SLOVENSKI STANDARD
SIST EN ISO 28258:2014

01-marec-2014

Kakovost tal - Digitalna izmenjava podatkov o tleh (ISO 28258:2013)

Soil quality - Digital exchange of soil-related data (ISO 28258:2013)

Bodenbeschaffenheit - Digitaler Austausch bodenbezogener Daten (ISO 28258:2013)

Qualité du sol - Échange numérique de données relatives au sol (ISO 28258:2013)

Ta slovenski standard je istoveten z: **EN ISO 28258:2013**

ICS:

13.080.01	Kakovost tal in pedologija na splošno	Soil quality and pedology in general
35.240.99	Uporabniške rešitve IT na drugih področjih	IT applications in other fields

SIST EN ISO 28258:2014 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 28258

October 2013

ICS 13.080.01

English Version

Soil quality - Digital exchange of soil-related data (ISO 28258:2013)

Qualité du sol - Échange numérique de données relatives au sol (ISO 28258:2013)

Bodenbeschaffenheit - Digitaler Austausch bodenbezogener Daten (ISO 28258:2013)

This European Standard was approved by CEN on 24 August 2013.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, 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: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN ISO 28258:2013: E

Contents

Page

Foreword

This document (EN ISO 28258:2013) has been prepared by Technical Committee ISO/TC 190 “Soil quality” in collaboration with 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 April 2014, and conflicting national standards shall be withdrawn at the latest by April 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 28258:2013 has been approved by CEN as EN ISO 28258:2013 without any modification.

INTERNATIONAL STANDARD

ISO 28258

First edition
2013-10-01

Soil quality — Digital exchange of soil-related data

Qualité du sol — Échange numérique de données relatives au sol

Reference number
ISO 28258:2013(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

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. 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. 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.

The committee responsible for this document is ISO/TC Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 1, *Evaluation of criteria, terminology and codification*.

Introduction

Concerns about the future of soils are increasing. The quality of soils and the needs for soil protection are an issue of ever-increasing importance, in all countries. Whether it be for matters of land development, recycling of waste, for assessing the consequences of the way of use of soils on the quality of water or, more generally, the maintaining of their ability to guarantee the functions expected of them by society, it is becoming more and more necessary to know soils, to describe them and to analyse them. A large number of standards indicate how to carry out these descriptions and analyses. However, soil-related studies are usually conducted by specialized departments and their results have then to be forwarded to the requesting parties or to the administration. Furthermore, as regards the availability of environmental data for the public, the official services are solicited to put them online, including information related to soils.

Soil data are produced during projects which involve the description of soil and — often, but not necessarily — sampling and analysis. Soil properties are estimated for parts of a soil, which can be genetic horizons or depth classes. This vertical sequence composes a soil profile. The intensity of soil description, sampling and analysis varies greatly among projects. In addition, available metadata, sampling and analytical designs and nomenclatures vary as well.

Due to this wide diversity of data and uses, the hardcopy (paper) form is nowadays rarely suitable, particularly when we consider that soil studies do not generally constitute an end in themselves but are only a part of the data required for the taking of land developmental or environmental-related decisions. Thus, soil data need to be crossed with other environmental, land-use or statistical data sources; the use of geographical information systems (GIS) is therefore essential. The purpose of this International Standard is to provide a general procedure to record all kinds of soil-related data in order to exchange them, while being consistent with relevant International Standards, but without any prerequisite for a given information system.

This International Standard proposes an eXtensible Markup Language (XML)-based format. XML consists of a set of rules for encoding information which is platform- and software-independent. A major advantage of using XML is that it is the standard for data transfer over the Internet. Most existing software tools and programming interfaces are designed to process and query XML files, to transform XML

into other data formats for further processing or display, and to transform XML to/from relational databases, whatever the purpose and the needs of the users. Moreover, a specific form of XML called GML is used for geographic information, promoting its exchange and use in combination with other environmental data.

