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

XB/T 610.3-2015

Replacing XB/T 610.3-2007

**Chemical analysis methods for samarium-cobalt permanent
alloy. Part 3: Determination of oxygen content. Impulse-infrared
absorption method
(English Translation)**

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Foreword

XB/T 610-2015 "samarium cobalt permanent magnet alloy chemical analysis method" is divided into three parts.

- Part 1. Determination of samarium, cobalt, copper, iron, zirconium, gadolinium, praseodymium;
- Part 2. Determination of calcium and iron content atomic absorption spectrometry;
- Part 3. Determination of oxygen content pulse - infrared absorption method.

This section is the third part of XB/T 610.3.

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

This section replaces XB/T 610.3-2007.

This section compared with the XB/T 610.3-2007, the main technical changes are as follows.

- Expand the scope of application, covering the samarium cobalt 1.5 and samarium cobalt 2.17 permanent magnetic alloy powder;
- Increasing the samarium cobalt 2.17 permanent magnet alloy in the determination of oxygen content;
- Modify the sample size, from the original standard 0.03g and 0.05g changed 0.07g ~ 0.11g;
- Modify the flux, from the original standard nickel foil and tin foil to nickel capsule.

This part of the National Rare Earth Standardization Technical Committee (SAC/TC229) and focal point.

This section is responsible for the drafting unit. Baotou Rare Earth Research Institute, Nonferrous Metal Technology Economics Research Institute.

Participated in the drafting of this section. Beijing Zhong Ke San Huan High-tech Co., Ltd., Gansu Rare Earth New Materials Co., Ltd. testing Heart, the State Tungsten and Rare Earth Products Quality Supervision and Inspection Center, the National Rare Earth Products Quality Supervision and Inspection Center.

1 Scope

XB/T 610 provisions of this part of the samarium cobalt permanent magnet alloy oxygen content of the determination.

This section applies to the determination of oxygen in SmCo permanent magnet alloys, determination of the range. 0.10% ~ 0.50%.

2 Method principle

Under an inert atmosphere, the sample melts at high temperature to release oxygen and reacts with the hot crucible to produce carbon monoxide, which is measured by infrared absorption.

3 Reagents and materials

3.1

cap with nickel capsule.

3.2

anhydrous ethanol.

3.3

High purity helium. $\geq 99.99\%$.

3.4

graphite crucible (pure spectrum).

3.5

Standard Samples. Select three suitable standards in the oxygen content of 0.10% ~ 0.50%.

4 Instruments

Pulse - infrared oxynitride meter.

Pulse furnace. temperature greater than 2000 °C, the detector sensitivity 0.001g/g.

5 Sample

The sample is made into small pieces of less than 0.1g each sample, the sample should be avoided oxidation and contamination, the sample immediately after the determination.

6.1 Sample

Weigh 0.070g ~ 0.11g sample (Chapter 5), accurate to 0.0001g.

6.2 The number of tests Weigh two samples (6.1) parallel determination, whichever is the average.

6.3 Instrument working conditions

Equipment, cleaning equipment and dust removal of various reagents should be able to normal use. According to the instructions of the instrument to start the instrument, preheat.
Instrument push