
**Soil quality — Determination of total sulfur
by dry combustion**

Qualité du sol — Dosage du soufre total par combustion sèche



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 2000

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.ch
Web www.iso.ch

Printed in Switzerland

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 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15178 was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 3, *Chemical methods and soil characteristics*.

Annex A of this International Standard is for information only.

This document is a preview generated by EVS

Soil quality — Determination of total sulfur by dry combustion

WARNING — This International Standard may involve hazardous materials, operations and equipment. This International Standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this International Standard to consult and establish appropriate health and safety practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard describes a procedure using dry combustion for the determination of total sulfur in soil samples. It is applicable to all types of air-dried soil samples.

NOTE High-temperature combustion methods might not determine total sulfur, only combustible sulfur. The difference between total and combustible sulfur is usually negligible in soils.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 11464, *Soil quality — Pretreatment of samples for physico-chemical analyses*.

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

3 Principle

The sulfur content of a soil sample, pretreated in accordance with ISO 11464, is determined by heating the sample to a temperature of at least 1 150 °C in a stream of oxygen-containing gas. Organically and inorganically bound sulfur is converted to SO₂. This reaction may in some cases need a higher temperature or the addition of catalysts, modifiers or accelerators. At temperatures < 1 350 °C, SO₃ may be formed in the presence of excess oxygen. This SO₃ has to be reduced to SO₂ using an appropriate reagent, e. g. copper. The SO₂ arising from the combustion is measured by infrared spectrometry, thermal conductivity or other suitable detection technique. Gases resulting from the combustion which may interfere with the detection stage have to be removed from the stream of gas prior to detection.

This method is for use with commercially available sulfur analysers equipped to carry out the preceding operations automatically. These instruments shall be calibrated using chemical compounds or standard reference materials of known sulfur content based on the range of sulfur in each sample analysed.

NOTE Complete decomposition of sulfur-containing compounds may not occur at lower temperatures, especially in the presence of free alkaline or alkaline earth carbonates or sulfates. In such cases, temperatures ≥ 1 350 °C or the use of matrix modifiers such as WO₃ or V₂O₅ may be necessary. The efficiency of the quantitative recovery of sulfur from such soils can be tested using substances such as calcium sulfate.