
International Standard



6227

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

ANSI Internet Doc Sect

**Chemical products for industrial use — General
method for determination of chloride ions —
Potentiometric method**

Produits chimiques à usage industriel — Méthode générale de dosage des ions chlorure — Méthode potentiométrique

First edition — 1982-09-01

UDC 661 : 543.257.1 : 546.131

Ref. No. ISO 6227-1982 (E)

Descriptors : chemical compounds, chemical analysis, determination, ions, chlorine, potentiometric analysis, industrial products.

Price based on 8 pages

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 6227 was developed by Technical Committee ISO/TC 47, *Chemistry*, and was circulated to the member bodies in August 1981.

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

Austria	India	South Africa, Rep. of
Belgium	Italy	Switzerland
China	Korea, Rep. of	Thailand
Egypt, Arab Rep. of	Netherlands	United Kingdom
France	Poland	USSR
Germany, F. R.	Portugal	
Hungary	Romania	

No member body expressed disapproval of the document.

Chemical products for industrial use — General method for determination of chloride ions — Potentiometric method

1 Scope

This International Standard specifies a general potentiometric method for the determination of chloride ions in solutions prepared from chemical products for industrial use.

The preparation of the test solution and any modifications to the general procedure should be dealt with in the specific International Standard for the chemical product to which the method is to be applied.

2 Field of application

The method is applicable to test solutions having chloride ion concentrations, expressed in milligrams per litre, of between 1 and 1 500. The method may be used to determine the total chlorine contained in chemical products after transforming it, if necessary, into chloride ions by a suitable process. The method has an absolute error, expressed as milligrams of chlorine, of 0,1 to 1 mg, according to the concentration of the standard volumetric solution used.

Under certain conditions, it is possible to determine bromide and iodide ions either simultaneously or separately. If chloride only is to be determined, bromide and iodide may be eliminated by the method described in annex C.

Cyanides, sulphides, thiocyanates, ammonium and iron(III) salts affect the determination; it is therefore necessary to eliminate them by suitable processes (see annex C).

3 Principle

Potentiometric titration of the chloride (Cl^-) ions with standard volumetric silver nitrate solution in an acid medium and in the presence of acetone, using a silver electrode or a chloride or silver ion-selective electrode (measuring electrode) and a calomel or a mercury(II) sulphate electrode (reference electrode). Other electrode pairs have been recommended (for example silver-platinum, calomel-platinum) but tests have shown that better potential increments are obtained with the electrode pairs indicated above.

NOTE — A manual procedure has been described, but automatic devices can obviously be used.

4 Reagents

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

4.1 Acetone.

4.2 Nitric acid, ρ approximately 1,40 g/ml, about 68 % (m/m) solution.

4.3 Potassium nitrate, solution saturated at room temperature.

4.4 Silver nitrate, solution, $c(\text{AgNO}_3) = 0,1$ mol/l approximately.

Dissolve 8,5 g of silver nitrate in a 500 ml one-mark volumetric flask, dilute to the mark and mix.

Store the solution in a dark glass bottle.

4.5 Silver nitrate, solution, $c(\text{AgNO}_3) = 0,01$ or $0,004$ mol/l approximately.

Select the appropriate solution according to the information in the table relating to 6.1.

Prepare the selected solution at the time of use from the silver nitrate solution (4.4), diluting when required in a one-mark volumetric flask.

NOTE — If solution 4.4 is used directly, as indicated in the table relating to 6.1, it should be standardized according to the procedure specified in 6.2. If the solutions prepared from that specified in 4.4 are used (see 4.5), the calibration of solution 4.4 is not necessary. It is sufficient to standardize the solution selected in 4.5, in all cases according to the procedure specified in 6.2.

4.6 Potassium chloride, standard reference solution, $c(\text{KCl}) = 0,1$ mol/l exactly.

Weigh, to the nearest 0,000 1 g, 3,727 6 g of potassium chloride, previously dried for 1 h at about 130 °C and cooled in a desiccator. Dissolve in a little water and transfer the solution quantitatively into a 500 ml one-mark volumetric flask. Dilute to the mark and mix.

This solution shall not be kept for more than one month.