BRITISH STANDARD

BS 6392-9: 1983

*Incorporating Amendment Nos. 1 and 2*

# Testing of ethanol for industrial use —

## Part 9: Method for determination of permanganate time

NOTE It is recommended that this Part be read in conjunction with the information given in the "General introduction" published separately as BS 6392-0.

Confirmed January 2011

UDC 661.722:543.869

# Foreword

This Part of BS 6392 is technically equivalent to ISO 1388 "*Ethanol for industrial use — Methods of test"* Part 12 "*Determination of permanganate time*", published in 1981 by the International Organization for Standardization (ISO).

For ease of production, the text of ISO 1388-12:1981, with the omission of the Annex, has been used for this British Standard. Some terminology and certain conventions are not identical with those used in British Standards; attention is drawn especially to the following.

The comma has been used as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

**This standard describes a method only and should not be used as a specification defining limits of purity. Reference to the standard should indicate that the method of test used is in accordance with BS 6392-9.**

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 August 1983



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/4
Draft for comment 80/51209 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 |
|---|---|---|
| 4945 | March 1986 | |
| 7764 | June 1993 | Indicated by a sideline in the margin |
| | | |
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# Contents

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## 1 Scope and field of application

This Part of BS 6392 describes a method for the determination of the permanganate time of ethanol for industrial use.

NOTE The title of the publication referred to in this standard is given on the inside back cover.

## 2 Definition

**permanganate time**

the number of minutes required, after adding 2 ml of 0,2 g/l potassium permanganate solution to 50 ml of the sample, for the colour to match that of a colour standard

## 3 Principle

Addition to a test portion, under specified conditions, of potassium permanganate solution. Determination of the time taken for the colour of this test solution to match that of a cobalt(II) chloride and uranyl nitrate colour standard.

## 4 Reagents

During the analysis, unless otherwise specified, use only reagents of recognized analytical grade, and distilled water or water of equivalent purity.

**4.1** *Potassium permanganate*, 0,2 g/l solution.

Use water previously boiled for 30 min with sufficient dilute potassium permanganate solution to give a stable faint pink coloration. Cool the water before preparation of the solution.

Prepare this solution immediately before use and protect it from light.

**4.2** *Cobalt(II) chloride and uranyl nitrate*, colour standard.

To 5 ml of a 50 g/l solution of cobalt(II) chloride hexahydrate ($CoCl_2.6H_2O$), add 7 ml of a 40 g/l solution of uranyl nitrate hexahydrate [$UO_2(NO_3)_2.6H_2O$], and dilute with water to 50 ml.

WARNING. Uranyl nitrate is radioactive and it is essential that appropriate precautions are taken. The use of uranyl nitrate is subject to the Ionizing radiations regulations SI 1985, No. 1333 and any amendments thereof which are currently in force.

Prepare this solution on the day of use.

## 5 Apparatus

NOTE Clean the glassware used so as to avoid any risk of contamination.

Ordinary laboratory apparatus, and

**5.1** *Water bath*, capable of being controlled at 15 ± 0,2 °C.

**5.2** *Two matched cylinders*, of capacity 100 ml, of transparent and colourless glass, graduated at 50 ml and fitted with ground glass stoppers.

**5.3** *Burette*, of capacity 10 ml, graduated in 0,05 ml divisions.

## 6 Procedure

### 6.1 Test portion

Carry out the test as soon as possible after receipt of the sample. (Instructions for the storage of the sample are given in BS 6392-0)

Rinse one of the cylinders (**5.2**), first with 15 to 20 ml of hydrochloric acid, $\varrho$ approximately 1,18 g/ml, about 36 % (*m*/*m*) solution, then six times with tap water, twice with distilled water and finally with some of the laboratory sample.

Immediately fill the cylinder to the mark with more of the laboratory sample at a temperature of about 15 °C.

### 6.2 Determination

Fill the second cylinder (**5.2**) to the mark with the colour standard (**4.2**).

Place the cylinder containing the test portion (**6.1**) in the water bath (**5.1**), controlled at 15 ± 0,2 °C, so that the water level in the bath is approximately 25 mm below the neck of the cylinder. After 15 min, remove the cylinder from the water bath and, using the burette (**5.3**), add 2,0 ml of the potassium permanganate solution (**4.1**). Note the time. Immediately stopper the cylinder, shake, and replace it in the water bath.

Remove the cylinder from the water bath, at intervals of 1 min and compare the colour, viewing vertically downwards against a white background, with the colour of the colour standard. Avoid exposing the test solution to strong daylight.

Note the time at which the colour of the test solution matches that of the colour standard.

## 7 Expression of results

Report the time, in minutes, from the addition of the potassium permanganate solution, for the colour of the test solution to match that of the colour standard.

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# Publication referred to

BS 6392, *Testing of ethanol for industrial use.*
BS 6392-0, *General introduction.*

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BSI
389 Chiswick High Road
London
W4 4AL