
INTERNATIONAL STANDARD



5785

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

Hydrochloric acid for industrial use — Determination of arsenic content — Silver diethyldithiocarbamate photometric method

Acide chlorhydrique à usage industriel — Dosage de l'arsenic — Méthode photométrique au diéthylthiocarbamate d'argent

First edition — 1978-08-15

ITeH STANDARD PREVIEW
(standards.iteh.ai)
ISO 5785:1978
<https://standards.iteh.ai/catalog/standards/sist/41fa58e5-6327-4976-ba39-9692810d1e3b/iso-5785-1978>

UDC 661.419 : 546.19 : 543.42

Ref. No. ISO 5785-1978 (E)

Descriptors: hydrochloric acid, chemical analysis, determination of content, arsenic, spectrophotometric analysis, silver diethyldithiocarbamate.

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 5785 was developed by Technical Committee ISO/TC 47, *Chemistry*, and was circulated to the member bodies in February 1977.

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

Australia
Austria
Belgium
Brazil
Bulgaria
Chile
Czechoslovakia
France

Germany
Hungary
Israel
Italy
Mexico
Netherlands
Poland
Portugal

ISO 5785:1978

Romania
South Africa, Rep. of
Switzerland
Turkey
United Kingdom
Yugoslavia

No member body expressed disapproval of the document.

Hydrochloric acid for industrial use – Determination of arsenic content – Silver diethyldithiocarbamate photometric method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a silver diethyldithiocarbamate photometric method for the determination of the arsenic content of hydrochloric acid for industrial use.

The method is applicable to products having arsenic (As) contents equal to or greater than 0,1 mg/kg.

2 REFERENCE

ISO 2590, *General method for the determination of arsenic – Silver diethyldithiocarbamate photometric method*.

3 PRINCIPLE

See ISO 2590, clause 3.

4 REAGENTS

See ISO 2590, clause 4.

5 APPARATUS

See ISO 2590, clause 5.

6 PROCEDURE

WARNING – See ISO 2590, clause 6.

6.1 Test portion

Weigh, to the nearest 0,001 g, 10 to 12 g of the test sample.

6.2 Preparation of the test solution

6.2.1 If the test portion (6.1) contains from 1 to 20 µg of As, introduce it into the conical flask (5.1.1) of the apparatus (5.1). Add water and, if necessary, some of the

hydrochloric acid solution (4.1) so as to give a final volume not exceeding 40 ml. The resulting solution should have an acidity of between 2,5 N and 3 N.

6.2.2 If the test portion (6.1) contains more than 20 µg of As, dilute it with water, transfer the solution obtained quantitatively to a one-mark volumetric flask of suitable capacity, dilute to the mark and mix. Take an aliquot portion of accurately known volume not exceeding 20 ml and containing not more than 20 µg of As, and introduce it into the conical flask (5.1.1) of the apparatus (5.1). Add the hydrochloric acid solution (4.1) and water, taking care not to exceed a volume of 40 ml. The resulting solution should have an acidity of between 2,5 N and 3 N.

6.4 Preparation of the calibration graph

See ISO 2590, sub-clause 6.3.

6.3 Blank test

See ISO 2590, sub-clause 6.2.

6.5 Determination

To the test solution (6.2.1 or 6.2.2), contained in the conical flask (5.1.1), add 2 ml of the potassium iodide solution (4.6) and 2 ml of the tin(II) chloride solution (4.7); swirl and allow to stand for 15 min. Continue in accordance with the procedure specified in ISO 2590, sub-clause 6.3.1, starting from the third paragraph ("Place a little of the absorbent cotton wool . . .").

6.5.1 Photometric measurements

Carry out the photometric measurements on the test solution and the blank test solution according to the procedure specified in ISO 2590, sub-clause 6.4.1, after having, however, adjusted the instrument to zero absorbance against the silver diethyldithiocarbamate solution (4.2).

7 EXPRESSION OF RESULTS

By means of the calibration graph (see ISO 2590, sub-clause 6.3.3), determine the masses of arsenic corresponding to the value of the photometric measurement of the test solution and to that of the blank test solution.

The arsenic content, expressed in milligrams of arsenic (As) per kilogram, is given by the formula

$$\frac{m_1 - m_2}{m_0} \times D$$

where

m_0 is the mass, in grams, of the test portion (6.1);

m_1 is the mass, in micrograms, of As found in the test solution;

m_2 is the mass, in micrograms, of As found in the blank test solution;

D is the ratio of the volume of the test solution to the volume of the aliquot taken for the determination. (If the determination has been carried out on the whole of the test solution, D is equal to 1.)

8 TEST REPORT

The test report shall include the following particulars :

- a) an identification of the sample;
- b) the reference of the method used;
- c) the results and the method of expression used;
- d) any unusual features note during the determination;
- e) any operation not included in this International Standard or in the International Standard to which reference is made, or regarded as optional.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 5785:1978](https://standards.iteh.ai/catalog/standards/sist/41fa58e5-6327-4976-ba39-9692810d1e3b/iso-5785-1978)

<https://standards.iteh.ai/catalog/standards/sist/41fa58e5-6327-4976-ba39-9692810d1e3b/iso-5785-1978>

ANNEX

ISO PUBLICATIONS RELATING TO HYDROCHLORIC ACID FOR INDUSTRIAL USE

ISO 904 – Determination of total acidity – Titrimetric method.

ISO 905 – Evaluation of hydrochloric acid concentration by measurement of density.

ISO 906 – Determination of sulphate content – Barium sulphate gravimetric method.

ISO 907 – Determination of sulphated ash – Gravimetric method.

ISO 908 – Determination of oxidizing or reducing substances – Titrimetric method.

ISO/R 909 – Determination of iron content – 2,2'-Bipyridyl spectrophotometric method.

ISO 2762 – Determination of soluble sulphates – Turbidimetric method.

ISO 5785 – Determination of arsenic content – Silver diethyldithiocarbamate photometric method.