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

GB/T 12690.8-2021

Replacing GB/T 12690.8-2003

**Chemical analysis methods for non-rare earth impurities of rare
earth metals and their oxides - Part 8: Determination of sodium
content**

稀土金属及其氧化物中非稀土杂质化学分析方法 第8部分：钠量的测定

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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 of Standardization Documents" Drafting. This document is part 8 of GB/T 12690 "Chemical Analysis Methods of Non-rare Earth Impurities in Rare Earth Metals and Their Oxides". GB/T 12690 The following parts have been released.

- 1. Determination of Carbon and Sulfur Content High Frequency-Infrared Absorption Method;
- 2. Gravimetric method for determination of ignition loss in rare earth oxides;
- 3. Gravimetric method for the determination of water content in rare earth oxides;
- 4. Determination of oxygen and nitrogen content by pulse-infrared absorption method and pulse-thermal conductivity method;
- 5. Determination of cobalt, manganese, lead, nickel, copper, zinc, aluminum, chromium, magnesium, cadmium, vanadium and iron content;
- 6. Determination of iron content potassium thiocyanate, 1,10-phenanthroline spectrophotometry;
- 7. Determination of silicon content;
- 8. Determination of sodium content;
- 9. Determination of Chlorine Content Silver Nitrate Turbidimetric Method;
- 10. Determination of phosphorus content molybdenum blue spectrophotometry;
- 11. Determination of Magnesium Content Flame Atomic Absorption Spectrometry;
- 12. Determination of Thorium Content Arsenazo III Spectrophotometry and Inductively Coupled Plasma Mass Spectrometry;

1 Scope

GB/T 12690.8-2021 is the Chinese national standard on chemical analysis methods for non-rare earth impurities of rare earth metals and their oxides - part 8: determination of sodium content, 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 11 October 2021 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 May 2022. 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 the method for the determination of sodium content in rare earth metals and their oxides. This document is applicable to the determination of sodium content in rare earth metals and their oxides, including flame atomic absorption spectrometry (method 1), inductive coupling Plasma emission spectroscopy (method 2) and inductively coupled plasma mass spectrometry (method 3). Flame atomic absorption spectrometry measurement range (quality Mass fraction). 0.0005%~0.025%; inductively coupled plasma emission spectrometry measurement range (mass fraction). 0.010%~0.20%; electricity Inductively coupled plasma mass spectrometry measurement range (mass fraction). 0.0005% ~ 0.025%. When the scope of analysis of the three methods in this document overlaps, method 1 is preferred as the arbitration method.

2 Normative references

The content of the following documents constitutes an indispensable clause of this document through normative references in the text. Among them, dated quotations 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 8170 Numerical rounding rules and the expression and determination of limit values

3 Terms and definitions

There are no terms and definitions that need to be defined in this document.

4 Flame atomic absorption spectrometry (Method 1)

4.1 Principle of the method The sample is dissolved in nitric acid, in a dilute nitric acid medium, using an air-acetylene flame, and measured at a wavelength of 589.0nm in an

atomic absorption spectrometer The absorbance of sodium. Use the standard addition method to calculate the sodium content.

4.2 Reagents Unless otherwise specified, only reagents and distilled water or deionized water or equivalent purity water are used in the analysis.

4.2.1 Hydrogen peroxide (30%).

4.2.2 Nitric acid (1 1).

4.2.3 Oxalic acid ($\rho=50\text{g/L}$).

4.2.4 Sodium standard storage solution. Weigh 2.5421g of sodium chloride (superior grade pure) that has been burned at 400°C to 450°C until there is no cracking sound in 500mL In the beaker, add 200mL of water to dissolve. Transfer to a 1000mL volumetric flask, dilute to the mark with water, and mix well. This solution 1mL contains 1mg sodium.

4.2.5 Sodium standard solution. Pipette 10.00mL sodium standard stock solution (4.2.4) into a 1000mL volumetric flask, dilute to the mark with water, and mix uniform. This solution 1mL contains 10 μg sodium.