
International Standard



6233

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

Manganese ores and concentrates — Determination of calcium and magnesium contents — EDTA titrimetric method

Minerais et concentrés de manganèse — Dosage du calcium et du magnésium — Méthode titrimétrique à l'EDTA

First edition — 1983-07-15

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (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 authorized 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 6233 was developed by Technical Committee ISO/TC 65, *Manganese and chromium ores*, and was circulated to the member bodies in March 1982.

It has been approved by the member bodies of the following countries :

Australia	India	Romania
Austria	Italy	South Africa, Rep. of
Brazil	Japan	Spain
Czechoslovakia	Mexico	Thailand
Egypt, Arab Rep. of	Netherlands	United Kingdom
Germany, F. R.	Poland	USSR

The member bodies of the following countries expressed disapproval of the document on technical grounds :

China
France

Manganese ores and concentrates — Determination of calcium and magnesium contents — EDTA titrimetric method

1 Scope and field of application

This International Standard specifies an EDTA titrimetric method for the determination of calcium and magnesium content of manganese ores and concentrates.

The method is applicable to products having calcium and magnesium contents greater than 0,3 % (*m/m*).

This International Standard should be read in conjunction with ISO 4297.

2 References

ISO 4296/1, *Manganese ores — Sampling — Part 1 : Increment sampling*.¹⁾

ISO 4296/2, *Manganese ores — Sampling — Part 2 : Preparation of samples*.¹⁾

ISO 4297, *Manganese ores and concentrates — Methods of chemical analysis — General instructions*.

3 Principle

Decomposition of the test portion with hydrochloric and nitric acids. Separation of silicon by evaporation of the solution to dryness. Dissolution of salts in hydrochloric acid, any insoluble residue being filtered off and the filtrate being reserved as the main solution.

Ignition of the filter containing the residue and treatment of it with sulfuric and hydrofluoric acids.

Fusion of the residue with sodium carbonate.

Dissolution of the melt in water and filtration of the solution obtained. Dissolution of the residue in hydrochloric acid and combination with the main solution.

Separation of barium [when its content exceeds 1 % (*m/m*)] as barium sulfate.

Separation of interfering elements (iron, aluminium, manganese, copper, lead and others) from the main solution (after separation of barium sulfate or without it) with hexamethylenetetramine and sodium diethyldithiocarbamate.

Titration of calcium with standard volumetric EDTA solution at pH 13 and titration of magnesium at pH 10 (after its separation from calcium as hydroxide) on a photoelectrode titrimeter in the presence of Eriochrome blue SE indicator, or visual titration of calcium with standard volumetric EDTA solution at pH 13 in the presence of a mixture of fluorexon and thymolphthalein as indicator and of calcium plus magnesium at pH 10 in the presence of Eriochrome black T indicator.

4 Reagents

4.1 Potassium disulfate ($K_2S_2O_7$).

4.2 Sodium carbonate, anhydrous.

4.3 Ammonia solution, ρ 0,90 g/ml.

4.4 Nitric acid, ρ 1,40 g/ml.

4.5 Hydrochloric acid, ρ 1,19 g/ml.

4.6 Hydrofluoric acid, ρ 1,14 g/ml.

4.7 Sulfuric acid, ρ 1,84 g/ml, diluted 1 + 1.

4.8 Sulfuric acid, 2 % (*m/m*) solution.

4.9 Hydrochloric acid, diluted 1 + 1.

4.10 Hydrochloric acid, diluted 1 + 4.

4.11 Hydrochloric acid, diluted 1 + 50.

4.12 Potassium hydroxide, 200 g/l solution.

Store the solution in a tightly stoppered polyethylene bottle.

4.13 Potassium hydroxide, 2 g/l solution.

4.14 Sodium-diethyldithiocarbamate, 100 g/l solution.

Prepare before use.

1) At present at the stage of draft.