
INTERNATIONAL STANDARD



4281

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

Sodium hexafluorosilicate for industrial use — Determination of free acidity and total hexafluorosilicate content — Titrimetric method

Hexafluorosilicate de sodium à usage industriel — Déterminations de l'acidité libre et de la teneur en hexafluorosilicate total — Méthode titrimétrique

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FOREWORD

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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 4281 was developed by Technical Committee ISO/TC 47, *Chemistry*, and was circulated to the member bodies in August 1975.

It has been approved by the member bodies of the following countries:

Belgium	India	Spain
Brazil	Israel	Switzerland
Czechoslovakia	Italy	Turkey
Egypt, Arab Rep. of	Mexico	United Kingdom
France	Poland	U.S.S.R.
Germany	Romania	
Hungary	South Africa, Rep. of	

No member body expressed disapproval of the document.

Sodium hexafluorosilicate for industrial use – Determination of free acidity and total hexafluorosilicate content – Titrimetric method

WARNING – Sodium hexafluorosilicate is poisonous if taken internally. Breathing of the dust should be avoided. Contact with the eyes and skin should be prevented and operators should wash thoroughly after handling the material and should wear a respirator and goggles when handling the powdered material.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a titrimetric method for the determination of the free acidity and the total hexafluorosilicate content of sodium hexafluorosilicate for industrial use. In respect of free acidity, it is applicable to products having free acidities, expressed as a percentage by mass of hexafluorosilicic acid (H_2SiF_6), equal to or greater than 0,1.

2 PRINCIPLE

Determination of the free acidity by titration of an ice-cold test portion with a standard volumetric sodium hydroxide solution in the presence of potassium nitrate and using bromothymol blue as indicator, followed by titration at near boiling temperature to determine the total hexafluorosilicate content.

3 REAGENTS

During the analysis, use only reagents of analytical grade and only distilled water or water of equivalent purity.

3.1 Crushed ice, prepared from distilled water or water of equivalent purity.

3.2 Potassium nitrate, saturated solution at ambient temperature.

3.3 Sodium hydroxide, 0,1 N standard volumetric solution.

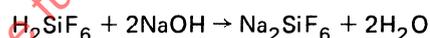
3.4 Sodium hydroxide, 0,5 N standard volumetric solution.

3.5 Bromothymol blue, 0,4 g/l solution.

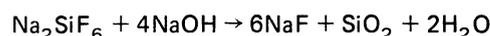
Heat 0,1 g of bromothymol blue with 3,2 ml of 0,05 N sodium hydroxide solution and 5 ml of 95 % (V/V) ethanol; after solution is effected, add 50 ml of 95 % (V/V) ethanol, dilute to 250 ml with water and mix.

4 REACTIONS

Cold titration



Hot titration



5 APPARATUS

Ordinary laboratory apparatus.

6 PROCEDURE

6.1 Test portion

In a glass weighing bottle, weigh, to the nearest 0,001 g, between 1,00 and 1,20 g of the test sample.

6.2 Determinations

Transfer the test portion (6.1) quantitatively to a 500 ml beaker containing about 100 g of the crushed ice (3.1) and 25 ml of the potassium nitrate solution (3.2), rinsing the residue from the weighing bottle into the beaker with the minimum quantity of water. Wash down the sides of the beaker with water. While stirring constantly, titrate immediately with the standard volumetric sodium hydroxide solution (3.3), in the presence of a few drops of the bromothymol blue solution (3.5) as indicator, until the blue colour persists for at least 30 s. On longer standing, the indicator will turn yellow; this colour change may be ignored.

Add the bulk of the standard volumetric sodium hydroxide solution (3.4) which is likely to be required for the second titration.

Then place the beaker on a hot-plate and bring to the boil. Titrate the hot solution rapidly with the standard volumetric sodium hydroxide solution (3.4) to the appearance of a permanent blue colour.