

# International Standard



# 848

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## Phosphoric acid for industrial use — Determination of calcium content — Titrimetric method

*Acide phosphorique à usage industriel — Dosage du calcium — 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 848 was developed by Technical Committee ISO/TC 47, *Chemistry*, and was circulated to the member bodies in February 1980.

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

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

The member body of the following country expressed disapproval of the document on technical grounds :

Netherlands

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

This International Standard cancels and replaces ISO Recommendation R 848-1968, of which it constitutes a technical revision.

# Phosphoric acid for industrial use — Determination of calcium content — Titrimetric method

## 1 Scope

This International Standard specifies a titrimetric method for the determination of the calcium content of phosphoric acid for industrial use.

## 2 Field of application

### 2.1 General case

The general method is applicable to phosphoric acid not containing polyphosphoric acids and to products having a calcium content equal to or greater than 0,020 % (*m/m*).

### 2.2 Special case

If it is not certain that polyphosphoric acids are absent, proceed as specified in clause 8 for the special case.

## 3 Principle

Precipitation of calcium as calcium oxalate at pH  $4 \pm 0,3$ .

Filtration of the precipitate, dissolution in hydrochloric acid and re-precipitation under the same operating conditions in order to purify the precipitate.

Oxidimetric titration in sulphuric acid solution by means of potassium permanganate.

## 4 Reagents

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

**4.1 Sulphuric acid**,  $\rho$  approximately 1,84 g/ml, about 96 % (*m/m*) solution.

**4.2 Hydrochloric acid**,  $\rho$  approximately 1,19 g/ml, about 37 % (*m/m*) solution.

**4.3 Ammonia**,  $\rho$  approximately 0,91 g/ml, about 25 % (*m/m*) solution.

**4.4 Ammonium chloride**, saturated solution at room temperature (approximately 300 g/l).

**4.5 Ammonium oxalate**, 40 g/l solution.

**4.6 Potassium permanganate**, standard volumetric solution,  $c(1/5 \text{ KMnO}_4) = 0,1 \text{ mol/l}$ .

## 5 Apparatus

Ordinary laboratory apparatus and

**5.1 pH meter.**

**5.2 Witt's apparatus**, with a 250 ml beaker (see the figure).

**5.3 Funnel**, of diameter approximately 60 mm, with a sintered glass disk of porosity grade P 10 (pore size index between 4 and 10  $\mu\text{m}$ ).

## 6 Procedure

### 6.1 Test portion

Weigh by difference, to the nearest 0,01 g, approximately 50 g of the test sample.

### 6.2 Determination

#### 6.2.1 Preparation of test solution

Place the test portion (6.1) in a beaker of suitable capacity (for example 250 ml), add 50 ml of water and 20 ml of the hydrochloric acid solution (4.2); bring to the boil, cool and transfer the solution quantitatively to a 500 ml one-mark volumetric flask. Dilute to the mark, mix thoroughly and, if necessary, filter on a dry filter paper, collecting the filtrate in a dry container.