International Standard 8112

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Caprolactam for industrial use — Determination of colour of 50 % aqueous caprolactam solution, expressed in Hazen units (platinum-cobalt scale) — Spectrometric method

Caprolactame à usage industriel — Détermination de la coloration d'une solution aqueuse à 50 % de caprolactame, exprimée en unités Hazen (échelle platine-cobalt) — Méthode spectrométrique

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

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INTERNATIONAL STANDARD ISO 8112-1984 (E)

Caprolactam for industrial use — Determination of colour of 50 % aqueous caprolactam solution, expressed in Hazen units (platinum-cobalt scale) — Spectrometric method

1 Scope and field of application

This International Standard specifies a spectrometric method of determining the colour, expressed in Hazen units, of a 50 % aqueous caprolactam solution as a measure of coloured impurities content of the sample.

2 Reference

ISO 2211, *Liquid chemical products — Measurement of colour in Hazen units (platinum-cobalt scale).*

3 Definition

colour expressed in Hazen units (Pt/Co scale) : The number which indicates the amount of platinum, in milligrams per litre, in the standard solution the absorbance of which, measured at a wavelength of 390 nm, is equal to that of the 50 % aqueous solution of caprolactam measured at the same conditions.

4 Principle

Spectrometric measurement of the absorbance of a 50 % aqueous caprolactam solution at a wavelength of 390 nm and optical path length of 50 mm, expressed in Hazen units by multiplying the absorbance measured by a constant factor equal to 150.

This factor is derived from measurements of absorbance of diluted standard solutions of platinum-cobalt scale (see ISO 2211, clause 6).

5 Reagents

During the analysis, use only distilled water or water of equivalent purity.

6 Apparatus

Ordinary laboratory apparatus and

6.1 Spectrometer, single-beam, or

6.2 Spectrometer, double-beam, or

6.3 Photometer, fitted with filters having maximum transmission at about 390 nm.

6.4 Two cells, of optical path length 50 mm.

7 Procedure

7.1 Weigh 50 ± 0,1 g of caprolactam, place in a 250 ml conical flask and dissolve in 50 ml of water. Allow the solution to stand till the air bubbles disappear.

7.2 Fill the two cells (6.4) with water. Adjust the spectrometer (6.1 or 6.2) or the photometer (6.3) for measuring absorption difference at a wavelength of 390 nm, if necessary. If a single-beam spectrometer is used, measure the possible difference in absorbance of the cells and correct the result obtained by the procedure specified in 7.3.

7.3 Replace the water in the sample cell by the caprolactam solution (7.1) and measure the absorbance of the caprolactam solution at a wavelength of 390 nm, after having adjusted the instrument to zero absorbance against water.

The difference between parallel measurements should not exceed 0,003 units of absorbance.

8 Expression of results

The colour of the caprolactam solution, expressed in Hazen units (platinum-cobalt scale), is given by the formula

$$150 \times A_{390}$$

where

A_{390} is the absorbance of the caprolactam solution (7.1) at a wavelength of 390 nm in cell with an optical path length of 50 mm, taking into account the absorption difference of the cells;

150 is the calculation factor for conversion into Hazen units.

Round the result to the nearest whole number.

NOTES

1 If cells of different optical path length are used, correct the calculation factor by multiplying by 50/*l*, where *l* is the optical path length, in millimetres, of the cells used.

2 In the original Hazen test, the colours are compared visually. The results obtained in the spectrometric method cannot be compared with the results of the original visual Hazen test (ISO 2211).

9 Test report

The test report shall include the following particulars:

a) an identification of the sample;

b) the reference of the method used;

c) the results and the method of expression used;

d) any unusual features noted during the determination;

e) any operations not included in this International Standard or in the International Standard to which reference is made, or regarded as optional.