

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 910

SULPHURIC ACID AND OLEUM FOR INDUSTRIAL USE
DETERMINATION OF TOTAL ACIDITY AND CALCULATION
OF FREE SO₃ CONTENT OF OLEUM

Volumetric method

1st EDITION
December 1968

COPYRIGHT RESERVED

The copyright of ISO Recommendations and ISO Standards belongs to ISO Member Bodies. Reproduction of these documents, in any country, may be authorized therefore only by the national standards organization of that country, being a member of ISO.

For each individual country the only valid standard is the national standard of that country.

Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 910, *Sulphuric acid and oleum for industrial use – Determination of total acidity and calculation of free SO₃ content of oleum – Volumetric method*, was drawn up by Technical Committee ISO/TC 47, *Chemistry*, the Secretariat of which is held by the Ente Nazionale Italiano di Unificazione (UNI).

Based on detailed work on this question carried out by the Technical Committee, a Draft ISO Recommendation was adopted in 1965.

In June 1967, this Draft ISO Recommendation (No. 1180) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Austria	India	South Africa, Rep. of
Belgium	Iran	Spain
Brazil	Ireland	Switzerland
Chile	Italy	Thailand
Cuba	Japan	Turkey
Czechoslovakia	Netherlands	U.A.R.
France	New Zealand	U.S.S.R.
Germany	Poland	Yugoslavia
Hungary	Portugal	
ICAITI*	Romania	

One Member Body opposed the approval of the Draft :

United Kingdom

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in December 1968, to accept it as an ISO RECOMMENDATION.

* Instituto Centroamericano de Investigación y Tecnología Industrial (Costa Rica, Guatemala, Honduras, Nicaragua, El Salvador, Panama).

SULPHURIC ACID AND OLEUM FOR INDUSTRIAL USE

DETERMINATION OF TOTAL ACIDITY AND CALCULATION

OF FREE SO₃ CONTENT OF OLEUM

Volumetric method

1. SCOPE

This ISO Recommendation describes a volumetric method for the determination of the total acidity of sulphuric acid for industrial use, conventionally expressed as H₂SO₄, and for the calculation of free SO₃ content of oleum.

2. FIELD OF APPLICATION

The method is applicable to sulphuric acid and oleum for industrial use. Two cases are considered :

- 2.1 H₂SO₄ content equal to, or lower than, 98 %.
- 2.2 H₂SO₄ content higher than 98 %.

3. PRINCIPLE

Preliminary oxidation with hydrogen peroxide and titration of total acidity by means of a sodium hydroxide standard volumetric solution, in the presence of methyl red.

4. REAGENTS

Distilled water or water of equivalent purity, neutral to methyl red, should be used in the test.

- 4.1 *Hydrogen peroxide*, 60 g/l solution, neutral to methyl red.
- 4.2 *Sodium hydroxide*, N standard volumetric solution.
(see Note, section 7).
- 4.3 *Methyl red*, 1 g/l ethanolic solution.
Dissolve 0.1 g of methyl red in 95 % (v/v) ethanol and dilute to 100 ml with the same ethanol.

5. APPARATUS

Ordinary laboratory apparatus and

- 5.1 *Ground glass stoppered flask*, capacity approximately 500 ml, with neck of about 30 mm diameter.
- 5.2 *Spherical glass ampoule*, of suitable shape and capacity, for example 20 mm in diameter, having one capillary end of about 50 mm in length (see example indicated in the following figure).
- 5.3 *Burette*, precision at least 0.05 ml.
- 5.4 *Conical flask*, capacity 500 ml, with ground glass stopper.