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CCS D43



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

GB/T 17416.1-2010

Replacing GB/T 17416.1-1998

**Method for chemical analysis of Zirconium ores - Part 1:
Determination of Zirconium- Hafnium oxide content**

锆矿石化学分析方法 第1部分：锆铪含量测定

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Foreword

GB/T 17416 "Zirconium ores chemical analysis method" has two parts.

- Part 1. Determination of zirconium and hafnium together;
- Part 2. Determination of zirconium and hafnium amount. This section GB/T 17416 "Zirconium ores chemical analysis methods," Part 1. This Part replaces GB/T 17416.1-1998 "Determination of Zirconium (Hafnium) the amount of zirconium ores chemical analysis of xylene orange." This section compared with the GB/T 17416.1-1998, the main changes are as follows:
 - Modify this part of the English name;
 - Text format has been modified;
 - Formula for calculating the mass fraction represented by the symbol w instead of ω (%);
 - Increased alert, warnings;
 - Increased provision sample. This section presents the People's Republic of China Ministry of Land Resources. This part of the National Standardization Technical Committee under the jurisdiction of Land and Resources. This section is responsible for drafting. National geology test center. This section is drafted. Liaoning Provincial Institute of Geology. The main drafters of this section. Shao Wenjun Yang Wei. This part of the standard replaces the previous editions are.
 - GB/T 17416.1-1998. Methods for chemical analysis of zirconium ores Part 1. Determination of zirconium and hafnium together Warning. Use of this standard shall have a person experiences regular laboratory work. This standard does not point out all possible security issues. Users have the responsibility to take appropriate safety and health practices and to ensure compliance with the conditions relevant national regulations.

1 Scope

GB/T 17416.1-2010 is the Chinese national standard on method for chemical analysis of

zirconium ores - part 1: determination of zirconium- hafnium oxide content, 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 10 November 2010 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 February 2011. Classification: ICS 73.060, CCS D43. 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.

GB/T 17416 provisions of this part of the spectrophotometric determination of zirconium, hafnium, zirconium ores combined amount of xylenol orange method. This section applies to zirconium ore, also applies to the determination of the amount of Zr, Hf together other rare metal ores. Measurement range. 0.010% to 2.0% (by mass) of zirconium hafnium combined amount [hafnium zirconium dioxide co-meter].

2 Normative references

The following documents contain provisions which, through reference

GB/T 17416 in this section constitute provisions of this section. For dated reference documents Member, all subsequent amendments (not including errata content) or revisions do not apply to this section, however, encouraged to reach under this section Parties to research agreement to use the latest versions of these documents. For undated reference documents, the latest versions apply to this section. Laboratory use specifications and test methods

GB/T 6682 Analysis Principle

3 Sodium oxide sample after alkali fusion decomposition, triethanolamine extraction, in 0.6mol/L HCl medium, zirconium, hafnium and XO form a red envelope Compound, addition of a cationic surfactant cetyl trimethyl ammonium bromide (of CTMAB) after spectrophotometer, measured at a wavelength of 560nm, Absorbance, calculate the amount of zirconium and hafnium together.

4 Reagents

The reagents used in this section, unless otherwise indicated, the use of analytical chemical reagents and in line with GB/T 6682 analysis laboratory analysis Water.

4.1 sodium peroxide.

4.2 Hydrofluoric acid ($\rho=1.13\text{g/mL}$). Warning. toxic and highly corrosive, the operation

should wear gloves to prevent skin contact

4.3 sulfate (11). Warning. Under constant stirring to concentrated sulfuric acid was slowly added to the water, be careful

4.4 hydrochloride (12).

4.5 hydrochloride (15).

4.6 Sodium hydroxide solution (10g/L).

4.7 triethanolamine (595).

4.8 triethanolamine sodium hydroxide solution. In 1L containing triethanolamine solution (4.7) in the beaker, 40g of solid sodium hydroxide, dissolved, and mix.

4.9 Magnesium chloride solution (80g/L).

4.10 cupric chloride solution (20g/L).

4.11 thiourea solution (100g/L).

4.12 XO solution (1g/L). Weigh 0.1g xlenol orange ($C_{31}H_{28}O_{13}N_2SNa_4$) was dissolved in 100mL of hydrochloric acid (19) was , Place a few days use.