INTERNATIONAL STANDARD ISO 2996

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

Sodium tripolyphosphate and sodium pyrophosphate for industrial use — Determination of particle size distribution by mechanical sieving

Tripolyphosphate et pyrophosphate de sodium à usage industriel — Analyse granulométrique par tamisage mécanique

First edition — 1974-12-01

UDC 661.635.2 : 620.168.3 : 621.928.2 **Ref. No. ISO 2996-1974 (E)**

Descriptors : sodium tripolyphosphate, sodium pyrophosphate, grain size analysis.

Price based on 3 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 2996 was drawn up by Technical Committee ISO/TC 47, *Chemistry*, and circulated to the Member Bodies in November 1972.

It has been approved by the Member Bodies of the following countries :

Australia	India	Spain
Austria	Israel	Sweden
Belgium	Italy	Switzerland
Bulgaria	Netherlands	Thailand
Czechoslovakia	New Zealand	Turkey
Egypt, Arab Rep. of	Poland	United Kingdom
France	Portugal	U.S.S.R.
Germany	Romania	
Hungary	South Africa, Rep. of	

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

No Member Body expressed disapproval of the document.

Printed in Switzerland

Sodium tripolyphosphate and sodium pyrophosphate for industrial use — Determination of particle size distribution by mechanical sieving

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of particle size distribution by mechanical sieving of sodium tripolyphosphate (pentasodium triphosphate) and sodium pyrophosphate (tetrasodium pyrophosphate) for industrial use.

2 PRINCIPLE

Mechanical sieving of a test portion under fixed conditions. Weighing of each of the fractions.

3 APPARATUS

Ordinary laboratory apparatus and

3.1 Series of circular sieves, with metallic mountings, approximately 200 mm diameter, capable of being fitted tightly together and including a base and a cover.

The apertures shall be chosen, according to the characteristics of the product to be examined, from the following series :

0,063 — 0,125 — 0,250 — 0,500 —
1,0 — 2,0 — 4,0 mm

NOTE — These apertures are specified in ISO 565, *Test sieves — Woven metal wire cloth and perforated plate — Nominal sizes of apertures.*

3.2 Automatic device, capable of applying to a set of four sieves, base and cover fitted, combined movements in the horizontal plane and impacts along the vertical axis.

The movement of the horizontal plane is defined as follows (see figure) : the centre of the sieves shall follow the same movement as the mid-point C of a straight line AB of length 380 mm. One extremity A of this line describes a circle, of radius $r = 20$ mm, in a horizontal plane. The other extremity B is constrained to describe a straight line, of length $2r = 40$ mm, lying on the line passing through the centre O of the circle.

The complete movement shall be repeated about 300 times per minute.

The vertical impacts are produced by a weight of about 1,2 kg falling from a height of 40 mm on a rubber pad fixed on a plate on the cover.

The frequency of impacts shall be about 150 impacts per minute and these shall not give rise to a vertical displacement of the sieves of greater than 0,5 mm.

NOTE — A device conforming to these specifications is commercially available and information on suppliers may be obtained from national standards organizations.

3.3 Electric oven, capable of being controlled at 105 ± 2 °C.

4 PROCEDURE

4.1 Test portion

Dry the laboratory sample in the oven (3.3), controlled at 105 ± 2 °C, for 1 h and allow to cool in a desiccator.

Weigh, to the nearest 0,01 g, 50 ± 0,02 g of the dried laboratory sample.

4.2 Determination

Choose, from the series of sieves (3.1), four sieves of which the apertures are appropriate to the characteristics of the product to be examined.

Fit these four sieves, cleaned and dried, one within the other in order of decreasing aperture size and add the cover and base. Place the sieve with the smallest aperture at the bottom, on the base.

Transfer the test portion (4.1) quantitatively to the topmost sieve and close the sieve with the cover.

Place the column of sieves on the shaking device (3.2) and connect to earth by a conductor.

Carry out the sieving for 30 min.

Weigh the contents of each sieve to the nearest 0,01 g.

Verify that the total of the masses obtained is equal, to the nearest 0,1 g, to the mass of the test portion.

5 EXPRESSION OF RESULTS

Calculate for each sieve :

— the mass (m), in grams, of product equal to the sum of the mass contained in that sieve and the masses contained in the sieves above;

— the percentage of the test portion passing through each sieve, given by the expression :

$$100 - 2m$$

Express the results in the form of a table summarizing the percentages passing through the different sieves, commencing with the sieve with the largest aperture.

