
INTERNATIONAL STANDARD



2366

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

Cryolite, natural and artificial — Determination of sodium content — Flame emission and atomic absorption spectrophotometric methods

Cryolithe naturelle et artificielle — Dosage du sodium — Méthodes par spectrophotométrie de flamme (émission) et par absorption atomique

First edition — 1974-11-01

get full document from standards.iteh.ai

UDC 661.8 : 553.634 : 546.33 : 543.423

Ref. No. ISO 2366-1974 (E)

Descriptors : cryolite, chemical analysis, determination of content, sodium, flame photometry, atomic absorption.

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 2366 was drawn up by Technical Committee ISO/TC 47, *Chemistry*, and circulated to the Member Bodies in November 1972.

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

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

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

No Member Body expressed disapproval of the document.

Cryolite, natural and artificial – Determination of sodium content – Flame emission and atomic absorption spectrophotometric methods

1 SCOPE

This International Standard specifies a flame emission spectrophotometric method and a flame atomic absorption spectrophotometric method for the determination of the sodium content of natural and artificial cryolite.

2 FIELD OF APPLICATION

The methods are applicable as alternatives to the determination of the sodium content of natural and artificial cryolite of normal composition, for which the molar ratio NaF/AlF_3 is equal to about 3.

3 REFERENCE

ISO/R 1619, *Cryolite (natural and artificial) – Preparation and storage of test samples*.

4 PRINCIPLE

Dissolution of a test portion in hydrochloric acid and water after attack by concentrated sulphuric acid.

— Flame emission spectrophotometric method : Atomization of the test solution in a flame (oxy-hydrogen, for example) and determination of sodium by measurement of the intensity of the radiation at 589 nm.

— Flame atomic absorption spectrophotometric method : Atomization of the solution in an air-acetylene flame and determination of sodium by spectrophotometric measurement of the absorption of the 589 nm line emitted by a sodium hollow-cathode lamp.

5 REAGENTS

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

5.1 Sulphuric acid, ρ approximately 1,84 g/ml, about 96 % (m/m) solution.

5.2 Hydrochloric acid, ρ approximately 1,19 g/ml, about 38 % (m/m) solution.

5.3 Standard sodium solution corresponding to 1,00 g of sodium per litre.

Weigh, to the nearest 0,000 1 g, 3,089 2 g of anhydrous sodium sulphate, previously dried at about 120 °C and cooled in a desiccator. Place in a beaker of convenient capacity (250 ml, for example), dissolve in about 100 ml of water, add 10 ml of the hydrochloric acid solution (5.2), transfer the solution quantitatively to a 1 000 ml one-mark volumetric flask, dilute to the mark and mix.

Transfer the solution to a plastics bottle.¹⁾

1 ml of this standard solution contains 1,00 mg of Na.

5.4 Standard sodium solution corresponding to 0,100 g of sodium per litre.

Place 50,0 ml of the standard sodium solution (5.3) in a 500 ml one-mark volumetric flask, dilute to the mark and mix.

1 ml of this solution contains 0,100 mg of Na.

Prepare this solution at the time of use and transfer to a plastics bottle.¹⁾

6 APPARATUS

Ordinary laboratory apparatus and

6.1 Platinum dish, diameter about 75 mm, height about 30 mm.

6.2 Flame spectrophotometer, fitted with an atomizer-burner constructed so as to excite emission of the 589 nm sodium line.

or

6.3 Atomic absorption spectrophotometer, fitted with a burner fed by compressed air and acetylene.

6.4 Sodium lamp, of the hollow-cathode or discharge type.

1) Polyethylene, polytetrafluoroethylene and polypropylene are, among others, suitable materials.