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# INTERNATIONAL STANDARD



# 4285

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## Phosphoric acid for industrial use — Guide to sampling techniques

*Acide phosphorique à usage industriel — Guide technique pour l'échantillonnage*

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## 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 4285 was developed by Technical Committee ISO/TC 47, *Chemistry*, and was circulated to the member bodies in October 1975.

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

Australia	Germany	Poland
Austria	Hungary	Romania
Belgium	India	South Africa, Rep. of
Brazil	Israel	Switzerland
Czechoslovakia	Italy	Turkey
Finland	Mexico	United Kingdom
France	Netherlands	U.S.S.R.

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

# Phosphoric acid for industrial use – Guide to sampling techniques

## 1 SCOPE

This International Standard is a guide to sampling techniques concerning the procedure to be followed and the precautions to be observed for the taking, the preparation and the storage of samples from a delivery of phosphoric acid for industrial use, with a view to assessing its quality.

## 2 FIELD OF APPLICATION

This guide to sampling techniques applies to ortho-phosphoric and polyphosphoric acids prepared by thermal and by wet processes, as well as to crystallized phosphoric acids.

The sampling of wet-process acids is particularly difficult because of the frequent presence of a more or less copious precipitate that is not easy to disperse into a suspension.

## 3 REFERENCES

ISO 683/XIII, *Heat-treated steels, alloy steels and free-cutting steels – Part 13: Wrought stainless steels*.

ISO 3165, *Sampling of chemical products for industrial use – Safety in sampling*.

ISO ..., *Chemical products – Sampling techniques for mobile liquids and mobile liquids derived from solids*.<sup>1)</sup>

## 4 MEANS OF DELIVERY

Phosphoric acids are generally delivered in large containers or mobile tanks (trucks, wagons, tankers) each of which may form a batch, and, more rarely, in smaller containers (for example, capacity less than 1 000 ml).

## 5 APPARATUS

### 5.1 For sampling

**5.1.1 Sampler or weighted bottle**, of stainless steel complying with the requirements of grade 20a of ISO 683/XIII (see ISO ...).

**5.1.2 Containers**, of plastics (polyethylene, polypropylene, polystyrene) when the acids are at a temperature below 50 °C but of stainless steel, complying with the requirements of grade 20a of ISO 683/XIII, when the acids are at a temperature above 50 °C.

The caps of plastics containers shall not contain metal inserts.

NOTE – The use of glass flasks for the taking and storage of samples is not recommended. They can cause the formation of films that adhere to the walls and form fluorosilicates by attack of the glass by the hydrofluoric acid present in phosphoric acids.

### 5.2 For mixing in the delivery container

Among the available means for mixing, those with the greatest chances of success are the following :

**5.2.1 Mechanical stirrer** (for example, propeller type), in the case of small delivery containers.

**5.2.2 Stirring system by air bubbling or closed-circuit pumping**, in the case of large containers and tanks.

#### NOTES

1 The air-bubbling system is the simplest and most practical and may, furthermore, be adapted to the shape of the reservoir by the use of spargers. It may, however, possibly result in the removal of hydrogen fluoride and fluorosilicate gas from the liquid, or vary the water content.

Closed-circuit pumping, provided that the output of the pump is high enough, is undoubtedly the most effective.

2 The mechanical stirrer and the air lance should be of acid-resistant stainless steel or be plastics coated. For assaying high strength acids, use dry air. If closed-circuit pumping is the method selected, it should be remembered that strong phosphoric acids crystallize at temperature of up to 28 °C; facilities should, therefore, be available to drain and wash out lines and pumps.

1) In preparation.