International Standard 6830

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Iron ores — Determination of aluminium content — EDTA titrimetric method

Minerais de fer — Dosage de l'aluminium — Méthode titrimétrique à l'EDTA

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Foreword

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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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

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Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Iron ores — Determination of aluminium content — EDTA titrimetric method

1 Scope and field of application

This International Standard specifies a titrimetric method using EDTA for the determination of the aluminium content of iron ores.

This method is applicable to a concentration range of 0,25 to 5,0 % (*m/m*) of aluminium in natural iron ores, and iron ore concentrates and agglomerates including sinter products.

2 References

ISO 385/1, *Laboratory glassware — Burettes — Part 1: General requirements.*

ISO 3081, *Iron ores — Increment sampling — Manual method.*

ISO 3082, *Iron ores — Increment sampling and sample preparation — Mechanical method.* [1)]

ISO 3083, *Iron ores — Preparation of samples — Manual method.*

ISO 7764, *Iron ores — Preparation of predried test samples for chemical analysis.*

3 Principle

Fusion of a test portion, in a vitreous carbon or zirconium crucible, with a mixed flux of sodium carbonate and sodium peroxide. Dissolution of the cooled melt in hydrochloric acid, precipitation of R_2O_3 with ammonia solution, filtration and redissolution of the hydroxides in hydrochloric acid.

Treatment with cupferron and chloroform, extraction of elements such as iron and titanium and rejection of the organic phase. Treatment of the aqueous phase with nitric and perchloric acids, evaporation, treatment with hydrochloric acid, dilution and filtration.

Addition to the filtrate of an excess of disodium dihydrogen ethylenedinitrilotetraacetate (EDTA) and titration of the excess with zinc standard volumetric solution using xylenol orange indicator. Addition of ammonium fluoride to release the EDTA bound to aluminium, and titration with zinc solution as before.

4 Reagents

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

4.1 Sodium carbonate (Na_2CO_3), anhydrous.

4.2 Sodium peroxide (Na_2O_2), dry.

4.3 Nitric acid, ϱ 1,40 g/ml.

4.4 Hydrochloric acid, ϱ 1,16 to 1,19 g/ml.

4.5 Hydrochloric acid, ϱ 1,16 to 1,19 g/ml diluted 1 + 5.

4.6 Hydrochloric acid, ϱ 1,16 to 1,19 g/ml diluted 1 + 1.

4.7 Ammonia, solution.

Ammonia (ϱ 0,880 to 0,890 g/ml) diluted 1 + 1.

4.8 Ammonium chloride (NH_4Cl), 10 g/l solution containing 2 drops (0,1 ml) of ammonia solution per 100 ml.

4.9 Cupferron (nitrosophenylhydroxylamine ammonium salt) [$C_6H_5N(NO)ONH_4$], 60 g/l solution.

Prepare this solution in cold ($\leq$ 20 °C) water on the day of use. Filter through a rapid paper and cool to 10 °C.

4.10 Chloroform.

4.11 Perchloric acid, ϱ 1,67 g/ml approx.

4.12 Sodium hydroxide, 100 g/l solution.

4.13 Sodium hydroxide, 10 g/l solution.

1) At present at the stage of draft.