
Soil quality — Sampling —

Part 100:

**Guidance on the selection of sampling
standards**

Qualité du sol — Échantillonnage —

*Partie 100: Lignes directrices sur la sélection des normes
d'échantillonnage*





COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

	Page
Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 General	1
5 Structure of sampling standards	1
6 Aspects of level 1 standards	2
7 Aspects of level 2 standards	2
8 Aspects of level 3 standards	2
Annex A (informative) Existing International Standards and other standards under the umbrella (ISO 18400-100)	4

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 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.

The document was prepared by Technical Committee ISO/TC 190, *Soil quality*, subcommittee SC 2, *Sampling*.

A list of all parts in the ISO 18400 series can be found on the ISO website.

Soil quality — Sampling —

Part 100:

Guidance on the selection of sampling standards

1 Scope

This document describes the structure of sampling standards for any kind of soil investigation. It also describes the coherence of the different parts in the ISO 18400 series. It provides guidance on the selection of sampling standards appropriate for the objectives of users.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 11074, *Soil quality — Vocabulary*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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

4 General

Whenever soil is to be characterized, it is not possible nor convenient to examine the whole and it is therefore necessary to take samples. It is essential that clear sampling objectives are set to ensure that suitable results are obtained for the intended purposes, e.g. determination of the nutrient status of soil or assessment of (potential) risks to human health.

Given the wide variety of potential objectives for soil sampling such as characterization of soils (and other soil materials) that are composed of a mixture of mineral particles, organic matter, water, air (soil gas) and soil organisms belonging naturally or not to soil, there is a need for a range of complementary standards as described in this document.

5 Structure of sampling standards

Three levels of sampling standards are recognized in the ISO 18400 series (see [Figure 1](#)). This document is the umbrella standard which describes all sampling standards within the scope of the ‘three levels-approach’ and their interrelationships. It will be updated when new documents are introduced on the levels 1, 2 or 3. See also [Annex A](#).

- a) **Level 1** includes a limited number of general standards dealing with general concepts within the scope of (environmental) sampling, e.g. statistics, sampling techniques, terminology and safety issues.

- b) **Level 2** includes a larger number of different sampling standards on subjects for which general guidance can be provided e.g. natural and cultivated soils, contaminated soils, sampling to determine biological parameters, for nutrient characterization, for sampling of soil gas.
- c) **Level 3** includes sampling procedures, providing detailed instructions for specifically defined circumstances and objectives (within this level 3 several parallel sampling procedures may be standardized as long as their field of application can be identified as sufficiently different).

Level 3 gives an opportunity to consider a solution to differences in approaches between different countries and/or key players. This includes acceptance of parallel sampling procedures for various conditions and objectives, allows different views to exist next to each other, and enables the user to select standard(s) appropriate for their specific objective(s). National standards can be standards on level 3, wherein comparable standards from different countries can be introduced based on a difference in their objectives. Obviously, the standards on level 3 should seamlessly fit to the standards on level 2.

EXAMPLE This example clarifies the concept:

Identify need for investigation of potentially contaminated site:

- consult ISO 18400-203¹⁾;
- carry out preliminary investigation according to ISO 18400-202¹⁾;
- prepare sampling strategy according to ISO 18400-104¹⁾;
- prepare sampling plan according to ISO 18400-101;
- carry out sampling according to ISO 18400-102, ISO 18400-103, ISO 18400-105, ISO 18400-106, ISO 18400-201, ISO 18400-203¹⁾ and ISO 18400-204;
- sample soil for determination of volatile organic compounds (VOC) according to level 3 method (30X);
- prepare sampling report according to ISO 18400-107;
- prepare investigation and assessment report(s) according to ISO 18400-203¹⁾.

6 Aspects of level 1 standards

Aspects of general importance for several sampling scenarios are dealt with on level 1.

EXAMPLE Sampling plan, sampling techniques and their application, strategies, safety, transport and storage, quality assurance.

7 Aspects of level 2 standards

Level 2 is open to all different applications of soil sampling standards, whereas specific sampling strategies are applied due to specific soil or parameter properties.

Typical examples for different soil characteristics which require different sampling strategies are natural or agricultural soils, stockpiles, potentially contaminated areas, geological investigations, forest areas, and measurement of biological properties including assessment of microbial diversity.

8 Aspects of level 3 standards

Level 3 standards allow amplification of level 2 guidance including procedures for specific soil sampling scenarios, or application of particular sampling techniques or approaches.

1) Under preparation.

