

International Standard



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Manganese ores and concentrates — Determination of lead content — Polarographic methods

Minerais et concentrés de manganèse — Dosage du plomb — Méthodes polarographiques

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 4300 was prepared by Technical Committee ISO/TC 65, *Manganese and chromium ores*.

ISO 4300 was first published in 1978. This second edition cancels and replaces the first edition of which it constitutes a minor revision.

Manganese ores and concentrates — Determination of lead content — Polarographic methods

1 Scope and field of application

This International Standard specifies two polarographic methods for the determination of the lead content of manganese ores and concentrates

method A : applicable to products having lead contents from 0,002 to 0,01 % (m/m);

method B : applicable to products having lead contents from 0,01 to 1,0 % (m/m).

It should be read in conjunction with ISO 4297.

2 References

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

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

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

3 Method A : For lead contents from 0,002 to 0,01 % (m/m)

3.1 Principle

Decomposition of a test portion by treatment with hydrochloric and nitric acids, and evaporation of the solution to dryness. Dissolution of the dry residue in hydrochloric acid, filtration of the insoluble residue and reservation of the filtrate as the main solution. Ignition of the filter containing the residue and treatment with nitric and hydrofluoric acids. Fusion of the ignited residue with sodium carbonate. Dissolution of the melt in hydrochloric acid in the presence of hydroxylammonium chloride solution, and combination with the main solution. Evaporation of the combined solution to dryness and dissolution of the dry residue in 2 mol/l hydrochloric acid.

Separation of the lead from other components by means of anionite, followed by elution of the lead with 0,02 mol/l hydrochloric acid.

Polarographic determination of the lead content at $-0,35$ to $-0,75$ V in a perchloric/phosphoric acid medium as a background.

3.2 Reagents and materials

3.2.1 Sodium carbonate, anhydrous.

3.2.2 Nitric acid, distilled, ρ 1,35 g/ml.

3.2.3 Hydrochloric acid, distilled, ρ 1,16 g/ml.

3.2.4 Hydrochloric acid, distilled, diluted 1 + 1.

3.2.5 Hydrochloric acid, distilled, diluted 1 + 19.

3.2.6 Hydrochloric acid, distilled, 2 mol/l.

3.2.7 Hydrochloric acid, distilled, 0,02 mol/l.

3.2.8 Hydrofluoric acid, ρ 1,14 g/ml, 40 % (m/m).

3.2.9 Perchloric acid (HClO_4), ρ 1,51 g/ml, 57 % (m/m) solution.

3.2.10 Phosphoric acid (H_3PO_4), diluted 1 + 3.

3.2.11 Ammonium thiocyanate (NH_4CNS), 400 g/l solution.

3.2.12 Hydroxylammonium chloride ($\text{NH}_2\text{OH}^+\text{Cl}^-$), 100 g/l solution.

3.2.13 Sodium chloride, 360 g/l solution.

3.2.14 Sodium hydroxide, 100 g/l solution.

3.2.15 Sodium hydroxide, 50 g/l solution.

3.2.16 Silver nitrate, 2,5 g/l solution.

3.2.17 Lead, standard solution, corresponding to 0,1 g of Pb per litre.