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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 42513.1-2023

**Methods for chemical analysis of nickel alloys - Part 1:
Determination of chromium content - Potentiometric titration
method with ammonium iron(II) sulfate**

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Standardization Administration**

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foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules for Standardization Documents"

drafting:

This document is part 1 of GB/T 42513 "Methods for Chemical Analysis of Nickel Alloys": GB/T 42513 has issued the following parts:

--- Part 1: Determination of chromium content Potentiometric ferrous ammonium sulfate titration method:

This document is modified to adopt ISO 7529:2017 "Determination of Chromium Content in Nickel Alloys by Ferrous Ammonium Sulfate Potentiometric Titration": This document is related to

Compared with ISO 7529:2017, there are many structural adjustments: Appendix A lists the structure number comparison between this document and ISO 7529:2017

list:

There are technical differences between this document and ISO 7529:2017, and a vertical single line is used in the outer margin of the terms involved

(I) are marked: See Appendix B for a list of these technical differences and their causes:

The following minimal editorial changes have been made to this document:

--- In order to coordinate with the existing standards, the name of the standard is changed to "Methods for Chemical Analysis of Nickel Alloys Part 1: Determination of Chromium Content Sulfuric acid

Ferric Ammonium Potentiometric Titration":

Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents:

Introduction

Nickel alloys are widely used in instruments and meters, electronic communications, pressure vessels, corrosion-resistant devices, and are widely used in aerospace and high-end special-purpose

Machinery and equipment manufacturing and other industries are one of the important metal raw materials for industrial development: Chromium is an important component in nickel alloys, and its content determines the

The performance of nickel alloys has produced products with various uses: The determination of chromium content in nickel alloys is of great significance to the production and use of nickel alloys: nickel

International standards for alloy chemical analysis methods have existed for decades: With the progress of my country's industry, the production and import of nickel alloys

Therefore, the transformation of international standards into national standards is of great significance to help the development and upgrading of the non-ferrous industry and the development of the domestic manufacturing industry:

righteous: GB/T 42513 aims to establish a complete and practicable set of tests for chromium, phosphorus, niobium, molybdenum, aluminum, vanadium, silicon, cobalt, copper and other elements in nickel alloys

standard method, transformed into the following international standards:

---ISO 7592:2017 Determination of chromium content in nickel alloys - ferrous ammonium sulfate potentiometric titration method;

---ISO 9388:1992 Determination of Phosphorus Content in Nickel Alloy Molybdenum Blue Molecular Absorption Spectrometry;

--- ISO 7530-1:2015 Flame atomic absorption spectroscopic analysis of nickel alloys Part 1: Determination of cobalt, chromium, copper, iron and manganese;

---ISO 11435:2011 Determination of Molybdenum Content in Nickel Alloys Inductively Coupled Plasma Atomic Emission Spectrometry;

---ISO 7530-7:1992 Flame atomic absorption spectroscopic analysis of nickel alloys - Part 7: Determination of aluminum content;

---ISO 7530-8:1992 Flame atomic absorption spectroscopic analysis of nickel alloys - Part 8: Determination of silicon content;

---ISO 7530-9:1993 Nickel Alloy Flame Atomic Absorption Spectroscopy Part 9:

Determination of Vanadium Content;

---ISO 22033:2011 Determination of Niobium Content in Nickel Alloys Inductively Coupled Plasma/Atomic Emission Spectrometry;

---ISO 11436:1993 Determination of total boron content in nickel and nickel alloys Curcuma molecular absorption spectrometry:

GB/T 42513 is proposed to consist of 9 parts:

--- Part 1: Determination of chromium content Potentiometric ferrous ammonium sulfate titration method: The purpose is to establish the determination of chromium content in nickel alloy

method:

--- Part 2: Determination of phosphorus content Molybdenum blue spectrophotometry: The purpose is to establish the determination method of phosphorus content in nickel alloy:

--- Part 3: Determination of cobalt, chromium, copper, iron and manganese content flame atomic absorption spectrometry: The purpose is to establish the cobalt,

Method for determination of chromium, copper, iron and manganese content:

--- Part 4: Determination of molybdenum content Inductively coupled plasma atomic emission spectrometry: The purpose is to establish the content of molybdenum in nickel alloy

Quantitative method:

--- Part 5: Determination of aluminum content Nitrous oxide - flame atomic absorption spectrometry and inductively coupled plasma atomic emission spectrometry

Law: The purpose is to establish the determination method of aluminum content in nickel alloy:

--- Part 6: Determination of silicon content Nitrous oxide - flame atomic absorption spectrometry and molybdenum blue spectrophotometry: The purpose is to establish the nickel

Method for determination of silicon content in alloys:

--- Part 7: Determination of vanadium content Nitrous oxide - flame atomic absorption spectrometry and inductively coupled plasma atomic emission spectrometry

Law: The purpose is to establish the determination method of vanadium content in nickel alloy:

--- Part 8: Determination of niobium content Inductively coupled plasma atomic emission spectrometry: The purpose is to establish the content of niobium in nickel alloy

Quantitative method:

--- Part 9: Determination of total boron content Curcumin spectrophotometry: The purpose is to establish the determination of total boron content in nickel alloy

method:

This document can ensure the advanced nature of national standards, promote the progress of my country's nickel alloy detection technology, and ensure that industry practitioners are in production,

There are standards to follow in the process of application, scientific research, and testing, and it fills the gap in the chemical analysis method for the determination of chromium content in nickel alloys in my country:

Chemical Analysis Methods of Nickel Alloys

Part 1: Determination of chromium content

Ferrous Ammonium Sulfate Potentiometric Titration

WARNING --- Personnel using this document should have formal laboratory work experience: This document does not address all possible security issues

question: It is the user's responsibility to take appropriate safety and health measures and ensure compliance with the conditions stipulated in the relevant national laws and regulations:

1 Scope

This document describes a method for the determination of chromium in nickel alloys by potentiometric titration of ferrous ammonium sulfate:

This document is applicable to the determination of chromium content in nickel alloy, the determination range (mass fraction) 1:00% ~ 22:00%:

This document does not apply to the detection of nickel alloys containing insoluble chromium carbides:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: dated citations

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document: