
Soil quality — Sampling —
Part 7:
Guidance on sampling of soil gas

Qualité du sol — Échantillonnage —

Partie 7: Lignes directrices pour l'échantillonnage des gaz du sol



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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 10381-7 was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 2, *Sampling*.

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 for the assessment of aerobic microbial processes in the laboratory*
- *Part 7: Guidance on sampling of soil gas*
- *Part 8: Guidance on sampling of stockpiles*

Introduction

ISO 10381-7 is one of a group of International Standards to be used in conjunction with each other where necessary. ISO 10381 (all parts) deals with sampling procedures for the various purposes of soil investigation. The stated soil-gas and landfill-gas measurements do not give any quantitative statement of the total quantity of material detected in soil gas or soil. The measurement results can be influenced by, e.g. temperature, humidity, air pressure, minimum extraction depth, etc.

The general terminology used is in accordance with that established in ISO/TC 190 and, more particularly, with the vocabulary given in ISO 11074-2.

In addition to the main components (nitrogen, oxygen, carbon dioxide), soil gas can contain other gases (methane, carbon monoxide, mercaptans, hydrogen sulfide, ammonia, helium, neon, argon, xenon, radon, etc.). It can also contain highly volatile organic compounds or inorganic vapours (mercury) which are of special interest within the framework of investigating soil and groundwater contamination.

Due to the different physical properties and ranges of concentrations of gases in soil and landfills as well as the wide variety of objectives for soil-gas sampling, this part of ISO 10381, after the general clauses 1 to 4, is subdivided into two sections:

- a) permanent gases of soil gas and landfill gas (Clause 5); and
- b) volatile organic compounds (VOCs) (Clause 6).

Thus it is inevitable that some details are repeated in both clauses in order to make the guidance comprehensive.

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Soil quality — Sampling —

Part 7:

Guidance on sampling of soil gas

WARNING — This part of ISO 10381 concerns on-site soil and sub-soil gas analysis requiring particular health and personal safety precautions.

1 Scope

This part of ISO 10381 contains guidance on the sampling of soil gas.

This part of ISO 10381 is not applicable to the measurement of gases from the soil entering into the atmosphere, the sampling of atmospheric gases, or passive sampling procedures.

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 10381-1, *Soil quality — Sampling — Part 1: Guidance on the design of sampling programmes*

ISO 10381-2, *Soil quality — Sampling — Part 2: Guidance on sampling techniques*

ISO 10381-3, *Soil quality — Sampling — Part 3: Guidance on safety*

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

ISO 11074-2, *Soil quality — Vocabulary — Part 2: Terms and definitions relating to sampling*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11074-1 and ISO 11074-2 and the following apply.

3.1

active soil-gas sampling

sampling by extracting a certain volume of soil gas

3.2

biodegradation

the physical and chemical breakdown of a substance by living organisms, mainly bacteria and/or fungi