6 TEST REPORT

The test report shall include the following particulars :

a) the reference of the method used;

b) the results and the method of expression used;

c) any unusual features noted during the determination;

d) any operation not included in this International Standard, or regarded as optional.

Dimensions in millimetres

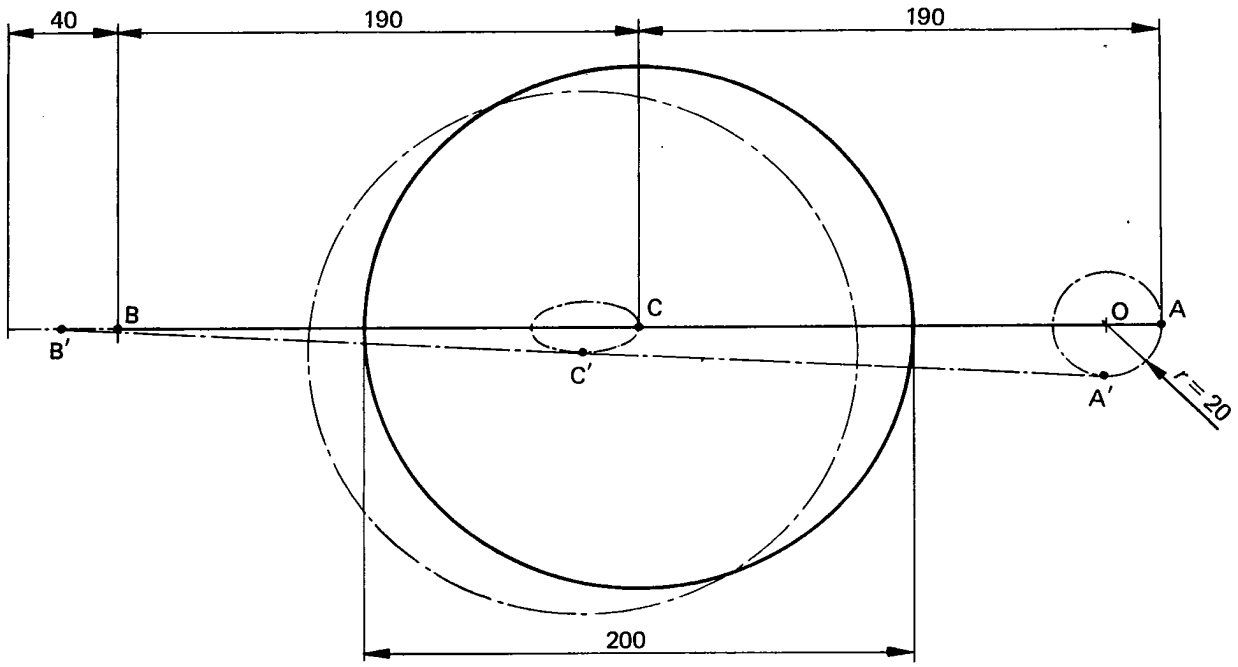

FIGURE — **Diagram of movements in the horizontal plane**

ANNEX

This document forms one of a series on methods of test for sodium phosphates for industrial use. The complete list of ISO publications already prepared or in course of preparation is as follows :

Sodium pyrophosphate (tetrasodium diphosphate)

ISO 2999 — *Estimation of pyrophosphate content — Potentiometric method.*

Sodium tripolyphosphate (pentasodium triphosphate)

ISO/R 850 — *Determination of matter insoluble in water.*

ISO/R 851 — *Measurement of pH — Potentiometric method.*

ISO 3000 — *Estimation of tripolyphosphate content — Tris(ethylenediamine) cobalt(III) chloride gravimetric method.*

Sodium pyrophosphate and sodium tripolyphosphate (tetrasodium diphosphate and pentasodium triphosphate)

ISO/R 852 — *Determination of iron content — 2,2'-Bipyridyl spectrophotometric method.*

ISO/R 853 — *Determination of loss on ignition.*

ISO 2996 — *Determination of particle size distribution by mechanical sieving.*

ISO 2998 — *Determination of orthophosphate content — Photometric method using the reduced molybdophosphate.*

ISO 3357 — *Determination of total phosphorus(V) oxide content — Quinoline molybdophosphate gravimetric method.*[1)]

ISO 3358 — *Separation by column chromatography and determination of the different phosphate forms.*[1)]

1) At present at the stage of draft.