

ICS 77.040.30

CCS H12



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

GB/T 13748.23-2024

**Methods for chemical analysis of magnesium and magnesium alloys -
Part 23: Determination of elements content - Wavelength dispersive
X-ray fluorescence spectrometric method**

镁及镁合金化学分析方法 第23部分：元素含量的测定 波长色散X射线荧光光谱法

Issued on: October 26, 2024

Implemented on: May 1, 2025

**Issued by: State Administration for Market Regulation;
Standardization Administration of China**

Table of Contents

1 Scope
1.10 Si 0.005 0
2 Normative references
2.00 Zr 0.10
3 Terms and Definitions
3.50 Sr 0.002 00.030 - -
4 Principles
4.50 Ti 0.002 0
5.00 Ce 0.10
7 Determination of zirconium content; Part
8 Gravimetric method for determination of rare earth content; Part
8.50 Pb 0.002 0
9 Determination of iron content - o-Phenanthroline spectrophotometric method; Part
11.00 Fe 0.002 0
12.00 Ni 0.002 0
15 Determination of zinc content;- Part
18 Determination of chlorine content - Silver chloride turbidimetric method; Part

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 is required. This document is Part 23 of GB/T 13748 Chemical Analysis Methods for Magnesium and Magnesium Alloys. GB/T 13748 has been published as follows part. Part

1. Determination of aluminum content;- Determination of tin content-Catechol violet spectrophotometric method (GB/T 13748.2); Determination of lithium content-Flame atomic absorption spectrometry (GB/T 13748.3); Part

4. Determination of manganese content - Periodate spectrophotometric method; Determination of yttrium content-Inductively coupled plasma atomic emission spectrometry (GB/T 13748.5); Determination of silver content-Flame atomic absorption spectrometry (GB/T 13748.6); Part

1 Scope

GB/T 13748.23-2024 is the Chinese national standard on methods for chemical analysis of magnesium and magnesium alloys - part 23: determination of elements content - wavelength dispersive x-ray fluorescence spectrometric method, in the field of metallurgy. 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 26 October 2024 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 May 2025. Classification: ICS 77.040.30, CCS H12. 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.

2.Determination of tin, beryllium, copper, nickel and titanium content - Spectrophotometric method; Part

3.Determination of lithium and silver content - Atomic absorption spectrometry; Part

4.Determination of manganese and zirconium content - Spectrophotometric method; Part

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies. In this document.

GB/T 8170 Rules for rounding off values and expression and determination of limit values

3 Terms and Definitions

There are no terms or definitions that require definition in this document.

4 Principles

The sample is made into a size suitable for X-ray fluorescence spectrometer measurement, and the sample measurement surface is processed into a smooth plane by milling machine or lathe. The X-ray beam is excited to obtain the characteristic X-ray fluorescence intensity of the element to be measured, and the content of the element to be measured is automatically calculated based on the calibration curve.

4.50 Ti 0.002 0

0.010 Nd 0.10

8.50 Pb 0.002 0

0.010 Mn 0.002 0

9 Determination of iron content - o-Phenanthroline spectrophotometric method; Part

10.Determination of silicon content - Molybdenum blue spectrophotometric method; Determination of beryllium content - chromium cyanine blue R spectrophotometric method (GB/T 13748.11); Part

12.Determination of copper content;- Determination of lead content by flame atomic absorption spectrometry (GB/T 13748.13); Part

14.Determination of nickel content - Dimethylglyoxime spectrophotometric method; Part

15.Determination of zinc content;- Determination of calcium content-Flame atomic absorption spectrometry (GB/T 13748.16); Determination of potassium and sodium content-Flame atomic absorption spectrometry (GB/T 13748.17); Determination of chlorine content-Silver chloride turbidimetric method (GB/T 13748.18); Determination of titanium content-Dianitipyrine methane spectrophotometric method (GB/T 13748.19); Part

20.Determination of elemental content - Inductively coupled plasma atomic emission spectrometry; Part

21.Determination of element content by photoelectric direct reading atomic emission spectrometry; Part

22.Determination of thorium content; Part

23.Determination of elemental content - Wavelength dispersive X-ray fluorescence spectrometry; Part

24.Determination of trace impurities by glow discharge mass spectrometry. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is proposed by China Nonferrous Metals Industry Association. This document is under the jurisdiction of the National Technical Committee on Standardization of Nonferrous Metals (SAC/TC 243). This document was drafted by: Chinalco Zhengzhou Nonferrous Metals Research Institute Co., Ltd., Southwest Aluminum (Group) Co., Ltd., China Aircraft Missile Research Institute, Hebi Product Quality Inspection and Testing Center, Nonferrous Metals Technology and Economic Research Institute Co., Ltd., National Standard (Beijing)

Inspection Certification and Inspection Co., Ltd., Shanghai Jiao Tong University, Kunming Metallurgical Research Institute Co., Ltd., Zhengzhou Qingyan Alloy Technology Co., Ltd., Shanxi Yinguanghua Shengmei Industry Co., Ltd. and Baotou Aluminum Co., Ltd. The main drafters of this document are. Bai Wanli, Gu Liu, Liu Gongda, Zhou Wenying, Sun Zhiyang, Xie Yuanping, Wu Yang, Yan Chunyan, Yu Lei, Jiang Li, Luo Shun, Xue Ning, Zhang Yuanke, Xiao Yang, Zhang Hongfang, Chen Yu, and Shan Xin.

Magnesium and magnesium alloys are important metal materials. GB/T 13748 "Chemical Analysis Methods for Magnesium and Magnesium Alloys" defines the chemical composition of magnesium and magnesium alloys. Analysis and testing plays an important role and is widely used in many fields such as magnesium and magnesium alloy product research and development, trade settlement, chemical element comparison, etc. It provides important support for the research and development, production, and trade of magnesium and magnesium alloy products in China. GB/T 13748 includes spectrophotometry, gravimetric method, atomic absorption spectrometry, inductively coupled plasma atomic emission spectrometry, optical Various analytical methods such as direct reading spectrometry and wavelength dispersive X-ray fluorescence spectrometry are aimed at standardizing the chemical analysis that affects the performance of magnesium and magnesium alloy products. Chemical elements such as aluminum, tin, lithium, manganese, zinc, zirconium, nickel, copper, beryllium, silicon, iron, lanthanum, cerium, praseodymium, neodymium, gadolinium, yttrium, etc. After optimization and integration, it is planned to consist of the following parts. Part

11.00 Fe 0.002 0

0.050 Y 0.10

12.00 Ni 0.002 0

0.060 Zn 0.002 0

18 Determination of chlorine content - Silver chloride turbidimetric method; Part

20.Determination of elemental content - Inductively coupled plasma atomic emission spectrometry; Part

21.Determination of element content - Photoelectric direct reading atomic emission spectrometry; Part

22.Determination of thorium content; Part

23.Determination of elemental content - Wavelength dispersive X-ray fluorescence spectrometry; Part