

ICS 13.080

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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 42485-2023

**Soil quality - Determination of nitrate, nitrite and ammonium in
soils - Extraction with potassium chloride solution and
determination with manual method**

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foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules for Standardization Documents"

drafting:

This document is modified to adopt ISO /T S14256-1:2003 "Soil Quality Potassium Chloride Solution Extraction Determination of Nitrate Nitrogen and Substance in Fresh Soil

Nitrate nitrogen and ammonium nitrogen Part 1: Manual analysis method", the document type is adjusted from the ISO technical specification to the national standard of our country:

A chapter "Terms and Definitions" has been added to this document:

Compared with ISO /T S14256-1:2003, this document has made the following structural adjustments:

---7:2:3:13, 7:3:3:7, 7:4:3:5 and 7:4:3:7 respectively correspond to 6:2:3:12:1, 6:3:3:7:1 and 6:3:3:7:1 of ISO /T S14256-1:2003

6:4:3:4:1 and 6:4:3:5:1;

---Added 7:2:5:1, 7:2:5:2, 7:2:5:3, 7:2:5:4, 7:2:5:5, 7:2:5:6 and 7:2:6 corresponding to ISO /T S14256-1:2003

6:2:5 of;

--- Deleted 6:3:3:3 of ISO /T S14256-1:2003;

---7:3:2 corresponds to 6:3:2 of ISO /T S14256-1:2003;

---7:4:2 corresponds to 6:4:2 of ISO /T S14256-1:2003:

The technical differences between this document and ISO /T S14256-1:2003 and their reasons are as follows:

--- Replaced ISO 3696 (see 7:1:2:1, 7:2:3:1, 7:3:3:1 and 7:4:3:1) with the normatively

quoted GB/T 6682 to accommodate

my country's technical conditions, improve operability;

--- Increase the purity requirements of reference substances (see 7:2:3:2, 7:2:3:3, 7:3:3:2 and 7:4:3:3) to improve accuracy;

--- Changed the usage of reference substances (see 7:2:3:2:1, 7:2:3:3:1, 7:3:3:2:1 and 7:4:3:3:1) to improve accuracy;

--- Changed the mass concentration of the nitrate nitrogen standard solution (see 7:2:3:2:2) to adapt to the preparation of the standard curve;

--- Changed the concentration of chemical reagents (see 7:2:3:5, 7:2:3:8 and 7:3:3:3) to meet my country's reagent standards;

--- Deleted unused reagents (see 6:3:3:3 of ISO /T S14256-1:2003);

--- Added the content that commercialized copper-plated cadmium grains can be purchased (see 7:2:4:1) to improve the convenience of application;

--- Added the series preparation of nitrate nitrogen standard solution (see 7:2:5:1) to prepare for the multi-point standard curve method of nitrate nitrogen;

--- Changed the description of the reduction step (see 7:2:5:3) to adapt to the determination of the standard curve method;

--- Add water to the scale line (see 7:2:5:4, 7:3:4 and 7:4:4) to improve the measurement accuracy;

--- Changed the amount of developer used (see 7:2:5:4, 7:3:4 and 7:4:4) to meet the demand for constant volume;

--- Changed the calibration curve (see 7:2:5:5, 7:3:4 and 7:4:4), compared with the two-point calibration curve, the multi-point calibration curve can reduce the error

Poor, improve accuracy;

--- Changed the representation of the calculation formula (see 7:2:6, 7:3:5 and 7:4:5) to match the method using the multi-point calibration curve;

--- Changed the concentration of the developer (see 7:4:3:12) to comply with the usage of the developer:

The following editorial changes have been made to this document:

--- Change the name of the standard to "Soil Quality Soil Nitrate Nitrogen, Nitrite Nitrogen and Ammonium Nitrogen Determination

Analysis method";

--- Deleted the note of 6:1:4 in ISO /T S14256-1:2003;

--- Deleted the suspension paragraph between 6:2:2 and 6:2:2:1 in ISO /T S14256-1:2003:

Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents:

This document was proposed by the Ministry of Agriculture and Rural Affairs of the People's Republic of China:

This document is under the jurisdiction of the National Soil Quality Standardization Technical Committee (SAC/TC404):

1 Scope

This document describes the determination of nitrate nitrogen, nitrite nitrogen and ammonium nitrogen in fresh soil samples by leaching with 1 mol/L potassium chloride solution:

Manual analysis method:

This document is applicable to all types of soil samples that have been homogeneously mixed by appropriate methods:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document:

GB/T 6682 Analytical laboratory water specifications and test methods (GB/T 6682-2008, ISO 3696:1987, MOD)

ISO 11465 Soil quality Determination of soil dry matter and moisture content Gravimetric method (Soilquality-Determination

3 Terms and Definitions

This document does not have terms and definitions that need to be defined:

4 principles

Use 1mol/L potassium chloride solution to extract the mixed soil samples, and use a

spectrophotometer to measure nitrate nitrogen and nitrite in the solution:

Nitrogen and ammonium nitrogen concentrations:

5 Preservation of soil samples

Soil samples should be protected from heating during collection:

During the transportation of soil samples to the laboratory, there should be no heating and temperature rise, and it should be transported in a refrigerator, especially in late spring and summer:

If the soil samples are analyzed within 3 days, they can be stored at 4°C: Otherwise, the soil samples should be stored frozen at -20°C, which can make the soil samples

The inorganic nitrogen content in the product will not change significantly within a few weeks:

When using frozen samples for determination, the temperature and duration of the thawing process should be controlled: Mix well within 4 hours after thawing

It can be thawed at room temperature; if it is thawed at 4°C, the thawing time should not exceed 48h:

The time required for thawing is largely influenced by the sample volume: Before cryopreservation, the amount of soil sample should be reduced as much as possible: