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Interested committees:

Title: Draft BS ISO 5314 Fertilizers - Determination of ammoniacal nitrogen content - Titrimetric method after distillation.

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



DRAFT International Standard

ISO/DIS 5314

Fertilizers — Determination of ammoniacal nitrogen content — Titrimetric method after distillation

*Engrais — Dosage de l'azote ammoniacal — Méthode
titrimétrique après distillation*

ICS: 65.080

ISO/TC 134

Secretariat: **INSO**

Voting begins on:
2025-07-10

Voting terminates on:
2025-10-02

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee [or Project Committee] ISO/TC-134, [name of committee], Subcommittee SC ##, [name of subcommittee].

This second edition cancels and replaces the first edition (ISO 5314-1981), which has been technically revised.

The main changes compared to the previous edition are as follows:

- The norm is divided into two parts: Part A and Part B, which are described below:

Part A consists of the revised edition.

Part B is new and involves distillation using an automatic apparatus followed by a distillate titration step, which can be carried out manually or automatically using a titrator for acid-base titration. The titration step can be done manually, similar to Part A, with the use of a titrator being optional.

The automatic distillation device enables rapid distillation in 7 to 10 minutes, increasing laboratory analysis capacity and reducing health risks for technicians. The compact design of the device minimizes the risk of damage compared to manual glass assembly, which is prone to breakage and gas leaks that can affect analysis results. This automatic device also facilitates rapid system cleaning through distillation of sample blanks, reducing contamination between samples

Notably, all automated distillation devices are equipped with a safety window, and some feature a safety system that alerts the operator if the window is not properly closed.

Distilling the sample in an automatic apparatus with automatic addition of sodium hydroxide solution reduces handling of concentrated sodium hydroxide solution (400 g/l). The apparatus then automatically injects a steam flow onto the neutralized sample to carry out the distillation of ammonia regenerated by the chemical reaction between ammonium ions and sodium hydroxide.

- Part B introduces the possibility of capturing regenerated ammonia by distillation in a standard boric acid solution, followed by acid-base titration with a standard HCl solution, as an alternative to using a standard sulfuric acid solution to capture the distilled ammonia, followed by titration with a standard NaOH solution. Additionally, acid-base titration using a chemical indicator can be replaced by automated pH titration.

- For safety reasons, we recommend using laboratory gloves and goggles to protect technicians from the highly basic sodium hydroxide solution.

A list of all parts in the ISO ##### series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

We take this opportunity, during the systematic revision of this standard, to propose introducing the use of semi-automatic or fully automated analyzers for determining ammoniacal nitrogen in fertilizers. This technique has become a viable alternative for performing this analysis. The new devices used in this analysis increase laboratory efficiency by reducing distillation time to just 7 minutes and minimizing the use of chemical reagents, such as concentrated sodium hydroxide solution. Additionally, they provide better hygiene and safety conditions for laboratory staff, including protection via a safety window and reduced handling of the basic solution, which is automatically introduced into samples before steam injection for distillation.

This project is divided into two parts:

- Part A: Manual distillation and titration method (revision of ISO 5314)
- Part B: Automatic distillation with manual or automatic titration method (new proposals and modifications tested in several laboratories worldwide)

This revision is necessary because many modern laboratories struggle to use the standard as it currently stands. For instance, some laboratories have stopped using the ISO 5314 standard for routine samples and reserve it only for commercial samples (to comply with COFRAC ISO 17025 accreditation) due to its low analytical capacity and safety risks, such as personnel forgetting to add anti-bumping granules to the solution being distilled. In contrast, automatic distillation devices feature a safety window that protects technicians from explosion risks, a safeguard not present in traditional distillation setups.

Based on bibliographical research, we also propose introducing the use of a standard boric acid solution as an alternative to the standard sulfuric acid solution for capturing ammonia during distillation, paired with a standard hydrochloric acid solution for titration.

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