Consequently, this International Standard contains information on how to encode soil data (metadata, soil description as well as geographic and temporal ones), including specifications and XML codes. In addition, and to make this International Standard "future-proof" between revisions, guidelines are provided for encoding of additional information not yet considered. These basic principles allow also the recipient system/user to read and/or decode information provided in a clear, safe and retrievable manner.

Figure 1 shows the fluxes of soil data, generic to many kinds of applications that can be organized using this International Standard.

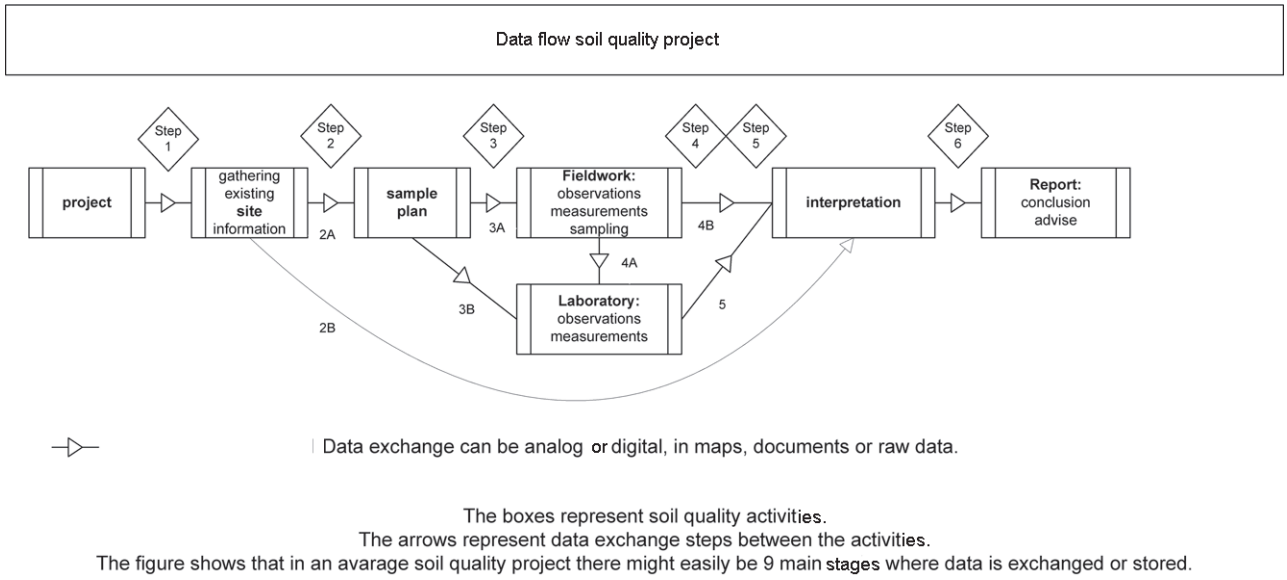

Figure 1 — Common data exchanges in soil quality

Soil quality — Digital exchange of soil-related data

1 Scope

This International Standard describes how to digitally exchange soil-related data. It aims to facilitate the exchange of valid, clearly described and specified soil-related data between individuals and organizations via digital systems, and enables any soil data producer, holder or user to find and transfer data in an unambiguous way.

This International Standard contains definitions of features, several parameter specifications and encoding rules that allow consistent and retrievable data exchange. It also allows the explicit geo-referencing of soil data by building on other International Standards, thus facilitating the use of soil data within geographical information systems (GIS). Because soil data are of various origins and are obtained according to a huge variety of description and classification systems, this International Standard provides no attribute catalogue, but a flexible approach to the unified encoding of soil data by implementing the provisions of ISO 19156 observations and measurements (OM) for use in soil science.

2 Normative references

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

ISO 11074, *Soil quality — Vocabulary*

ISO 15903, *Soil quality — Format for recording soil and site information*

ISO 19106:2004, *Geographic information — Profiles*

ISO 19109, *Geographic information — Rules for application schema*

ISO 19118, *Geographic information — Encoding*

ISO 19136, *Geographic information — Geography Markup Language (GML)*

ISO 19156:2011, *Geographic information — Observations and measurements*

ISO 25177:2008, *Soil quality — Field soil description*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11074 and in ISO 19109, and the following, apply.

