

ICS 73.060
CCS D40



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

GB/T 14353.20-2019

**Methods for chemical analysis of copper ores, lead ores and
zinc ores - Part 20 : Determination of rhenium content -
Inductively coupled plasma mass spectroscopy**

铜矿石、铅矿石和锌矿石化学分析方法 第20部分：铼量测定 电感耦合等离子体
质谱法

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Foreword

GB/T 14353 "Chemical Analysis Methods for Copper Ore, Lead Ore and Zinc Ore" is divided into 21 parts.

--- Part 1. Determination of copper content;

--- Part 2. Determination of lead content;

--- Part 3. Determination of zinc content;

--- Part 4. Determination of cadmium content;

---Part 5. Determination of nickel content;

---Part 6. Determination of cobalt content;

---Part 7. Determination of arsenic content;

--- Part 8. Determination of volume;

---Part 9. Determination of molybdenum content;

--- Part 10. Determination of tungsten content;

--- Part 11. Determination of silver content;

--- Part 12. Determination of sulfur content;

--- Part 13. Determination of the amount of gallium, indium, niobium, tungsten and molybdenum;

1 Scope

GB/T 14353.20-2019 is the Chinese national standard on methods for chemical analysis of copper ores, lead ores and zinc ores - part 20 : determination of rhenium content -

inductively coupled plasma mass spectroscopy, 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 18 October 2019 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 May 2020. Classification: ICS 73.060, CCS D40. 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 part of GB/T 14353 specifies the determination of antimony content in copper ore or polymetallic ore by inductively coupled plasma mass spectrometry, including Magnesium oxide sintering (method 1) and closed acid digestion (method 2) Two different pre-treatment analytical methods. This section applies to magnesium oxide sintering or closed acid digestion-inductively coupled plasma mass spectrometry in the presence of antimony in copper ore or polymetallic ores. Determination. The detection limits of Method 1 and Method 2 were both 0.004 µg/g. Measuring range. 0.01 µg/g ~ 15.0 µg/g.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article. Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 6682 Analytical laboratory water specifications and test methods

GB/T 14505 General rules and general rules for chemical analysis of rocks and ores

3 Determination of antimony content in copper ore or polymetallic ore by magnesium oxide sintering-inductively coupled plasma mass spectrometry (method 1)

3.1 Principle The sample is mixed with magnesium oxide and melt-decomposed in a muffle furnace. After cooling, it is extracted by hot water, and the solution is dissolved in the form of perhenic acid (ReO₄). The liquid is separated from a large amount of matrix components, and the cerium-containing sample solution is introduced into an inductively coupled plasma mass spectrometer after being boiled at a low temperature, filtered, concentrated and acidified. Determine the count value of , use element as internal standard, the count value is proportional to the concentration of the measured element, and use the calibration curve method to directly measure the sample. The amount of electricity.

3.2 Reagents or materials This section uses analytically pure reagents and secondary water in accordance with

GB/T 6682, unless otherwise stated.

3.2.1 Magnesium oxide. excellent grade pure.

3.2.2 Hydrogen peroxide solution. $w(\text{H}_2\text{O}_2) = 30\%$.

3.2.3 Nitric acid solution (1 1). excellent grade pure.

3.2.4 Preparation of standard solution.

a) standard stock solution [$\rho(\text{Re}) = 250\mu\text{g/mL}$]. weigh 0.0971g potassium perrhenate ($> 99.99\%$), placed in 100mL