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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 42307-2023

Fertilizers and soil conditioners - Determination of biuret content of urea-based fertilizers - HPLC 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 equivalent to ISO 18643:2016 "Determination of biuret content in fertilizers and soil conditioners urea-based fertilizers

Phase Chromatography":

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

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

1 Scope

This document describes a method for the determination of biuret content in liquid and solid urea-based fertilizers by high performance liquid chromatography:

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:

and testmethods)

Note: GB/T 6682-2008 Analytical Laboratory Water Specifications and Test Methods (ISO 3696:1987, MOD)

3 Terms and Definitions

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

4 principles

The content of biuret in fertilizer was extracted with acetonitrile aqueous mobile phase, and biuret was separated from it with amino/aminopropyl column based on reversed-phase liquid chromatography:

The other components were separated and detected with an ultraviolet detector:

5 Reagents or Materials

Caution: According to the chemical safety data sheet, acetonitrile is a flammable and toxic reagent, and related operations should be carried out in a fume hood: this document

Not all potential safety hazards have been pointed out, the operator is responsible for taking necessary safety and health protection measures, and ensuring that the relevant operations comply with relevant regulations:

District laws and regulations:

Only water confirmed as Class III water in ISO 3696 may be used:

5:1 Acetonitrile: chromatographically pure:

5:2 Mobile phase: 150mL of water and 850mL of acetonitrile, filter with a 0:22μm filter membrane before use, and ultrasonically degas for 10min:

NOTE: Another test method using an acetonitrile-free mobile phase and limitations of its application are given in Appendix B:

5:3 Biuret standard solution (0:5mg/mL): Weigh 0:5000g of high-purity biuret, dissolve it in the mobile phase (5:2), and transfer to 1L

In a volumetric flask, dilute to the mark with mobile phase (5:2), and shake well:

The purity of biuret is not less than 97%, and the purity indicated on the reagent label is calculated based on biuret content rather than nitrogen content:

AOAC960:04A(c), ISO 17322 and other standards provide steps for purifying biuret: