INTERNATIONAL STANDARD 2211

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

Liquid chemical products — Measurement of colour in Hazen units (platinum-cobalt scale)

First edition — 1973-10-01

UDC 66 : 535.661.4

Ref. No. ISO 2211-1973 (E)

Descriptors : chemical compounds, liquids, colorimetry.

Price based on 2 pages

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 2211 was drawn up by Technical Committee ISO/TC 47, *Chemistry*, and circulated to the Member Bodies in February 1972.

It has been approved by the Member Bodies of the following countries :

Austria	India	Sweden
Belgium	Israel	Switzerland
Czechoslovakia	Italy	Thailand
Egypt, Arab Rep. of	New Zealand	Turkey
France	Romania	United Kingdom
Germany	South Africa, Rep. of	U.S.A.
Hungary	Spain	U.S.S.R.

The Member Body of the following country expressed disapproval of the document on technical grounds :

Netherlands

Printed in Switzerland

Liquid chemical products — Measurement of colour in Hazen units (platinum-cobalt scale)

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of measuring the colour in Hazen units of liquid chemical products.

It is applicable only to clear, slightly coloured liquids for which the colour characteristics are close to those of the reference platinum-cobalt scale. Such colour characteristics are generally describable as "brownish-yellow".

This method is applicable whenever specified by an ISO Recommendation or International Standard relating to a given product.

2 PRINCIPLE

Visual comparison of the colour of a sample with that of colour standards, and expression of the result in terms of Hazen (platinum-cobalt) colour units.

For routine control purposes an instrument such as a comparator, colorimeter or spectrophotometer may be used, provided that it has first been established that the results so obtained are identical with those obtained by visual comparison.

3 DEFINITION

Hazen colour unit : The colour of a solution containing 1 mg of platinum per litre in the form of chloroplatinic acid, in the presence of 2 mg of cobalt(II) chloride hexahydrate per litre.

4 REAGENTS

Distilled water, or water of equivalent purity, shall be used in the test.

4.1 Cobalt(II) chloride hexahydrate ($CoCl_2 \cdot 6H_2O$).

4.2 Hydrochloric acid, ρ approximately 1,19 g/ml, about 38 % (m/m) solution, or approximately 12 N solution.

4.3 Chloroplatinic acid

Dissolve 1,00 g of platinum in a sufficient quantity of aqua regia in a glass or porcelain dish by heating on a boiling-water bath. When the metal has dissolved, evaporate the solution to dryness. Add 4 ml of the hydrochloric acid solution (4.2) and again evaporate to dryness. Repeat this operation twice more. In this way 2,10 g of chloroplatinic acid (H_2PtCl_6) are obtained.

or

4.4 Potassium chloroplatinate (K_2PtCl_6).

5 APPARATUS

Ordinary laboratory apparatus and

5.1 Two colorimetric tubes, flat based if possible, with a graduation mark at least 100 mm above the base and matched especially with respect to colour of glass and height of graduation mark above the base. Suitable tubes are available commercially as 50 ml or 100 ml Nessler cylinders.

For the measurement of low colorations (less than 50 Hazen units), the height of the graduation mark above the base must be greater than for the measurement of deeper colours and must be sufficient that, on looking through this greater depth of liquid, a clear distinction between the standard Hazen matching solutions can be observed.

6 PREPARATION OF STANDARD COLORIMETRIC SOLUTIONS

6.1 Standard colorimetric solution, 500 Hazen units.

Dissolve 2,00 g of the cobalt chloride (4.1) and the equivalent of 1,00 g of platinum, i.e. either

- 2,10 g of the chloroplatinic acid (4.3), or
- 2,49 g of the potassium chloroplatinate (4.4),

in water in a 2000 ml one-mark volumetric flask, add 200 ml of the hydrochloric acid solution (4.2), dilute to the mark and mix.

This solution has a colour of 500 Hazen colour units.