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

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**Determination of total sulfur in fertilizers - High temperature
combustion**

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Table of Contents

Foreword

1 Scope

2 Normative references

3 Terms and definitions

4 Principle

5 Instruments, Materials, and Reagents

5.1 Overview

5.2 Instruments

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 is required.

This document is equivalent to ISO 22887.2020 "Determination of total sulfur content in fertilizers by high-temperature combustion method".

The following minimal editorial changes were made to this document.

Changed the name of the standardization document to harmonize with the existing standardization document. -

1 Scope

This document describes a method for the determination of total sulfur content in fertilizers and soil conditioners.

This method is applicable to solid fertilizers, liquid fertilizers and fertilizer raw materials with a total sulfur content of 0.1% to 97.0%.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies.

in this document.

ISO 8157 Terminology for fertilizers, soil conditioners and beneficial substances
stances-Vocabulary

Note. GB/T 6274-2016 Terminology of fertilizers and soil conditioners (ISO 8157:1984, NEQ)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8157 apply.

4 Principle

The sulfur (S) in the samples and standard substances is burned at a temperature above 1100°C and converted into sulfur dioxide (SO₂).

The mass fraction (%) of total sulfur can be determined by a thermal conductivity detector (TCD) or an infrared detector (IR).

Other elements such as carbon (C), hydrogen (H) or nitrogen (N) need to be separated from sulfur dioxide by thermal adsorption or desorption.

5.1 Overview

Warning - Improper operation of the combustion method for elemental analysis may result in burns, as some instrument parts may

Even after the instrument is turned off, some components remain hot for a long time. If you do not use the instrument carefully, you may

Severe burns can occur. Follow the manufacturer's specific operating instructions to ensure safe use of the instrument.

Depending on the test method chosen, different types of instruments can be used to determine total sulfur content.

5.2.1 Type A instrument. combustion instrument with conductivity detector

The A-type instrument shown in Figure 1 uses helium or argon as the carrier gas and a thermal conductivity detector (TCD) to measure sulfur (SO₂) content.

When using this equipment, it is advisable to remove all air impurities in the gas path before injecting the sample.

At 1100 °C, oxygen is supplied to the sample to convert all elements into their corresponding fully oxidized gases. A catalyst is used in the combustion tube.

(such as tungsten trioxide) to assist oxidation. After combustion, the gas passes through the reducing environment and halogen scrubber in turn, converting the nitrogen oxides in the gas into

Nitrogen and halogen impurities are removed. Other combustion gases such as carbon dioxide, water and sulfur dioxide are washed or adsorbed in their respective

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