BRITISH STANDARD

BS 3762-3.15: 1985

Analysis of formulated detergents —

Part 3: Quantitative test methods —

Section 3.15 Method for estimation of carboxymethylcellulose content

NOTE It is recommended that this Section be read in conjunction with the information in the "*General Introduction*", published separately as BS 3762-0.

Confirmed January 2011

UDC 661.185:543.42:547.458.8

Foreword

This Section of BS 3762 has been prepared under the direction of the Chemicals Standards Committee and supersedes method D4 of BS 3762:1964.

This standard describes a method of test only and should not be referred to as a specification defining limits of purity. Reference to the standard should indicate that the method of test used is in conformity with BS 3762-3.12.

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.

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 January 1985

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/34
Draft for comment 84/50245 DC

ISBN 0 580 14121 7

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

blank

1 Scope

This Section of BS 3762 describes a method of analysis for the estimation of carboxymethylcellulose content of formulated detergents.

NOTE The titles of the publications referred to in this Section are listed on the inside back cover.

2 Principle

Hydrolysis and dehydration of the carboxymethylcellulose to furfural derivatives, which produce a green colour with a solution of anthrone in 60 % sulphuric acid. The method is not specific for carboxymethylcellulose as most cellulose derivatives, and also other carbohydrates such as sucrose, react similarly. The intensity of the colour decreases with the increase in the degree of substitution of the carboxymethylcellulose and it is essential to prepare a standardization graph from similar material to that in the sample, or to express the result in terms of an arbitrary standard.

NOTE The method is based on that reported by Black, H.C. Analytical Chemistry, 1951, **23**, 1792-5.

3 Reagents

The reagents shall be of a recognized analytical reagent quality. Water complying with the requirements of BS 3978 shall be used throughout.

3.1 *Kieselguhr*

3.2 *Sulphuric acid*, 60 % (*V*/*V*) solution. Add 60 mL of the concentrated sulphuric acid (ρ = 1.84 g/mL) slowly to 40 mL of water, cooling well. Dilute to 100 mL with water when cold.

3.3 *Anthrone solution*. Dissolve 0.2 g of anthrone ($C_6H_4COC_6H_4CH_2$) in about 50 m L of concentrated sulphuric acid (ρ = 1.84 g/mL), which has been added to 5 mL of water. Cool and dilute to 200 mL with the concentrated sulphuric acid. Allow the solution to stand for 4 h before use. Do not use a solution that is more than 24 h old.

4 Apparatus

Ordinary laboratory apparatus and the following are required.

4.1 *One-mark volumetric flasks* of capacity 50, 100 and 200 mL, complying with the requirements of BS 1792.

4.2 *Filter*, sintered or fritted glass or silica, porosity grade no. 4, complying with the requirements of BS 1752.

4.3 *Spectrometer* (or photoelectric absorptiometer fitted with filters providing maximum transmission at a wavelength of about 625 nm) and a cell of optical path length 10 mm.

5 Procedure

5.1 Test portion

Weigh 1.00 g of the well mixed test sample.

5.2 Determination

Dissolve the test portion in the sulphuric acid solution (**3.2**), and, using this acid, dilute to 100 mL in a one-mark volumetric flask. If per-salts are present, heat the test portion for 2 h in an oven at 150 °C and then allow it to cool, before dissolving in the acid.

Filter the solution through the filter (**4.2**), using a little kieselguhr (**3.1**) to aid filtration. Transfer 5 mL of the filtered solution to a 50 mL one-mark volumetric flask.

Add 80 mL of the anthrone solution (**3.3**) in a slow continuous stream to 50 mL water while stirring. Add 30 mL of the resulting warm solution to the 50 mL flask containing the sample solution and to a second flask for a blank. Heat the flasks in a boiling water bath for 15 min. Cool and dilute each to the mark with the sulphuric acid (**3.2**). Measure the absorbance of the sample solution in a cell of optical path length 10 mm at 625 nm against the blank.

Prepare a standardizing graph from the figures obtained by treating known amounts of carboxymethylcellulose (see clause **2**) by the above procedure, to cover a suitable range.

6 Expression of results

Record the percentage of carboxymethylcellulose in the sample by reference to the graph.

7 Test report

The test report shall include the following information:

a) a reference to this British Standard, i.e. BS 3762-3.15;

b) the results and the method of expression used;

c) the test conditions.

blank

Publications referred to

BS 1752, *Laboratory sintered or fritted filters.*
BS 1792, *One-mark volumetric flasks.*
BS 3978, *Water for laboratory use.*

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: 020 8996 9000. Fax: 020 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: 020 8996 9001. Fax: 020 8996 7001.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: 020 8996 7111. Fax: 020 8996 7048.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: 020 8996 7002. Fax: 020 8996 7001.

Copyright

BSI
389 Chiswick High Road
London
W4 4AL