
INTERNATIONAL STANDARD



1617

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

Aluminium oxide primarily used for the production of aluminium — Determination of sodium content — Flame emission spectrophotometric method

Oxyde d'aluminium principalement utilisé pour la production de l'aluminium — Dosage du sodium — Méthode par spectrophotométrie de flamme en émission

First edition — 1976-09-15

SEP 17 1979

ANSI Internal Doc Sect

UDC 661.862.22 : 546.33 : 543.42

Ref. No. ISO 1617-1976 (E)

Descriptors : aluminium oxide, chemical analysis, determination of content, sodium, spectrophotometric analysis.

AVA Documents
Document Sharing Hub
Price based on 5 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.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 47 has reviewed ISO Recommendation R 1617 and found it technically suitable for transformation. International Standard ISO 1617 therefore Replaces ISO Recommendation R 1617-1970 to which it is technically identical.

ISO Recommendation R 1617 was approved by the Member Bodies of the following countries :

Australia	India	Romania
Austria	Iran	South Africa, Rep. of
Belgium	Israel	Spain
Brazil	Italy	Sweden
Chile	Korea, Rep. of	Switzerland
Czechoslovakia	Netherlands	Thailand
Egypt, Arab Rep. of	New Zealand	Turkey
France	Norway	United Kingdom
Germany	Peru	U.S.S.R.
Greece	Poland	Yugoslavia
Hungary	Portugal	

No Member Body expressed disapproval of the Recommendation.

No Member Body disapproved the transformation of ISO/R 1617 into an International Standard.

Aluminium oxide primarily used for the production of aluminium — Determination of sodium content — Flame emission spectrophotometric method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a flame emission spectrophotometric method for the determination of the sodium content of aluminium oxide primarily used for the production of aluminium.

The method is applicable to products having a sodium content, expressed as Na_2O , equal to or greater than 0,05 % (m/m).

2 REFERENCES

ISO 802, *Aluminium oxide primarily used for the production of aluminium — Preparation and storage of test samples*.

ISO 2927, *Aluminium oxide primarily used for the production of aluminium — Sampling*.

3 PRINCIPLE

Fusion, at a controlled temperature, of a test portion of aluminium oxide with a mixture of lithium carbonate and boron trioxide or, as alternative, a mixture of lithium carbonate and lithium tetraborate.

Dissolution of the fused mass in hydrochloric acid.

Aspiration of the solution into a flame and determination of the sodium content by measurement of the intensity of the light emitted at a wavelength of 589 nm.

4 REAGENTS

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

4.1 Lithium carbonate, anhydrous (Li_2CO_3).

4.2 Boron trioxide (B_2O_3), or

4.2.1 Boric acid (H_3BO_3), or

4.2.2 Lithium tetraborate ($\text{Li}_2\text{B}_4\text{O}_7$).

NOTE — If crystallized lithium tetraborate pentahydrate ($\text{Li}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$) is available, first dehydrate it by gradual heating in a platinum dish.

4.3 Aluminium, 99,99 % pure, in the form of shavings.

4.4 Mercury, extra pure.

4.5 Acetone, ρ approximately 0,788 g/ml.

4.6 Hydrochloric acid, ρ approximately 1,19 g/ml, about 38 % (m/m) solution.

4.7 Nitric acid, ρ approximately 1,40 g/ml, about 68 % (m/m) solution.

4.8 Sodium, standard solution corresponding to 2,00 g of Na_2O per litre.

Weigh, to the nearest 0,001 g, 3,774 g of sodium chloride, which has been previously dried for about 12 h at 110 °C and cooled in a desiccator, and dissolve in water. Transfer the solution quantitatively to a 1 000 ml one-mark volumetric flask, dilute to the mark and mix. Transfer the solution to a plastics bottle.

1 ml of this standard solution contains 2,00 mg of Na_2O .

4.9 Sodium, standard solution corresponding to 0,200 g of Na_2O per litre.

Take 50,0 ml of the standard sodium solution (4.8) place in a 500 ml one-mark volumetric flask, dilute to the mark and mix.

1 ml of this standard solution contains 0,200 mg of Na_2O .

Prepare this solution just before use and transfer it to a plastics bottle.

4.10 Sodium, standard solution corresponding to 0,080 g of Na_2O per litre.

Take 40,0 ml of the standard sodium solution (4.8), place in a 1 000 ml one-mark volumetric flask, dilute to the mark and mix.

1 ml of this standard solution contains 0,080 mg of Na_2O .

Prepare this solution just before use and transfer it to a plastics bottle.