



G-92-07

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

Sodium perborates for industrial use — Determination of particle size distribution by mechanical sieving

Perborates de sodium à usage industriel — Analyse granulométrique par tamisage mécanique

First edition — 1976-04-01

UDC 661.652 : 620.168.3

Ref. No. ISO 3118-1976 (E)

Descriptors : sodium perborate, tests, grain size analysis, sieve analysis.

Price based on 3 pages

FOREWORD

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International Standard ISO 3118 was drawn up by Technical Committee ISO/TC 47, *Chemistry*, and circulated to the Member Bodies in April 1973.

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

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

No Member Body expressed disapproval of the document.

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Printed in Switzerland

Sodium perborates 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 the particle size distribution by mechanical sieving of sodium perborates for industrial use.

2 REFERENCE

ISO 565, *Test sieves — Woven wire cloth and perforated plate — Nominal sizes of apertures.*

3 PRINCIPLE

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

4 APPARATUS

Ordinary laboratory apparatus and

4.1 Series of circular sieves (see ISO 565), with metallic mountings, approximately 200 mm diameter, capable of being fitted tightly together and including a base and a cover. The sieves shall be chosen by agreement between the interested parties.

4.2 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.

5 PROCEDURE

5.1 Test portion

Weigh, to the nearest 0,01 g, 45 to 55 g of the laboratory sample.

NOTE — If the sample needs to be divided, this should be carried out by an appropriate device which will ensure a representative sample, particularly with respect to particle size distribution, for example a spinning cone device.

5.2 Determination

Fit the sieves (4.1), cleaned and dried, one within the other in decreasing order of aperture size, and add the base. Place the sieve with the smallest aperture at the bottom, on the base. Place the sieve with the largest aperture at the top.

Transfer quantitatively the test portion (5.1) to the topmost sieve and close the sieve with the cover.

Fix the set of sieves on to the automatic device (4.2) and connect to earth by a conductor. Sieve for 5 min, or such a time as may be agreed between the interested parties, and then weigh the contents of each sieve to the nearest 0,01 g.

The total of the masses obtained should be equal, to within $\pm 0,1$ g, to the mass of the test portion (5.1).

6 EXPRESSION OF RESULTS

Calculate

- the percentage by mass of the test portion which is retained on each sieve;
- the percentage by mass of the test portion which passes through the sieve with the smallest aperture.

7 TEST REPORT

The test report shall include the following particulars:

- the reference of the method used;
- the results and the method of expression used;
- any unusual features noted during the determination;
- any operation not included in this International Standard, or regarded as optional.

Dimensions in millimetres

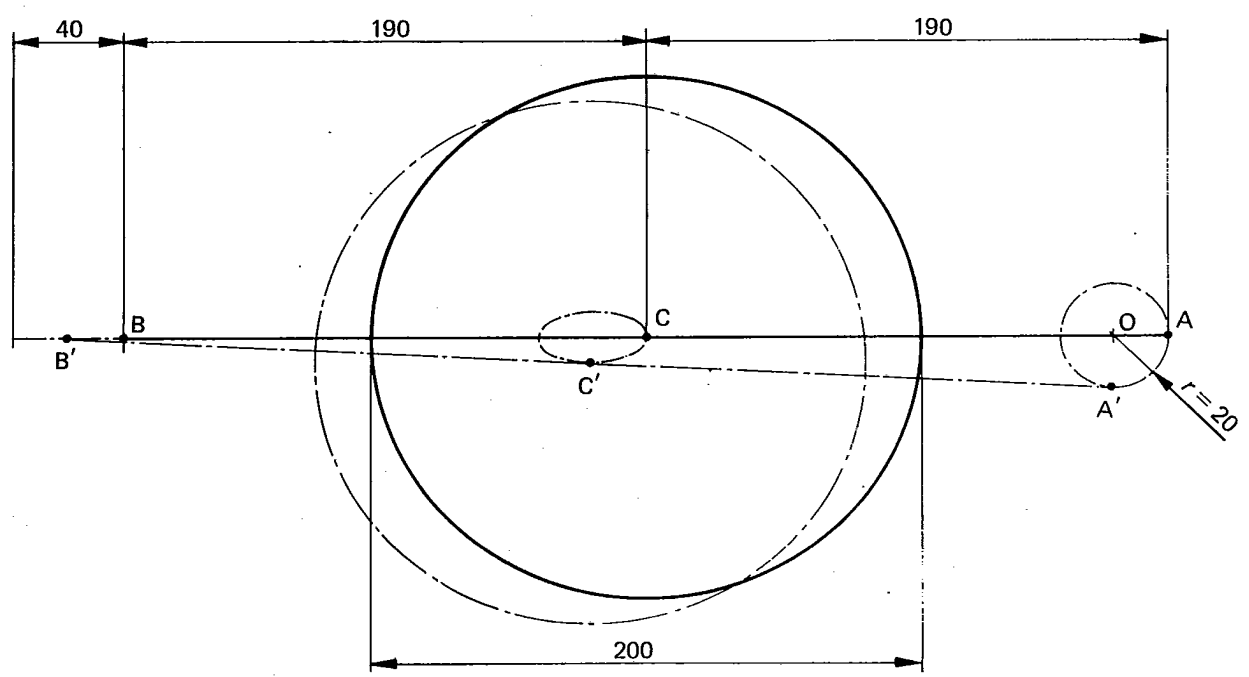


FIGURE — Diagram of movements in the horizontal plane

ANNEX

ISO PUBLICATIONS RELATING TO (A) BORIC ACID, (B) BORIC OXIDE, (C) D/SODIUM TETRABORATES,
(D) SODIUM PERBORATES, AND (E) CRUDE SODIUM BORATES, FOR INDUSTRIAL USE

Applicability

- A ISO 1914 – Determination of boric acid content – Volumetric method.
- B ISO 1915 – Determination of boric oxide content – Volumetric method.
- C ISO 1916 – Determination of sodium oxide and boric oxide contents and loss on ignition.
- D ISO 1917 – Determination of sodium oxide, boric oxide and available oxygen contents – Volumetric methods.
- A B C E ISO 1918 – Determination of sulphur compounds – Volumetric method.
- A B C ISO 2214 – Determination of manganese content – Formaldehyde oxime photometric method.
- A B C ISO 2215 – Determination of copper content – Zinc dibenzylidithiocarbamate photometric method.
- E ISO 2216 – Determination of sodium oxide and boric oxide contents – Volumetric method.
- E ISO 2217 – Determination of matter insoluble in alkaline medium and preparation of test solutions.
- E ISO 2218 – Determination of loss in mass after heating at 900 °C.
- E ISO 2760 – Determination of total aluminium content – Titrimetric method.
- E ISO 2761 – Determination of total titanium content – Photometric method.
- D ISO 3118 – Determination of particle size distribution by mechanical sieving.
- A B C ISO 3119 – Determination of chromium content – Diphenylcarbazide photometric method.
- C E ISO 3120 – Determination of water content – Gravimetric method.
- A B C ISO 3121 – Determination of chloride content – Mercurimetric method.
- A B C D E ISO 3122 – Determination of iron content – 2,2'-Bipyridyl photometric method.
- D ISO 3123 – Determination of rate of solution – Conductivity method.
- E ISO 3124 – Determination of iron soluble in alkaline medium – 2,2'-Bipyridyl photometric method.
- E ISO 3125 – Determination of aluminium soluble in alkaline medium – EDTA titrimetric method.
- D ISO 3424 – Determination of bulk density.