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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 14352.24-2022

Methods for chemical analysis of tungsten ores and molybdenum ores - Part 24: Determination of germanium conten - Inductively coupled plasma mass spectrometry

钨矿石、钼矿石化学分析方法 第24部分：锗含量的测定 电感耦合等离子体质谱法

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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 24 of GB/T 14352 "Methods for Chemical Analysis of Tungsten and Molybdenum Ores". GB/T 14352 has been issued with Lower part.

1.Determination of tungsten content;

2.Determination of molybdenum content;

3.Determination of copper content;

4.Determination of lead content;

5.Determination of zinc content;

6.Determination of cadmium content;

7.Determination of cobalt content;

8.Determination of nickel content;

9.Determination of sulfur content;

10.Determination of arsenic content;

11.Determination of bismuth content;

12.Determination of silver content;

1 Scope

GB/T 14352.24-2022 is the Chinese national standard on methods for chemical analysis of tungsten ores and molybdenum ores - part 24: determination of germanium conten - inductively coupled plasma mass spectrometry, in the field of mining and minerals. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 30 December 2022 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 April 2023. Classification: ICS 73.060, CCS D46. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the method for the determination of germanium content in tungsten ore and molybdenum ore by inductively coupled plasma mass spectrometry. This document is applicable to the determination of germanium content in tungsten ore and molybdenum ore by inductively coupled plasma mass spectrometry. The detection limit of the germanium content detection method in this document is 0.063 μg/g, and the determination range is 0.2 μg/g~300 μg/g.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, dated references 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.

GB/T 6682-2008 Analytical laboratory water specifications and test methods

GB/T 14505 General principles and general provisions for chemical analysis methods of

rocks and ores Calibration specification for

JJF1159 quadrupole inductively coupled plasma mass spectrometer

3 Terms and Definitions

This document does not have terms and definitions that need to be defined.

4 Principles

The sample is melted by sodium hydroxide at high temperature and extracted by water. Germanium exists in the solution in the form of soluble germanate and is diluted to prepare a solution. Take Part of the solution is separated by cation and anion exchange resins to remove a large amount of sodium salt and a small amount of residual molybdenum. The separated solution was atomized, evaporated Processes such as emission, dissociation, atomization, and ionization enter the mass spectrometer, and the mass spectrometer performs separation according to the mass-to-charge ratio. For a specific mass-to-charge ratio, at a certain Within the concentration range, the concentration of the analyte element in the sample is directly proportional to the signal intensity of the mass spectrometer. The content of germanium in the sample was calculated by the calibration curve.

5 Test conditions

The test conditions such as temperature, humidity, voltage and frequency during the detection of the inductively coupled plasma mass spectrometer shall comply with the environmental conditions specified in JJF1159. Environmental conditions and related requirements.

6 Reagents or materials

Unless otherwise stated, only reagents confirmed to be of analytical grade were used in the analysis.