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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 26416.3-2022

Replacing GB/T 26416.3-2010

Chemical analysis methods for rare earth ferroalloy - Part 3: Determination of calcium, magnesium, aluminium, nickel and manganese contents - Inductively coupled plasma emission spectrometry

稀土铁合金化学分析方法 第3部分：钙、镁、铝、镍、锰量的测 定 电感耦合等离子体发射光谱法

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Standardization Administration of China

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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. This document is part 3 of GB/T 26416 "Methods for Chemical Analysis of Rare Earth Ferroalloys". GB/T 26416 has issued the following part.

1.Determination of the total amount of rare earth;

2.Determination of rare earth impurity content Inductively coupled plasma emission spectrometry;

3.Determination of calcium, magnesium, aluminum, nickel, manganese content Inductively coupled plasma emission spectrometry;

4.Determination of iron content Potassium dichromate titration method;

5.Determination of oxygen content pulse - infrared absorption method. This document replaces GB/T 26416.3-2010 "Methods for Chemical Analysis of Dysprosium-Fe Alloys Part

3.Amounts of Calcium, Magnesium, Aluminum, Silicon, Nickel, Molybdenum, and Tungsten Determination of Inductively Coupled Plasma Emission Spectrometry", compared with GB/T 26416.3-2010, except for structural adjustments and editorial changes, The main technical changes are as follows:

a) The scope of application has been changed, and the determination range of calcium, magnesium and nickel content has been changed from 0.0050%~0.050% to 0.0050%~0.25%; the measurement range of aluminum content was changed from 0.020%~0.10% to 0.0050%~0.25% (see Chapter 1,.2010 Chapter 1 of the edition);

b) Added the preparation, system Preparation of column standard solutions (see 8.4, 8.5);

c) Changed the wavelength of some analytical lines (see 8.6.1,

6.6.1 of the.2010 edition);

d) Changed "precision" and changed "permissible difference" to "reproducibility" (see Chapter 10, Chapter 8 of the.2010 edition). Please note that some contents of this document may refer to patents. The issuing agency of this document assumes no responsibility for identifying patents. This document is proposed and managed by the National Rare Earth Standardization Technical Committee (SAC/TC229). This document is drafted by: Ganzhou Institute of Nonferrous Metallurgy Co., Ltd., Industrial Analysis and Testing Center of Guangdong Academy of Sciences, Changting Jin of Fujian Province Dragon Rare Earth Co., Ltd., National Standard (Beijing) Inspection and Certification Co., Ltd., Sichuan Jiangxi Copper Rare Earth Co., Ltd., China Nonferrous Metals Guilin Mineral Geology Research Institute Co., Ltd., Baotou Huamei Rare Earth High-Tech Co., Ltd., Zibo Jiahua New Material Resources Co., Ltd. The main drafters of this document. Liu Hong, Xie Lu, Zhang Wenxing, Li Ying, Ma Yanfang, Xiong Xiaoyan, Chen Tao, Wang Jinfeng, Deng Nan, Wang Chunshui, Hao Huifang, Luo Yingying, Zeng Xuehua, Wang Jin, Du Yejian, Kang Yaxian, Wang Miao, Zhang Zhenglian. This document was first published in.2010, and this is the first revision.

The rare earth iron alloy referred to in this document refers to the master alloy composed of iron and one or more rare earth elements, which is generally adopted by molten salt electrolysis or fusion It is mainly used as an additive for magnetic materials such as NdFeB permanent magnet materials, magnetostrictive materials, optical and magnetic recording materials, or as a deoxidizer, Additives, etc. are used in iron and steel smelting. Chemical composition is an important assessment index of rare earth ferroalloys. This series of standards GB/T 26416 "Rare earth iron Alloy Chemical Analysis Method" integrates the industry standard XB/T 616-2012 "Chemical Analysis Method of Gadolinium Iron Alloy", XB/T 621-2016 "Holmium Ferroalloy Chemical Analysis Method", XB/T 623-2018 "Cerium-Fe Alloy Chemical Analysis Method", XB/T 624-2018 "Chemical Analysis Method of Yttrium-Fe Alloy "Analysis Method", to establish the current large-scale production of rare earth ferroalloys (including ferro-lanthanum, ferro-cerium, ferro-lanthanum-cerium, ferro-Nd, ferro-dysprosium, ferro-gadolinium, ferro-gadolinium, holmium iron and yttrium iron, etc.) in the production and application of the chemical analysis method standards for indicators that need to be assessed, including the total amount of rare earth, rare earth impurity content, non-rare Detection of soil impurity content, etc. According to the different detection objects and detection methods, as well as the differences in the matrix, GB/T 26416 is proposed to be composed of 9 parts Composition.

1 Scope

GB/T 26416.3-2022 is the Chinese national standard on chemical analysis methods for rare earth ferroalloy - part 3: determination of calcium, magnesium, aluminium, nickel and manganese contents - inductively coupled plasma emission spectrometry, 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 30 December 2022 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 July 2023. Classification: ICS 77.120.99, CCS H14. 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 document specifies rare earth iron alloys (lanthanum-iron alloy, cerium-iron alloy, gadolinium-iron alloy, dysprosium-iron alloy, holmium-iron alloy, yttrium-iron alloy, lanthanum-cerium-iron alloy Alloy) Determination of calcium, magnesium, aluminum, nickel, manganese content. This document is applicable to rare earth iron alloys (lanthanum-iron alloy, cerium-iron alloy, gadolinium-iron alloy, dysprosium-iron alloy, holmium-iron alloy, yttrium-iron alloy, lanthanum-cerium-iron alloy Alloy) Determination of calcium, magnesium, aluminum, nickel, manganese content. Measuring range (mass fraction). 0.0050%~0.25%.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, dated references For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document.

GB/T 6682 Analytical laboratory water specifications and test methods

GB/T 8170 Numerical rounding off rules and expression and determination of limit values

3 Terms and Definitions

This document does not have terms and definitions that need to be defined.

4 Method Summary

The sample is decomposed by hydrochloric acid and nitric acid, and in dilute hydrochloric acid or dilute nitric acid medium, the influence of the matrix on the determination is corrected by the approximate matrix matching method. Connected with argon plasma light source excitation, using the standard curve method for spectral determination.

5 Reagents or Materials

Unless otherwise specified, in the analysis, only the reagents confirmed as superior grade

and above and the secondary water in accordance with the provisions of GB/T 6682 of the laboratory are used. Distilled water or deionized water or water of equivalent purity, and liquid reagents are stored in plastic bottles. Prefer certified standard solutions.

5.1 Hydrogen peroxide (30%).

5.2 Hydrochloric acid (rho=1.19g/mL).

5.3 Nitric acid (rho=1.42g/mL).

5.4 Hydrochloric acid (1 1).

5.5 Nitric acid (1 1).

5.6 Calcium standard storage solution. weigh 0.2497g of calcium carbonate [w(CaCO3)>=99.99%] dried at 105°C to constant weight and place in In a 100mL beaker, moisten it with a small amount of water, add 10mL of hydrochloric acid (5.4) and heat at low temperature until dissolved, remove it and cool to room temperature, and transfer to 100mL