3.1
analysis
process by which a sample is tested for composition or state according to a described procedure

Note 1 to entry: Most analyses are carried out on dislocated samples, but analyses can also be carried out on material *in situ*.

3.2
analytical result
qualitative or quantitative characteristic of a material obtained by an analysis

3.3
application schema
conceptual schema for data required by one or more applications

[SOURCE: ISO 19101.]

3.4
attribute
characteristic of a feature

Note 1 to entry: Objects and entities (see ISO 11179) are features in the context of this International Standard.

3.5
borehole
boring
bore
penetration into the subsurface with removal of soil/rock material by using, e.g. a hollow tube-shaped tool

Note 1 to entry: Generally, it is a vertical penetration.

[SOURCE: ISO 11074.]

3.6
class
description of a set of objects that share the same attributes, operations, methods, relationships, and semantics

[SOURCE: ISO/IEC 19501.]

3.7
code
member of a code list

3.8
code list
defined set of valid values of an attribute parameter

3.9
data model
description of the organization of data in a manner that reflects an information structure

3.10
extensible mark-up language
XML
subset of SGML (standard generalized markup language) which uses semantic tags in a structured format

Note 1 to entry: SML offers a flexible way to create information formats and to share both data and metadata with other applications and users.

Note 2 to entry: See ISO 13374-2.

3.11
feature
abstraction of a real world phenomenon

[SOURCE: ISO 19101.]

Note 1 to entry: A feature has identity and properties (it can be described with attributes).

Note 2 to entry: Any feature is an instantiation of a feature type, e.g. several described real-world soil profiles are all features of the feature type SoilProfile.

3.12
feature catalogue
catalogue(s) containing definitions and descriptions of feature types

3.13
feature type
class of features having common characteristics

[SOURCE: ISO 19156.]

Note 1 to entry: For this International Standard, it is considered that both geographic and soil quality related real-world and abstract objects can be features.

3.14
geography markup language
GML
XML encoding in compliance with ISO 19118 and, more specifically, ISO 19136 for the transport and storage of geographic information modelled according to the conceptual modelling framework used in the ISO 19100 family of International Standards and including both the spatial and non-spatial properties of geographic features

3.15
horizon
domain of a soil with a certain vertical extension, which is more or less parallel to the surface and is homogeneous for most morphological and analytical characteristics, developed in a parent material through pedogenic processes or made up of *in situ* sedimented organic residues of up-growing plants (peat)

3.16
layer
domain of a soil with a certain vertical extension developed through non-pedogenic processes, displaying an unconformity to possibly over- or underlying adjacent domains

Note 1 to entry: In the framework of soils deeply modified by human activity, artificial layers may be due to different kinds of deposits (concrete, bricks, etc.).

Note 2 to entry: Layers may be part of a horizon.

3.17
metadata
data that defines and describes other data

[SOURCE: ISO/IEC 11179-1:2004]

Note 1 to entry: Metadata are data, and data become metadata when they are used as defined. This happens under particular circumstances, for particular purposes, and with certain perspectives. The set of circumstances, purposes or perspectives for which some data are used as metadata is called the *context* (see ISO/IEC 11179-1).

Note 2 to entry: In turn, some metadata may provide the context for the interpretation of the data they are related to, e.g. units of measurement give an idea how to interpret the measurement value.

Note 3 to entry: This definition is similar to that of "data about data", as defined in ISO 19115, among other International Standards.

3.18
non-destructive investigation
application of a set of procedures or techniques to obtain observations on a material without lastingly changing its physical structure and chemical characteristics

3.19
observation
act of observing a property, with the goal of producing an estimate of the value of the property

Note 1 to entry: This definition is conformant with the definition of *observation* in ISO 19156.

