INTERNATIONAL STANDARD

ISO 7530-1

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Nickel alloys — Flame atomic absorption spectrometric analysis —

Part 1: Determination of cobalt, chromium, copper, iron and manganese

Alliages de nickel — Analyse par spectrométrie d'absorption atomique dans la flamme —

Partie 1: Détermination du cobalt, du chrome, du cuivre, du fer et du manganèse

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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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 155, *Nickel and nickel alloys*.

This second edition of ISO 7530-1 cancels and replaces ISO 7530-1:1990, ISO 7530-2:1990, ISO 7530-3:1990, ISO 7530-4:1990, ISO 7530-5:1990, and ISO 7530-6:1990, which have been technically revised.

ISO 7530 consists of the following parts, under the general title *Nickel alloys — Flame atomic absorption spectrometric analysis*:

— *Part 1: Determination of cobalt, chromium, copper, iron and manganese*

— *Part 7: Determination of aluminium content*

— *Part 8: Determination of silicon content*

— *Part 9: Determination of vanadium content*

Introduction

This part of ISO 7530 describes five flame atomic absorption spectrometric methods for the determination of cobalt, chromium, copper, iron, and manganese in nickel alloys.

Although the methods are described independently, it is possible to determine more than one element on a single test solution by adjustment of the sample weight and initial and subsequent dilutions.

Nickel alloys — Flame atomic absorption spectrometric analysis —

Part 1: Determination of cobalt, chromium, copper, iron and manganese

1 Scope

This part of ISO 7530 describes flame atomic absorption spectrometric methods for the determination of cobalt, chromium, copper, iron, and manganese in nickel alloys which can be dissolved in the nitric-hydrochloric acids mixture specified.

For each element, the method is applicable to the content range between 0,01 % and 4 %.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 385, *Laboratory glassware — Burettes*

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

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

3 Principle

Dissolution of a test portion in a nitric–hydrochloric acids mixture, evaporation of acids excess, and dissolution of the salts.

Addition of an ionization suppressant if necessary and dilution of the solution to a known volume.

Nebulization of the test solution after suitable dilution, if necessary, into an air/acetylene or a nitrous oxide/acetylene flame of an atomic absorption spectrometer.

Measurement of the absorption of the energy of the resonance line from the spectrum of the element being determined and comparison with that of calibration solutions of the same element.

4 Reagents

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

4.1 Nitric acid, (HNO_3) ρ_{20} = 1,41 g/ml.

4.2 Nitric acid solution, 1 + 1.

Add 500 ml of nitric acid (4.1) to 500 ml of water.