

Water quality — Determination of ammonium nitrogen by flow analysis (CFA and FIA) and spectrometric detection

The European Standard EN ISO 11732:1997 has the status of a
British Standard

ICS 13.060.01

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW



Document Sharing Hub

National foreword

This British Standard is the English language version of EN ISO 11732:1997. It is identical with ISO 11732:1997.

Amendment No. 1 introduces Annex ZA.

The UK participation in its preparation was entrusted by Technical Committee EH/3, Water quality, to Subcommittee EH/3/2, Physical, chemical and biochemical methods, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement these international or European publications may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN ISO title page, page 2, the ISO title page, page ii, pages 1 to 14, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Amendments issued since publication

Amd. No.	Date	Comments
10251	January 1999	Introduction of Annex ZA

This British Standard, having been prepared under the direction of the Health and Environment Sector Board, was published under the authority of the Standards Board and comes into effect on 15 September 1997

© BSI 06-1999

ISBN 0 580 28016 0

Contents

	Page
National foreword	Inside front cover
Foreword	2
Foreword	ii
Text of ISO 11732	1

English version

Water quality — Determination of ammonium nitrogen by flow analysis (CFA and FIA) and spectrometric detection

(ISO 11732:1997)

Qualité de l'eau — Détermination de l'azote ammoniacal par analyse de l'écoulement (CFA et FIA) et détection spectrométrique
(ISO 11732:1997)

Wasserbeschaffenheit — Bestimmung von Ammoniumstickstoff mit der Fließanalyse (CFA und FIA) und spektrometrischer Detektion
(ISO 11732:1997)

This European Standard was approved by CEN on 1997-05-28. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

The text of the International Standard ISO 11732:1997 has been prepared by Technical Committee ISO/TC 147, Water quality, in collaboration with Technical Committee CEN/TC 230, Water analysis, the Secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 1998, and conflicting national standards shall be withdrawn at the latest by January 1998.

According to CEN/CENELEC Internal Regulations, the national standards bodies of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 11732:1997 was approved by CEN as a European Standard without any modification.

NOTE Normative references to International Standards are listed in Annex ZA (normative).

Contents

	Page		Page
Foreword	2	2.6 Sampling and sample preparation	9
Introduction	1	2.7 Procedure	9
1 Determination of ammonium nitrogen by flow injection analysis (FIA) and spectrometric detection	1	2.8 Evaluation	9
1.1 Scope	1	3 Expression of results	9
1.2 Normative references	1	4 Test report	9
1.3 Principle	1	5 Statistical characteristics of the method	10
1.4 Reagents	2	Annex A (informative) Results of interlaboratory trial	11
1.5 Apparatus	3	Annex B (informative) Ammonium calibration lines for FIA	12
1.6 Sampling	4	Annex C (informative) Ammonium calibration lines for CFA	13
1.7 Procedure	4	Annex D (informative) Bibliography	14
1.8 Evaluation	5	Annex ZA (normative) Normative references to international publications with their relevant European publications	Inside back cover
2 Determination of ammonium nitrogen by continuous flow analysis (CFA) and spectrometric detection	5	Figure 1 — Example of a flow injection system for ammonium nitrogen concentrations for 0,1 mg/l to 10 mg/l	4
2.1 Scope	5	Figure 2 — Examples of a continuous flow system (macroflow) for ammonium nitrogen concentrations 0,1 mg/l to 10 mg/l	7
2.2 Normative references	6	Figure 3 — Examples of a continuous flow system (microflow) for ammonium nitrogen concentrations 0,1 mg/l to 10 mg/l	8
2.3 Principle	6	Figure B.1 — Ammonium calibration line — Flow Injection Analysis (FIA) Working range $\text{NH}_4 - \text{N}$ (0,1 – 1,0 mg/l)	12
2.4 Reagents	6	Figure B.2 — Ammonium calibration line — Flow Injection Analysis (FIA) Working range $\text{NH}_4 - \text{N}$ (1 – 10 mg/l)	12
2.5 Apparatus	8	Figure C.1 — Ammonium calibration line — Continuous Flow Analysis (CFA) — Microflow method Working range $\text{NH}_4 - \text{N}$ (0,1 – 1,0 mg/l)	13
		Figure C.2 — Ammonium calibration line — Continuous Flow Analysis (CFA) — Macroflow method Working range $\text{NH}_4 - \text{N}$ (1 – 10 mg/l)	13
		Table A.1 — Statistical characteristics of the determination of ammonium(N) using flow injection analysis (FIA) and spectrometric detection	11
		Table A.2 — Statistical characteristics of the determination of ammonium(N) using continuous flow analysis (CFA) and spectrometric detection	11

INTERNATIONAL STANDARD

**ISO
11732**

First edition
1997-07-01

Water quality — Determination of ammonium nitrogen by flow analysis (CFA and FIA) and spectrometric detection

*Qualité de l'eau — Détermination de l'azote ammoniacal par analyse en
flux (CFA et FIA) et détection spectrométrique*



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 11732 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*.

Annex A to Annex D of this International Standard are for information only.

Descriptors: Water, quality, water pollution, water tests, chemical analysis, determination of content, nitrogen, ammoniacal nitrogen, spectrometric method