

ICS 77.120.20

CCS H 12



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

GB/T 13748.7-2013

Replacing GB/T 13748.7-2005

**Chemical analysis methods of magnesium and magnesium
alloys -- Part 7: Determination of zirconium content**

镁及镁合金化学分析方法 第7部分：锆含量的测定

(English Translation)

Issued on: September 6, 2013

Implemented on: May 1, 2014

Issued by: Standardization Administration of China

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Foreword

GB/T 13748 "analysis methods of magnesium and magnesium alloys" is divided into 22 parts.

- Part 1. Determination of aluminum content;
- Part 2. Determination of tin content pyrocatechol violet spectrophotometry;
- Part 3. Determination of lithium content Flame atomic absorption spectrometry;
- Part 4. Determination of manganese content periodate spectrophotometry;
- Part 5. Determination of yttrium content inductor coupled plasma atomic emission spectrometry;
- Part 6. Determination of silver by flame atomic absorption spectrometry;
- Part 7. Determination of zirconium content;
- Part 8. rare earth content Gravimetric method;
- Part 9. Determination of iron content phenanthroline spectrophotometry;
- Part 10. Determination of silicon content - Molybdenum blue spectrophotometric method;
- Part 11. Determination of beryllium content Eriochrome cyanine R spectrophotometry;
- Part 12. Determination of copper content;
- Part 13. Determination of lead content by flame atomic absorption spectrometry;
- Part 14. Determination of nickel dimethylglyoxime spectrophotometry;
- Part 15. Determination of zinc content;
- Part 16. Determination of calcium content by flame atomic absorption spectrometry;
- Part 17. potassium content and sodium content - Flame atomic absorption spectrometry;

- Part 18. Determination of the chlorine content of silver chloride turbidimetric method;
- Part 19. Determination of titanium content security for spectrophotometric morpholino than methane;
- Part 20. ICP-AES determination of element contents;
- Part 21. photoelectric direct reading atomic emission spectroscopy method element content;
- Part 22. Determination of thorium content.

This section GB/T 13748 Part 7.

The object is to have a standard adoption of Part 1, Part 4, Section 7, Section 8, Section 9, Section 10, Section 12, Part 14, Part 159 sections revised.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This Part replaces GB/T 13748.7-2005 "Magnesium and magnesium alloys - Determination of zirconium content analysis of xylenol orange spectrophotometric Spectrophotometry. " this section compared with the GB/T 13748.7-2005, the main technical changes are as follows.

- Added "two alizarin sulfonate spectrophotometric method" Determination of insoluble zirconium content;
- Added "three alizarin sulfonate spectrophotometric method" Determination of soluble zirconium content;
- Amend Chapter 1, "scope";
- Increased Chapter 2, "General" requirements;
- Increased Chapter 6, "lab report" requirement;
- Remove the "quality assurance and control" requirements;
- Increased the arbitration provisions.

This section includes three methods, "a method" is GB/T 13748.7-2005 "magnesium and magnesium alloys of zirconium content analysis methods "Reconfirmed;" Determination of xylenol orange spectrophotometric method II "is a new method of increasing" alizarin sulfonate spectrophotometric, "Determination of the insoluble Zirconium; "Method three" is a new method of increasing "alizarin sulfonate spectrophotometric," Determination of soluble zirconium.

Method two Use this section to modify the translation method using ISO 2354. 1976 "magnesium alloy insoluble zirconium salt photometric determination of Alizarin Law "; Method three in this section use the translation method to modify the use of ISO 1178.

1976" Determination of magnesium alloy soluble zirconium alizarin sulfonate luminosity law".

This section is a method of arbitration.

The non-ferrous metal part by the National Standardization Technical Committee (SAC/TC243) centralized.

This section is responsible for drafting units. Aluminum Corporation of China Zhengzhou Research Institute, China Nonferrous Metals Industry Quality Standards and Metrology Institute the study.

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Method three main drafters of this section. Wu Yu Qiang, Liyue Ping, Hu Xuan, Zhang Jie, Shi Lei.

This part of the standard replaces the previous editions are.

--- GB/T 13748.7-1992, GB/T 13748.7-2005.

Magnesium and its alloys -Part 7. Determination of zirconium content

1 Scope

GB/T 13748 in this part of the method provides a method for the determination of magnesium and magnesium alloy of zirconium content.

Part II of this method for the determination of magnesium alloy of zirconium insoluble content.

This section provides three methods determination of soluble magnesium content of zirconium alloys.

This section applies to a method for the determination of magnesium and magnesium alloy of zirconium content. Measuring range. 0.10% to 1.00%.

This part of the second method applicable to the determination of insoluble content of zirconium in magnesium alloys. Measurement range. 0.020% to 0.30%.

Part three of this method for the determination of soluble magnesium alloy of zirconium content. Measuring range. 0.10% to 1.0%.

Method three in this section do not apply to leaded and (or) magnesium alloy of bismuth,

lead and (or) bismuth magnesium alloy should be in accordance with Appendix A for analysis.

Magnesium alloy rare earth, thorium and the presence of silver does not interfere with the determination of zirconium.

NOTE: hafnium content easily and less than 1% zirconium coexist interfere with the determination of zirconium.

2 General

2.1

Unless otherwise indicated, this part of the reagents used are in line with national standards or industry standard analytical reagent, the water are distilled water.

2.2

specimens should be processed to a thickness of less than 1mm debris.

3 a method of xylenol orange spectrophotometric method

3.1 Method summary

Sample decomposition with hydrochloric acid and hydrofluoric acid, perchloric acid was added to remove the fluoride ion. To adjust the acidity of perchloric acid was added xylenol orange and zirconium generation Red complex at 535nm wavelength spectrophotometer measured absorbance.

3.2 Reagents

3.2.1

hydrochloric acid ($\rho = 1.19\text{g/mL}$).

3.2.2

hydrofluoric acid ($\rho = 1.14\text{g/mL}$).

3.2.3

perchloric acid ($\rho = 1.69\text{g/mL}$).

3.2.4

perchloric acid [$c(\text{HClO}_4) = 6.5\text{mol/L}$]. Pipette 275mL perchloric acid (3.2.3) was diluted with water to 500mL, and mix (required the calibration).

3.2.5

hydrochloric acid (11).