

---

---

**Soil quality — Sampling —**

Part 6:

**Guidance on the collection, handling and storage of soil under aerobic conditions for the assessment of microbiological processes, biomass and diversity in the laboratory**

*Qualité du sol — Échantillonnage —*

*Partie 6: Lignes directrices pour la collecte, la manipulation et la conservation, dans des conditions aérobies, de sols destinés à l'évaluation en laboratoire des processus, de la biomasse et de la diversité microbiens*



**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS



© ISO 2009

**COPYRIGHT PROTECTED DOCUMENT**

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

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](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

Foreword.....	iv
Introduction .....	v
1 Scope .....	1
2 Terms and definitions.....	1
3 Procedure .....	1
3.1 Selection of sampling locations.....	1
3.2 Description of field site .....	2
3.3 Sampling conditions.....	2
3.4 Sampling methods.....	2
3.5 Sample marking .....	2
3.6 Transportation conditions .....	2
3.7 Soil processing .....	2
3.8 Storage conditions and storage periods.....	3
3.9 Pre-incubation.....	4
4 Sampling report .....	4
Bibliography .....	6

## 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 10381-6 was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 4, *Biological methods*.

This second edition cancels and replaces the first edition (ISO 10381-6:1993), Subclauses 3.6, 3.7, 3.8 and Clause 4 of which have been technically revised. Table 1 has been added.

ISO 10381 consists of the following parts, under the general title *Soil quality — Sampling*:

- *Part 1: Guidance on the design of sampling programmes*
- *Part 2: Guidance on sampling techniques*
- *Part 3: Guidance on safety*
- *Part 4: Guidance on the procedure for investigation of natural, near-natural and cultivated sites*
- *Part 5: Guidance on the procedure for the investigation of urban and industrial sites with regard to soil contamination*
- *Part 6: Guidance on the collection, handling and storage of soil under aerobic conditions for the assessment of microbiological processes, biomass and diversity in the laboratory*
- *Part 7: Guidance on sampling of soil gas*
- *Part 8: Guidance on sampling of stockpiles*

## Introduction

Soils are both complex and heterogeneous because they consist of both living and non-living components occurring in different combinations. Therefore, the condition of the soil, from collection to completion of an experiment, should be considered in relation to effects on the soil microflora. Temperature, water content, availability of oxygen and duration of storage are all known to affect the soil microflora, and thus the processes they mediate.

Soils can however be used effectively in laboratory systems to investigate microbially-mediated processes, provided that the dynamics of the living microflora are appreciated. This part of ISO 10381 provides guidance on the collection, handling and storage of soil for laboratory use where aerobic microbial activity is the main component of the study. It describes how to minimize the effects of differences in temperature, water content and availability of oxygen on aerobic processes to facilitate reproducible laboratory determinations [10], [11].

This document is a preview generated by EVS

## Soil quality — Sampling —

### Part 6:

## Guidance on the collection, handling and storage of soil under aerobic conditions for the assessment of microbiological processes, biomass and diversity in the laboratory

### 1 Scope

This part of ISO 10381 provides guidance on the collection, handling and storage of soil for subsequent testing under aerobic conditions in the laboratory. The recommendations in this document are not applicable to the handling of soil where anaerobic conditions are to be maintained throughout.

This part of ISO 10381 is mainly applicable to temperate soils. Soils collected from extreme climates (e.g. permafrost, tropical soils) may require special handling.

### 2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 2.1

##### **aerobic**

descriptive of a condition in which molecular oxygen is freely available

#### 2.2

##### **anaerobic**

descriptive of a condition in which molecular oxygen is not available

#### 2.3

##### **water content on a dry mass basis**

mass of water evaporating from the soil when dried to constant mass at 105 °C divided by the dry mass of the soil and multiplied by 100

[ISO 11465:1993, 3.2]

### 3 Procedure

#### 3.1 Selection of sampling locations

The locations of the sites from which samples are taken should be selected according to the purpose of the study.

These locations should be identified and recorded, e.g. on a map by reference to easily recognizable static objects or by using a detailed map reference or by GIS. If practicable, the locations should be marked so that they may be used for comparative tests or for obtaining replicate samples.