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Boric oxide for industrial use — Determination of boric oxide content — Volumetric method

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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 1915 was drawn up by Technical Committee ISO/TC 47, *Chemistry.*

It was approved in July 1970 by the Member Bodies of the following countries:

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

No Member Body expressed disapproval of the document.

Boric oxide for industrial use — Determination of boric oxide content — Volumetric method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a volumetric method for the determination of the boric oxide content of boric oxide for industrial use.

2 PRINCIPLE

Titration of a dissolved test portion with a standard volumetric solution of sodium hydroxide in the presence of mannitol or sorbitol, using phenolphthalein as indicator.

3 REAGENTS

Distilled water or water of equivalent purity, free from carbon dioxide, shall be used in the test.

3.1 Mannitol, neutral, or alternatively **sorbitol,** neutral.

These products shall satisfy the following condition:

5.0 g, dissolved in 50 ml of carbon dioxide-free water, requires for neutralization not more than 0.3 ml of 0.02 N sodium hydroxide solution using phenolphthalein solution as indicator.

3.2 Hydrochloric acid, 0.25 N standard volumetric solution.

3.3 Sodium hydroxide, 0.5 N standard volumetric solution, free from carbonate.

3.4 Screened methyl red, indicator solution.

Dissolve 0.01 g of methyl red and 0.01 g of bromocresol green in 95 % (V/V) ethanol and dilute to 100 ml with the same ethanol.

3.5 Phenolphthalein, 10 g/l ethanolic solution.

Dissolve 1 g of phenolphthalein in 95 % (V/V) ethanol, dilute to 100 ml with the same ethanol and add 0.02 N sodium hydroxide solution until the first appearance of a pink colour.

4 APPARATUS

Ordinary laboratory apparatus.

1) Under study.

5 SAMPLING

Follow the principles described in ISO ...[1], minimizing exposure during sampling to avoid absorption of atmospheric moisture.

6 PROCEDURE

6.1 Test portion

Weigh, to the nearest 0.000 5 g, about 0.5 g of the laboratory sample. Weighing shall be carried out as rapidly as possible to minimize absorption of atmospheric moisture.

6.2 Determination

Transfer the test portion (6.1) to a beaker and dissolve in about 120 ml of water by heating, avoiding boiling. Cool the solution to ambient temperature, add 0.4 ml of the screened methyl red indicator solution (3.4) and slightly acidify with the hydrochloric acid solution (3.2). Add the sodium hydroxide solution (3.3) from a burette until the solution is just yellow. Add approximately 15 g of the mannitol or sorbitol (3.1) and 0.4 ml of the phenolphthalein solution (3.5). Titrate the solution with the sodium hydroxide solution (3.3) to a distinct pink colour.

NOTE — To ensure that the correct titration end point is obtained, the following standard colour matching solution may be used for comparison with the solution being titrated.

Mix

- 50 ml of a 3.81 g/l solution of disodium tetraborate decahydrate ($Na_2B_4O_7.10H_2O$),
- 100 ml of water,
- 2.0 ml of the hydrochloric acid solution (3.2),
- 0.4 ml of the screened methyl red indicator solution (3.4),
- 0.4 ml of the phenolphthalein solution (3.5).

Equal volumes of this solution and of the titrand shall be compared in similar beakers.