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Nickel, ferronickels and nickel alloys — Determination of phosphorus content — Phosphovanadomolybdate spectrophotometric method

Nickel, ferronickels et alliages de nickel — Détermination de la teneur en phosphore — Méthode spectrophotométrique au phosphovanadomolybdate

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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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 155, *Nickel and nickel alloys*.

This second edition cancels and replaces the first edition (ISO 11400:1992), which has been technically revised. The main changes are as follows:

— the title has been reworded;

— Clause 2 has been updated;

— Clause 3 has been added and the subsequent clauses have been renumbered;

— Clause 4 (the former Clause 3) has been partially reworded;

— in Clause 5 (the former Clause 4): the references of several reagents have been added;

— Clause 6 (the former Clause 5) has been partially reworded, namely 6.1;

— Clause 8 (the former Clause 7) has been partially rearranged regarding the numbering of the paragraphs;

— in 8.4 (the former 7.7), Table 2 has been added;

— 8.5, "Check samples" has replaced 7.8, "Number of determinations";

— the Bibliography has been added.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Nickel, ferronickels and nickel alloys — Determination of phosphorus content — Phosphovanadomolybdate spectrophotometric method

1 Scope

This document specifies a spectrophotometric method for the determination of the phosphorus content in nickel, ferronickels and nickel alloys between 0,000 5 % (by mass) and 0,05 % (by mass).

Arsenic, chromium, hafnium, niobium, silicon, tantalum, titanium and tungsten interfere, but the interferences can be avoided by complexation or volatilization (for chromium). The lowest phosphorus content [0,000 5 % (by mass)] can only be reached in samples with low contents of these interfering elements.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 648, *Laboratory glassware — Single-volume pipettes*

ISO 1042, *Laboratory glassware — One-mark volumetric flasks*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Principle

Dissolution of a test portion in a mixture of nitric and hydrochloric acids. Fuming with perchloric acid in a perfluoroalkoxy copolymer (PFA) or polytetrafluoroethylene (PTFE) beaker and removal of chromium as volatile chromylchloride.

Complexation of silicon and refractory elements with hydrofluoric acid.

Conversion of phosphorus to phosphovanadomolybdic acid in a perchloric and nitric acid solution.

After addition of citric acid to complex arsenic, extraction of phosphovanadomolybdic acid with 4-methyl-2-pentanone.

Spectrophotometric measurement at a wavelength of 355 nm.

5 Reagents

During the analysis, unless otherwise specified, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity (see ISO 3696).

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