*

ISO 11074:2015, *Soil quality — Vocabulary*

3 Description scopes and methods

3.1 Investigation scopes

Soil investigations usually have specific objectives. Field soil description will usually be adapted to the scope of the investigation. Other standards are adapted to various scopes and can be combined with this International Standard.

Main investigation types based on project objectives or approaches are:

— investigation for contamination (e.g. according to ISO 18400-203)

— investigation for nature or near-nature management (e.g. according to ISO 18400-205)

— investigation for cultivation management

— investigation for agricultural management

— investigation for forestry

— investigation for archeology

— investigation of soil gas (e.g. according to ISO 18400-204)

— biological investigation (e.g. according to ISO 18400-206)

Note 1 see figure 1 for a schema how this standard can be used in combination with other standards

Note 2 Annex G provides an informative list of the most used aspects of soil that can be described and the importance of separate types of soil investigations.

3.2 Combined use with other description standards

This International Standard can also be used in combination with standards that provide guidance or requirements of specific aspects of soil observations and measurements.

Where relevant, examples are given for the combined use with

— FAO Guidelines for soil descriptions e.g. to describe soils and denominate horizons;

— World Reference Base for soil resources (WRB) e.g. to determine soil types;

— ISO 14688 part 1 and 2 Geotechnical investigation and testing: Identification and classification of soil.

This International Standard can be used with other combined standards if a reference to the combined standard is given in the field report (this International Standard) and the report of the descriptions in the investigation report (e.g. according to ISO 18400-107).

If other standards that limit the options given in this International Standard are used in combination, the reference to this International Standard shall also be given in combination.

Examples

ISO 25177:— FAO

ISO 25177:— ISO 18400-203

3.3 Quality control and quality assurance

The desired accuracy and detail levels is dependent on the project scope and project objectives.

Where aspects of soil description are mentioned or given ISO 18400-106 Soil sampling – Soil sampling part 106: Quality control and quality assurance shall be applied.

For digital exchange of soil related data ISO 28258:— Soil quality - Digital exchange of soil-related data can be applied.

Note 1 Education and training of staff is important, especially the experience with similar soil sites, soil layers and project scopes. Estimations of e.g. texture can be done by reference analysis and reference samples, working with (other) experienced soil describers. If no specific (e.g. lawful) regulation is in effect, specific branch or project method to determine valid estimations is recommended.

Note 2 A check for logical and consistent field data can give a first impression of data quality

Note 3 For field investigations checking of some absolute accurate estimations can be done by comparison with laboratory analyses e.g. sieving tests. Relatively accurate estimations can be checked by comparison between two different describers of soil or soil samples.

3.4 Description structure

Soil is described in different levels:

— General level: references of a soil description, e.g. profile numbers, geographical coordinates. See clause 4.

— Site level: aspects of the location or site. The scale of the location or site is determined in the project. A project can have different sites or locations. A site or location usually has more than one plots. See clause 4.

— Plot level: aspects that can be observed on profile level: from the borehole or in a trial pit or trench. See clause 5 and 6.

— Layer/horizon level: aspects that can be observed on one spot from surface down. See clause 7

NOTE The difference between plot and site (location) is explained in ISO 28258 Digital exchange of soil-related data.

4 Description of general references and general information

Reference for this clause is FAO Guidelines for soil descriptions (FAO 2006). If another reference is used this shall be clearly stated in the text of the written report or the metadata of the digital data that is reported. The following aspects should be described:

4.1 Site/profile numbers

— Profile number

— Survey number or code

4.2 Location

— Country

Codes according to ISO 3166-1 and ISO 3166-2 shall be used. For historical research designations according to ISO 3166-3 should be considered, when necessary.

— Administrative division

To be adapted according to the country: (provinces, states, regions, departments, towns etc.), both uncoded and coded.

— Toponym and address of the location

Place name, street and street number, postal code, local/extra place name.

4.3 Geographical coordinates

Latitude and longitude of the site are given as accurately as possible in decimal degrees (WGS84). Other reference systems can be used if specified.

— Type of geographical reference system (degrees, lambert, national reference grid)

— Position within the geographical reference system (longitude in deg/min/s, latitude in deg/min/s)

— Altitude (in meters)

4.4 Date of observation

— Year

— Month

— Day

— Time

4.5 Author and organization

— Author's name

— Accreditation

— Name of organization

— Department

— Address

— Telephone

— Fax number

— E-mail address

5 Profile environment

The environment of the determined profile usually referred to as soil description on plot level can be described in combination of different specific standards (see clause 2).

Reference for this clause is FAO Guidelines for soil descriptions (FAO 2006). If another reference is used this shall be clearly stated in the text of the written report or the metadata of the digital data that is reported.

5.1 Previous precipitation

0 No precipitation within the last month

1 No precipitation within the last week

2 No precipitation within the last three days

3 Rainy but no intense precipitation within the last three days

4 Moderate rain for several days or intense rainfall the day before the observation

5 Extreme precipitation or snow melt or inundation just before the observation

6 Not recorded

5.2 Land use at plot level (checked by detailed field survey)

01 Buildings and industrial infrastructures

02 Mining site (current or past).

03 Metal processing sites

04 Chemical processing sites

05 Oil and gas production sites

06 Metal manufacturing sites

07 Food processing sites

08 Waste disposal sites

09 Cultivated Lands

10 Horticulture

11 Grazing

12 Orchards, fruit plantations or grapevines

13 Forest, woodlands

14 Mixed land use (agroforestry or agropastoral)

15 Gathering/hunting-fishing (exploitation of natural vegetation, hunting or fishing)

16 Nature protection (for example: nature reserve, protected area, erosion control by terracing)

17 Wetland (for example: marsh, swamp, mangrove, etc.)

18 Snow or ice cover

19 Bare rock or rocky surface

20 Other type of unutilized and unmanaged site

21 Natural lands

22 Natural grass lands

23 Recreation land