



EAST AFRICAN COMMUNITY



EDICT



OF
GOVERNMENT

In order to promote public education and public safety, equal justice for all, a better informed citizenry, the rule of law, world trade and world peace, this legal document is hereby made available on a noncommercial basis, as it is the right of all humans to know and speak the laws that govern them.

EAS 216-12 (2001) (English): Ethanol for industrial use – Methods of test – Part 12: Determination of permanganate time

ISO INSIDE



BLANK PAGE





EAS 216-12:2001
ICS 71.080.60

EAST AFRICAN STANDARD

**Ethanol for industrial use — Methods of test — Part 12:
Determination of permanganate time**

EAST AFRICAN COMMUNITY

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to achieve this objective, the Partner States in the Community through their National Bureaux of Standards, have established an East African Standards Committee.

The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

© East African Community 2001 — All rights reserved*

East African Community

P O Box 1096

Arusha

Tanzania

Tel: 255 27 2504253/8

Fax: 255-27-2504481/2504255

E-Mail: eac@eachq.org

Web: www.each.org

* © 2001 EAC — All rights of exploitation in any form and by any means reserved worldwide for EAC Partner States' NSBs.

International Standard



1388/12

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

**Ethanol for industrial use — Methods of test —
Part 12 : Determination of permanganate time**

Éthanol à usage industriel — Méthodes d'essai — Partie 12 : Détermination du temps de permanganate

First edition — 1981-12-01

UDC 661.722 : 543.8

Ref. No. ISO 1388/12-1981 (E)

Descriptors : industrial products, ethanols, tests, determination, permanganates, time, potassium permanganate.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 1388/12 was developed by Technical Committee ISO/TC 47, *Chemistry*, and was circulated to the member bodies in February 1980.

It has been approved by the member bodies of the following countries :

Australia	Germany, F.R.	Romania
Austria	Hungary	South Africa, Rep. of
Belgium	India	Switzerland
Brazil	Italy	Thailand
Bulgaria	Korea, Rep. of	United Kingdom
China	Netherlands	USSR
Czechoslovakia	Philippines	
France	Poland	

No member body expressed disapproval of the document.

This International Standard has also been approved by the International Union of Pure and Applied Chemistry (IUPAC).

International Standards ISO 1388/1 to ISO 1388/12 cancel and replace ISO Recommendation R 1388-1970, of which they constitute a technical revision.

Ethanol for industrial use — Methods of test — Part 12 : Determination of permanganate time

1 Scope and field of application

This part of ISO 1388 specifies a method for the determination of the permanganate time of ethanol for industrial use.

This document should be read in conjunction with ISO 1388/1 (see the annex).

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 ($\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$), add 7 ml of a 40 g/l solution of uranyl nitrate hexahydrate [$\text{UO}_2(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$], and dilute with water to 50 ml.

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 $15 \pm 0,2$ °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 specified in ISO 1388/1.)

Rinse one of the cylinders (5.2), first with 15 to 20 ml of hydrochloric acid, ρ approximately 1,19 g/ml, about 38 % (*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 $15 \pm 0,2$ °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.

ISO 1388/12-1981 (E)

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.

Annex

ISO Publications relating to ethanol for industrial use

ISO 1388/1 — General.

ISO 1388/2 — Detection of alkalinity or determination of acidity to phenolphthalein.

ISO 1388/3 — Estimation of content of carbonyl compounds present in small amounts — Photometric method.

ISO 1388/4 — Estimation of content of carbonyl compounds present in moderate amounts — Titrimetric method.

ISO 1388/5 — Determination of aldehydes content — Visual colorimetric method.

ISO 1388/6 — Test for miscibility with water.

ISO 1388/7 — Determination of methanol content [methanol contents between 0,01 and 0,20 % (V/V)] — Photometric method.

ISO 1388/8 — Determination of methanol content [methanol contents between 0,10 and 1,50 % (V/V)] — Visual colorimetric method.

ISO 1388/9 — Determination of esters content — Titrimetric method after saponification.

ISO 1388/10 — Estimation of hydrocarbons content — Distillation method.

ISO 1388/11 — Test for detection of furfural.

ISO 1388/12 — Determination of permanganate time.
