BRITISH STANDARD

BS 4651-1: 1988

Ammonia solution —

Part 1: Method for determination of density at 20 °C

NOTE It is recommended that this Part be read in conjunction with the information on methods for sampling in BS 4651-0, published separately.

UDC 546.171.1 – 145.2:542.3:532.14:531.756

Foreword

This Part of BS 4651 has been prepared under the direction of the Chemicals Standards Committee and supersedes clause **2** of BS 4651:1971 which is withdrawn. This method is based on that described in clause **2** of BS 4651:1971. The principal difference is that a reference temperature has been adopted.

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

WARNING. Ammonia solution is a moderately strong alkali which exerts a local irritant action on the skin. Strong solutions which come into contact with the eyes, even for a short period, can cause serious and permanent damage.

Ingestion of ammonia solution will result in the destruction of the mucous lining of the mouth, throat and stomach.

Ammonia vapour is readily released from ammonia solution and is combustible in air between the concentrations of 16 % and 27 % (*V*/*V*) and may explode in confined spaces.

When sampling ammonia solution, take the precautions described in BS 4651-0.

This Part of BS 4651 describes a method of test only and should not be used or quoted as a specification defining limits of purity. Reference to this Part should indicate that the method of test used complies with BS 4651-1:1988.

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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This British Standard, having been prepared under the direction of the Chemicals Standards Committee, was published under the authority of the Board of BSI and comes into effect on 31 August 1988

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The committees responsible for this British Standard are shown in Part 0.

The following BSI references relate to the work on this standard:
Committee reference CIC/21
Draft for comment 87/51188 DC

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 and 2, 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 of issue	Comments

Contents

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1 Scope

This Part of BS 4651 describes a gravimetric method for the determination of the density of ammonia solution for industrial use.

The method is applicable to solutions containing 25.0 % to 35.0 % (*m*/*m*) ammonia.

NOTE The publications referred to in this standard are listed on the inside back cover.

2 Principle

The mass of a known volume of ammonia solution, controlled at 20 °C, is measured using an analytical balance.

3 Apparatus

3.1 *General.* Ordinary laboratory apparatus and the following.

3.2 *One-mark volumetric flask,* 50 mL, complying with BS 1792, class A.

3.3 *Thermostatically controlled circulating water bath,* capable of being maintained at 20 ± 0.5 °C.

4 Procedure

4.1 Test portion

Transfer to a beaker a test sample of sufficient volume to proceed with the determination. Cover the beaker with a suitable watch glass. Place the beaker in the water bath (**3.3**) controlled at 20 ± 0.5 °C, for a sufficient period to allow equilibration in temperature.

4.2 Determination

Weigh, to the nearest 0.0001 g, the clean, dry, stoppered one-mark volumetric flask (**3.2**). Fill the flask to the mark with the test portion (**4.1**), replace the stopper and weigh the flask and sample to the nearest 0.0001 g.

5 Expression of results

The density, ρ of the ammonia solution at 20 °C, in g/mL, is given by the following expression.

$$\frac{m_2 - m_1}{50}$$

where

m_1 is the mass of the flask (see **4.2**) (in g);

m_2 is the mass of the flask and test portion (in g);

50 is the volume of the test portion (**4.1**) (in mL).

6 Test report

The test report shall include the following information:

a) a reference to this British Standard, i.e. BS 4651-1:1988;

b) a complete identification of the sample;

c) details of any unusual features noted during the determination;

d) the results expressed in accordance with clause **5**;

e) any operation not included in this British Standard or regarded as optional.

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Publications referred to

BS 1792, *Specification for one-mark volumetric flasks.*
BS 4651, *Ammonia solution.*
BS 4651-0, *Methods for sampling.*

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