

Soil quality — Determination of cyanide

ICS 13.080.10

National foreword

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The UK participation in its preparation was entrusted by Technical Committee EH/4 Soil quality, to subcommittee EH/4/3, Chemical methods and soil characteristics, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

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Summary of pages

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Soil quality — Determination of cyanide

Qualité du sol — Dosage des cyanures



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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.

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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 11262 was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 3, *Chemical methods and soil characteristics*.

Introduction

Cyanides may be present in soil as cyanide ions and as complex cyanides. They can be determined as easily released cyanide, as complex cyanide or as total cyanide. This International Standard specifies the determination of easily released cyanides, complex cyanides and total cyanide.

This International Standard addresses, in particular, the following two subjects:

- a) liberation and absorption of hydrogen cyanide;
- b) determination of cyanide ions:
 - 1) photometric method;
 - 2) titrimetric method using an indicator.

Soil quality — Determination of cyanide

WARNING — Hydrogen cyanide and its salts are toxic, thus care shall be exercised in the manipulation of cyanide-contaminated samples. Volatile hydrogen cyanide (with a smell of bitter almonds) is released from acidified solutions containing cyanide salts. Since hydrogen cyanide gas is highly toxic, do not acidify samples except in accordance with the defined procedures in Clause 7. Carry out all work in a fume hood and wear suitable plastic gloves when handling contaminated samples.

Place analytical wastes containing cyanides in a special lidded container in the laboratory for temporary storage. Clearly mark this container with labels such as “Toxic waste” or “Cyanides”. Periodically empty the container and dispose of the wastes containing cyanides as “special waste” via an appropriate waste management contractor.

1 Scope

This International Standard is applicable to as-received soil samples, and specifies two quantification methods for the determination of easily released and complex cyanides. It is not always necessary to determine easily released cyanide prior to the measurement of complex cyanide. In this instance, the first part of the distillation process is omitted so that only the total cyanide is determined. The methods are applicable to soil containing between 0,5 mg/kg and 10 000 mg/kg of total cyanide. The methods and corresponding ranges of cyanide in the aliquot taken from the relevant absorption solution are as follows:

a) photometric method:

This method is applicable for cyanide contents of 0,5 mg/kg to 50 mg/kg in the original field-moist sample.

b) titrimetric method using an indicator:

This method is applicable for cyanide contents of above 50 mg/kg in the original field-moist sample.

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 3696:1987, *Water for analytical laboratory use — Specification and test methods*

ISO 4793:1980, *Laboratory sintered (fritted) filters — Porosity grading, classification and designation*

ISO 9297, *Water quality — Determination of chloride — Silver nitrate titration with chromate indicator (Mohr's method)*

ISO 11465, *Soil quality — Determination of dry matter and water content on a mass basis — Gravimetric method*

ISO 14507:2003, *Soil quality — Pretreatment of samples for determination of organic contaminants*