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

GB/T 13748.14-2013

Replacing GB/T 13748.14-2005

**Chemical analysis methods of magnesium and magnesium
alloys -- Part 14: Determination of nickel content --
Dimethylglyoxime spectrophotometric method**

镁及镁合金化学分析方法 第14部分：镍含量的测定 丁二酮肟分光光度法

(English Translation)

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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.

The object is to have a standard adoption of Part 1, Part 4, Section 7, Section 8, Section 9, Section 10, Section 12, Part 9 Part 14, Part 15 and other amendments.

This is Part 14.

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

This Part replaces GB/T 13748.14-2005 "Ding Determination of magnesium and magnesium alloy chemical analysis of nickel content dimethylglyoxime spectrophotometric law".

This section compared with the GB/T 13748.14-2005, the main technical changes are as follows.

--- Amend 3.14, as the "solution 1mL containing 0.004mg Nickel";

--- Re-edited in Table 1;

--- In 6.5.2 "In the reagent blank solution" to the "reagent blank solution (without the nickel standard solution were) as a reference.";

--- To increase the "lab report" requirement;

--- Remove the "quality assurance and control" requirements;

--- Prepared according to standard rules of text editing finishing.

This section uses redrafted reference method ISO 4058. 1977 "magnesium and magnesium alloy of nickel dimethylglyoxime spectrophotometric determination", and ISO 4058:1977 non-equivalent.

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.

This section is drafted. Northeast Light Alloy Co., Ltd., Southwest Aluminum limited liability company.

Drafters of this section. High Zhenzhong, Zheng Yunlong, Zhou Bing, Chen Xiongli, Denglan Hong, Tan Jiaying, Choi Ji Hong, Liu Xin.

This part of the standard replaces the previous editions are.

--- GB/T 13748.14-2005, GB/T 13748.14-1992.

Magnesium and its alloys -Determination of nickel content. Part 14 Dimethylglyoxime spectrophotometry

1 Scope

This section specifies the determination of magnesium and magnesium alloys of nickel content.

This section applies to the determination of magnesium and magnesium alloys of nickel content. Determination of the range of 0.00020% to 0.050%.

2 Method summary

Sample was dissolved in hydrochloric acid and nitric acid. Hydroxylamine hydrochloride, citric acid and thiourea as a masking agent. With chloroform extraction of nickel dimethylglyoxime Health Into the complex, then back-extracted with dilute hydrochloric acid, the nickel into the aqueous phase. Oxidation with bromine water and butyric Dimethylglyoxime color in ammonia solution. in 445nm wavelength spectrophotometer measured absorbance.

3 Reagents

3.1

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

3.2

nitric acid ($\rho = 1.42\text{g/mL}$).

Aqueous ammonia 3.3 ($\rho = 0.90\text{g/mL}$).

3.4

chloroform.

3.5

hydrochloric acid (119).

3.6

ammonia (119).

3.7

citric acid solution (300g/L).

3.8

hydroxylamine hydrochloride solution (100g/L).

3.9

thiourea solution (100g/L).

3.10

bromine saturated solution.

3.11

dimethylglyoxime in ethanol (10g/L).

3.12

Nickel standard stock solution (1mg/mL). Weigh 1.0000g of nickel [w (Ni) $\geq$ 99.9%] placed in 300mL beaker, covered

Table dish. Was added 10mL of water and 10mL of nitric acid (3.2), heated until completely dissolved. Was added 10mL of hydrochloric acid (3.1), carefully evaporated to dryness, then

10mL of hydrochloric acid (3.1) is repeated again evaporated to dryness. Salts dissolved in water, heating to completely dissolve the salt. Moved into 1000mL volumetric flask with water Dilute to volume, and mix. 1mL solution containing 1mg nickel.

3.13

Nickel standard solution (0.08mg/mL). a nickel Pipette 8.00mL standard stock solution (3.12) in 100mL volumetric flask, diluted with water to the mark, and mix. This solution 1mL containing 0.08mg nickel.

3.14

Nickel standard solution (0.004mg/mL). a nickel standard solution Pipette 5.00mL (3.13) in 100mL volumetric flask, dilute with water to Volume, and mix the solution 1mL containing 0.004mg nickel.

3.15

bromothymol blue solution (1g/L). Weigh 0.100g bromothymol blue dissolved in 5mL of ethanol and transferred to 100mL volumetric flask, to Dilute with water to volume, and mix.