

INTERNATIONAL  
STANDARD

**ISO**  
**10694**

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**Soil quality — Determination of organic  
and total carbon after dry combustion  
(elementary analysis)**

*Qualité du sol — Dosage du carbone organique et du carbone total après  
combustion sèche (analyse élémentaire)*



Reference number  
ISO 10694:1995(E)

## **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.

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.

International Standard ISO 10694 was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 3, *Chemical methods and soil characteristics*.

Annexes A and B of this International Standard are for information only.

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# Soil quality — Determination of organic and total carbon after dry combustion (elementary analysis)

## 1 Scope

This International Standard specifies a method for the determination of the total carbon content in soil after dry combustion. The organic carbon content is calculated from this content after correcting for carbonates present in the sample. If carbonates are removed beforehand, the organic carbon content is measured directly.

This International Standard is applicable to all types of air-dried soil samples.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

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

ISO 10390:1994, *Soil quality — Determination of pH*.

ISO 10693:1995<sup>1)</sup>, *Soil quality — Determination of carbonate content — Volumetric method*.

ISO 11464:1994, *Soil quality — Pretreatment of samples for physico-chemical analyses*.

1) To be published.

ISO 11465:1993, *Soil quality — Determination of dry matter and water content on a mass basis — Gravimetric method*.

## 3 Principle

The carbon present in the soil is oxidized to carbon dioxide (CO<sub>2</sub>) by heating the soil to at least 900 °C in a flow of oxygen-containing gas that is free from carbon dioxide. The amount of carbon dioxide released is then measured by titrimetry, gravimetry, conductometry, gas chromatography or using an infrared detection method, depending on the apparatus used. When the soil is heated to a temperature of at least 900 °C, any carbonates present are completely decomposed. For the determination of the organic carbon content, any carbonates present are previously removed by treating the soil with hydrochloric acid. Alternatively, if the carbonate content of the examined samples is known and corrections are made for the carbonates present when the organic carbon content is calculated.

NOTE 1 When the pH-CaCl<sub>2</sub> is less than 6,5, the presence of carbonates is unlikely. For example, this combination of low pH and presence of carbonates is only possible in recently limed soils.

## 4 Reagents

Use only reagents of recognized analytical grade and distilled or deionized water for all solutions.

**4.1 Water**, with an electrical conductivity not higher than 0,2 mS/m at 25 °C (grade 2 water according to ISO 3696).