

INTERNATIONAL
STANDARD

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11261

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**Soil quality — Determination of total
nitrogen — Modified Kjeldahl method**

Qualité du sol — Dosage de l'azote total — Méthode de Kjeldahl modifiée



Reference number
ISO 11261:1995(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 11261 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.

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Soil quality — Determination of total nitrogen — Modified Kjeldahl method

1 Scope

This International Standard specifies a method for the determination of the total nitrogen (ammonium-N, nitrate-N, nitrite-N and organic N) content of a soil. Nitrogen in N-N-linkages, N-O-linkages and some heterocyclics (especially pyridine) is only partially determined. This International Standard is applicable to all types of soils.

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 5725:1986, *Precision of test methods — Determination of repeatability and reproducibility for a standard test method by inter-laboratory tests*.

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

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

3 Principle

The method is based on the Kjeldahl-digestion, but titanium dioxide (TiO_2) is used as the catalyst instead of selenium.

NOTE 1 Titanium dioxide is ecotoxicologically less harmful than selenium.

4 Reagents

All reagents shall be of recognized analytical grade. Use water of grade 2 complying with ISO 3696.

4.1 Salicylic acid/sulfuric acid.

Dissolve 25 g of salicylic acid in 1 litre of concentrated sulfuric acid ($\rho = 1,84 \text{ g/cm}^3$).

4.2 Potassium sulfate catalyst mixture.

Grind and thoroughly mix 200 g of potassium sulfate, 6 g of copper(II) sulfate pentahydrate and 6 g of titanium dioxide, with the crystal structure of anatase.

4.3 Sodium thiosulfate pentahydrate.

Crush the crystals to form a powder that passes through a sieve with an aperture of 0,25 mm.

4.4 Sodium hydroxide, $c(\text{NaOH}) = 10 \text{ mol/l}$.

4.5 Boric acid solution, $\rho(\text{H}_3\text{BO}_3) = 20 \text{ g/l}$.

4.6 Mixed indicator.

Dissolve 0,1 g of bromocresol green and 0,02 g of methyl red in 100 ml of ethanol.

4.7 Sulfuric acid, $c(\text{H}^+) = 0,01 \text{ mol/l}$.