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XB

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

XB/T 620.1-2015

**Chemical analysis methods for waste rare earth phosphors.
Part 1: Determination of total rare earth oxides content.
Gravimetric method
(English Translation)**

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Foreword

XB/T 620-2015 "Abandoned rare earth phosphor chemical analysis method" is divided into three parts.

--- Part 1. Determination of total rare earth oxides gravimetric method;

--- Part 2. Determination of lead, cadmium, mercury content; Inductively coupled plasma atomic emission spectrometry;

--- Part 3. Determination of yttrium oxide, lanthanum oxide, cerium oxide, europium oxide, gadolinium oxide, terbium oxide, dysprosium oxide Inductively Coupled Plasma Sub-atomic emission spectrometry.

This part is part 1.

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

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

This section is responsible for drafting unit. Beijing University of Technology.

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1 Scope

This part of XB/T 620 specifies the method for the determination of the total rare earth oxides in spent rare earth phosphors.

This section applies to the determination of total rare earth oxides in spent rare earth

phosphors. The measuring range is from 10.00% to 70.00%.

2 Method principle

The sample was melted and decomposed with sodium peroxide to separate silicon and aluminum. Sedimentation by perchloric acid smoke to remove silicon, dissolved with hydrochloric acid. Ammonia precipitation Silicon, calcium, magnesium, barium and so on. In the pH value of 1.8 ~ 2.0 oxalic acid precipitation rare earth, burning to a constant volume, weighing its quality, calculate the total amount of rare earth oxides.

3 Reagents and materials

3.1

Sodium peroxide.

3.2

Ammonium chloride.

3.3

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

3.4

perchloric acid ($\rho=1.67\text{g/mL}$).

3.5

Hydrogen peroxide (30%).

3.6

Hydrochloric acid (1 1).

3.7

sulfuric acid (1 1).

3.8

Ammonia (1 1).

3.9

Sodium hydroxide wash (20 g/L).

3.10

ammonium chloride - ammonia water washing solution. 20g/L, with ammonia (3.8) adjusted to pH 9 ~ 10.

3.11

hydrochloric acid lotion. 100mL water containing 4mL hydrochloric acid (3.6).

3.12

oxalic acid solution (100g/L).

3.13

oxalic acid lotion (20g/L).

3.14

crystal violet solution (1g/L, ethanol solution).

4 Instruments

4.1

Analytical Balance. Feel 0.1mg.

4.2

high temperature furnace. temperature > 1000 °C.

4.3.200

mesh (aperture of 0.074mm) standard sieve.

5 Sample

5.1

The particle size of the sample should be ground through a 0.074mm standard sieve.