INTERNATIONAL STANDARD 1593

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Urea for industrial use — Determination of alkalinity — Titrimetric method

Urée à usage industriel — Détermination de l'alcalinité — Méthode titrimétrique

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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.

Prior to 1972, the results of the work of the technical committees were published as ISO Recommendations; these documents are in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 47, *Chemistry*, has reviewed ISO Recommendation R 1593-1970 and found it technically suitable for transformation. International Standard ISO 1593 therefore replaces ISO Recommendation R 1593-1970, to which it is technically identical.

ISO Recommendation R 1593 had been approved by the member bodies of the following countries :

Australia	Hungary	Romania
Austria	India	South Africa, Rep. of
Belgium	Iran	Spain
Brazil	Israel	Sweden
Canada	Italy	Switzerland
Czechoslovakia	Netherlands	Thailand
Egypt, Arab Rep. of	New Zealand	Turkey
France	Peru	United Kingdom
Germany	Poland	U.S.S.R.
Greece	Portugal	Yugoslavia

No member body had expressed disapproval of the Recommendation.

No member body disapproved the transformation of the Recommendation into an International Standard.

Printed in Switzerland

Urea for industrial use — Determination of alkalinity — Titrimetric method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a titrimetric method for the determination of the alkalinity of urea for industrial use.

2 PRINCIPLE

Titration of the alkalinity of a test portion with a standard volumetric hydrochloric acid solution in the presence of an indicator.

3 REAGENTS

During the analysis, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity, neutral to the mixed indicator (3.2).

3.1 Hydrochloric acid, 0,1 N standard volumetric solution.

3.2 Mixed indicator, ethanolic solution.

Dissolve 0,1 g of methyl red in about 50 ml of 95 % (*V/V*) ethanol and add 0,05 g of methylene blue. After dissolution, dilute to 100 ml with the same ethanol and mix.

4 APPARATUS

Ordinary laboratory apparatus.

5 PROCEDURE

5.1 Test portion

Weigh, to the nearest 0,1 g, about 100 g of the test sample and transfer to a 500 ml conical flask.

5.2 Determination

Dissolve the test portion (5.1) in about 350 ml of water, add a few drops of the mixed indicator solution (3.2) and titrate with the hydrochloric acid solution (3.1) to the colour change of the indicator.

6 EXPRESSION OF RESULTS

The alkalinity, expressed as a percentage by mass of ammonia (NH_3), is given by the formula

$$V \times 0{,}001\,7 \times \frac{100}{m}$$

$$= \frac{0{,}17\,V}{m}$$

where

V is the volume, in millilitres, of the hydrochloric acid solution (3.1) used for the titration;

m is the mass, in grams, of the test portion (5.1);

0,001 7 is the mass, in grams, of ammonia corresponding to 1 ml of exactly 0,1 N hydrochloric acid solution.

NOTE — If the concentration of the standard volumetric solution used is not exactly as specified in the list of reagents, an appropriate correction should be made.

7 TEST REPORT

The test report shall include the following particulars :

a) the reference of the method used;

b) the results and the method of expression used;

c) any unusual features noted during the determination;

d) any operation not included in this International Standard, or regarded as optional.

ANNEX

ISO PUBLICATIONS RELATING TO UREA FOR INDUSTRIAL USE

ISO 1592 – Determination of nitrogen content – Titrimetric method after distillation.

ISO 1593 – Determination of alkalinity – Titrimetric method.

ISO 1594 – Determination of ash.

ISO/R 1595 – Determination of iron content – 2,2′-Bipyridyl photometric method.

ISO 2749 – Measurement of the pH of a solution of urea of conventional concentration (100 g/l) – Potentiometric method.

ISO 2750 – Measurement of colour in Hazen units (platinum-cobalt scale) of a urea-formaldehyde solution.

ISO 2751 – Determination of the buffer coefficient – Potentiometric method.

ISO 2752 – Measurement of the variation of pH in the presence of formaldehyde – Potentiometric method.

ISO 2753 – Determination of water content – Karl Fischer method.

ISO 2754 – Determination of biuret content – Photometric method.

ISO 4274 – Determination of biuret content – Flame atomic absorption and photometric absorption methods.