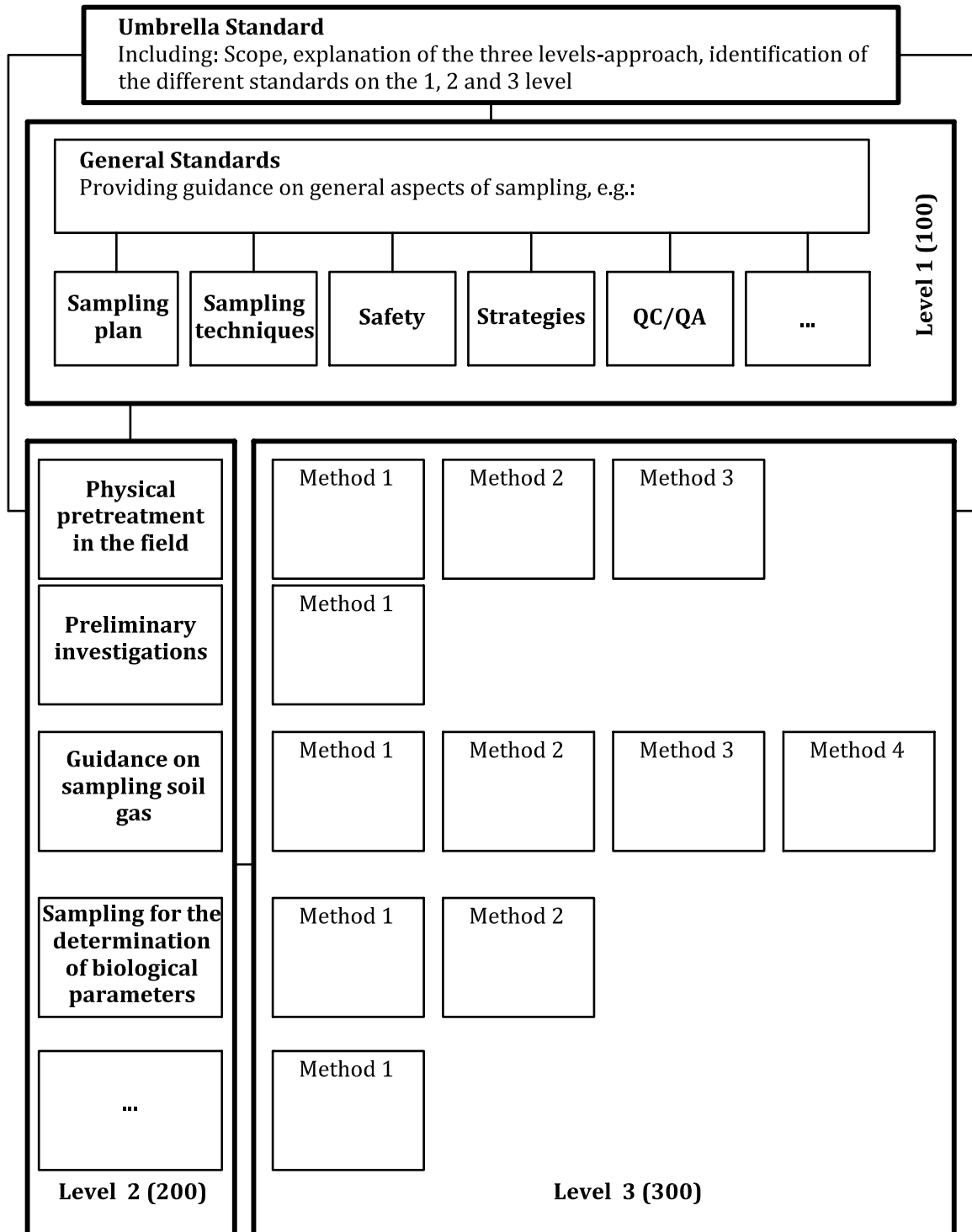


Figure 1 — “Three levels-approach” for sampling standardization

Annex A (informative)

Existing International Standards and other standards under the umbrella (ISO 18400-100)

A.1 Umbrella

ISO 18400-100, *Soil quality — Sampling — Part 100: Guidance on the selection of sampling standards*

A.2 Level 1

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

— ISO 18400-102, *Soil quality — Sampling — Part 102: Selection and application of sampling techniques*

— ISO 18400-103, *Soil quality — Sampling — Part 103: Safety*

— ISO 18400-104²⁾, *Soil quality — Sampling — Part 104: Strategies*

— ISO 18400-105, *Soil quality — Sampling — Part 105: Packaging, transport, storage and preservation of samples*

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

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

A.3 Level 2

— ISO 18400-201, *Soil quality — Sampling — Part 201: Physical pretreatment in the field*

— ISO 18400-202²⁾, *Soil quality — Sampling — Part 202: Preliminary investigations*

— ISO 18400-203²⁾, *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 18400-205²⁾, *Soil quality — Sampling — Part 205: Guidance on the procedure for investigation of natural, near-natural and cultivated sites*

— ISO 18400-206²⁾, *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*

A.4 Level 3

—

2) Under preparation.

