BRITISH STANDARD

BS 4651-0: 1987

Ammonia solution —

Part 0: Methods for sampling

UDC 546.171.1:620.113.4

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Chemicals Standards Committee (CIC/-) to Technical Committee CIC/21, upon which the following bodies were represented:

British Coal
British Pharmacopoeia Commission
British Sulphate of Ammonia Federation Ltd.
Chemical Industries Association
Fertiliser Manufacturers' Association Ltd.
Ministry of Defence
Textile Institute

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Amendments issued since publication

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Contents

Foreword

This Part of BS 4651 has been prepared under the direction of the Chemicals Standards Committee. It explains the revision of the 1971 edition into Parts. Methods for the sampling of ammonia solution are given, which supersede those given in Appendix A of BS 4651:1971 which has been deleted by amendment.

It is intended to publish eight Parts of BS 4651, which will collectively supersede the 1971 edition. As each Part is published, the corresponding clause of BS 4651:1971 will be withdrawn by amendment. The relationship of these Parts to the 1971 edition of this standard and to International Standards is summarized in Table 1.

For many years the UK has participated in the work of TC 47, Chemistry, of the International Organization for Standardization (ISO). Two test methods, applicable to ammonia solution for industrial use, were approved by the UK and, in accordance with BSI policy, are published as separate, dual-numbered Parts of BS 4651 (see Table 1).

NOTE The term "ammonia solution" is used to describe grades of product containing between 25.0 % to 35.0 % (*m*/*m*) ammonia.

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.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 4, 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.

1 Scope

This Part of BS 4651 describes methods for the sampling of ammonia solution from bulk containers, drums, carboys and bottles.

The Parts of this edition of BS 4651 together with the corresponding clauses of the 1971 edition and any corresponding International Standards are summarized in Appendix A.

2 Sampling of ammonia solution

2.1 Safety precautions

Use appropriate protective clothing (gas-tight goggles, PVC gloves, apron and boots) for carrying out any bulk sampling operation involving ammonia solution. Use self-contained air sets and eye wash bottles, which should be readily available for use if needed.

Smoking and sources of ignition are prohibited during the sampling of ammonia solution.

NOTE Mixtures of ammonia gas and air can explode, if ignited, when the proportion of ammonia gas is within the limits 16 % to 27 % (*V*/*V*).

Keep all containers cool and apply additional cooling if possible before removing stoppers and bungs.

2.2 Sampling from bulk containers

WARNING. DO NOT USE COMPRESSED AIR TO DISCHARGE AMMONIA SOLUTION FROM BULK CONTAINERS.

Whenever it is necessary to take a sample of ammonia solution from any bulk container, cool the container and vent it to the atmosphere before removing any stopper or cover. Take care to ensure that any escaping ammonia gas is discharged at a point remote from personnel.

Withdraw samples from the tank by means of a sampling "thief" made of 25 mm diameter polyethylene or polypropylene tubing, 2 m long and tapered at each end to 10 mm diameter over a minimum of 100 mm tube length. Transfer samples taken from tanks immediately into clean glass screw-stoppered bottles, cool them immediately and keep them in a cool place (e.g. a cold water bath or fridge) until required for analysis.

Use the following procedure.

a) Take two consecutive 500 mL samples and discard both in order to clear the sampling tube and bottle and to obtain representative material.

b) Take the sample required in a bottle fitted with an internal solid screw-stopper and rubber gasket. Tighten the stopper as soon as the sample is in the bottle.

2.3 Sampling from drums, carboys and bottles

2.3.1 *General.* Do not use suction during the withdrawal of the sample, especially with concentrated solutions, since reduction of pressure readily depletes the solution of ammonia gas.

2.3.2 ***Drums***

WARNING. DO NOT USE COMPRESSED AIR TO DISCHARGE AMMONIA SOLUTION FROM DRUMS.

Sample from drums by pouring, by siphoning or by means of a polyethylene or polypropylene sampling "thief".

If the sample is to be obtained by pouring, use a specially constructed elevated platform to hold the drum, and a screw-in pourer and funnel to facilitate transfer and reduce the risk from splashing.

If the sample is to be obtained by siphoning, use a suitable siphon constructed from stainless steel, polyethylene, polypropylene or glass. Start the siphon by applying a slight air pressure to the drum, e.g. from a hand bellows or bulb, provided that the end of the delivery tube is below the level of the liquid in the drum.

If a polyethylene or polypropylene sampling "thief" is used to draw a sample, use the procedure described in **2.2**.

2.3.3 ***Carboys***

WARNING. DO NOT USE COMPRESSED AIR TO DISCHARGE AMMONIA SOLUTION FROM CARBOYS.

Sample from carboys by pouring, by siphoning, by the use of a polyethylene or polypropylene sampling "thief" or by the use of a hand-operated pump.

If the sample is to be obtained by pouring, use a properly constructed carboy tilter.

If the sample is to be obtained by siphoning, use a suitable siphon constructed from stainless steel, polyethylene, polypropylene or glass. Start the siphon by applying a slight air pressure by means of a hand bellows or bulb, provided that the end of the delivery tube is below the level of the liquid in the carboy.

NOTE Polyethylene or polypropylene siphons incorporating bellows for priming are commercially available.

If a polyethylene or polypropylene sampling "thief" is used to draw a sample, use the procedure described in **2.2**.

Do not use electrically-operated pumps.

2.3.4 *Bottles.* Sample from bottles by simple pouring action.

In the laboratory, carry out sampling in a fume cupboard.

WARNING. DO NOT PIPETTE AMMONIA SOLUTION BY MOUTH. USE ONE OF THE SUITABLE DEVICES COMMERCIALLY AVAILABLE.

Appendix A Structure of BS 4651

The Parts of BS 4651 are listed in Table 1 together with the corresponding clauses of the 1971 edition and any corresponding International Standards.

Table 1 — Structure of revision of BS 4651:1971

Current revision of BS 4651 (in Parts)	Title	Corresponding Clause of BS 4651:1971	Corresponding International Standard
Part 0	Methods for sampling	—	—
Part 1[a]	Method for determination of density at 20 °C	Clause **2**	—
Part 2	Method for determination of ammonia content	Clause **3**	ISO 7108
Part 3	Method for determination of residue on evaporation	Clause **4**	ISO 7109
Part 4[a]	Method for determination of residue after heating at 850 °C	Clause **4**	—
Part 5[a]	Method for determination of iron content	Clause **5**	—
Part 6[a]	Methods for determination of chloride content	Clause **6**	—
Part 7[a]	Method for determination of carbon dioxide content	Clause **7**	—

[a] In preparation.

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Publications referred to

See also Appendix A.

ISO 7108, *Ammonia solution for industrial use — Determination of ammonia content — Titrimetric method.*

ISO 7109, *Ammonia solution for industrial use — Determination of residue after evaporation at 105 ° C — Gravimetric method.*

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