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PEOPLE'S REPUBLIC OF CHINA**

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**Determination of germanium content in germanium renewable
raw materials**

再生锗原料中锗的测定方法

(English Translation)

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Foreword

The standard proposed by China Nonferrous Metals Industry Association.

This standard Nonferrous Metals by the National Standardization Technical Committee.

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Determination of germanium in germanium raw material regeneration

1 Scope

This standard specifies the method for determination of germanium in the germanium content of renewable raw materials.

This standard is applicable to the determination of germanium in renewable raw materials germanium. Measurement range. from 1% to 99%.

2 Principle of the method

Sample with FeCl_3 or H_2O_2 peroxide, hydrochloric acid distillation separation of germanium in 3mol/L phosphate and 4.5mol/L HCl medium to 0.35mol/L sodium hypophosphite reduced to the $\text{Ge}^{4+} + \text{Ge}^{2+}$, using starch solution as indicator below 20 °C,

with potassium iodate standard solution Titration.

3 Reagents

Unless otherwise stated, only confirmed in the analysis of analytical grade reagents and distilled water or equivalent purity.

3.1

potassium iodide (KI).

3.2

anhydrous sodium carbonate (Na_2CO_3).

3.3

Sodium hydroxide (NaOH).

3.4

hypophosphite ($\text{NaH}_2\text{PO}_2 \cdot \text{H}_2\text{O}$).

3.5

ferric chloride ($\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$).

3.6

hydrochloride ($\rho 1.19\text{g/mL}$).

3.7

phosphoric acid ($\rho 1.69\text{g/mL}$).

3.8

Hydrogen peroxide (30%).

3.9

HCl (1 + 1).

3.10

saturated sodium bicarbonate solution.

3.11

starch solution (5g/L).

3.12 Potassium iodate standard solution I

Weigh 1.0000g pre-drying to constant weight basis KIO_3 at 130°C in 400mL beaker.

Potassium iodide was added 20g (3.1), 0.5g of anhydrous sodium carbonate (3.2), 200mL water and stir until completely dissolved and transferred to 1000mL volumetric flask with

water to volume, mix Uniform, placed 24h. Ba concentration ($1/6\text{KIO}_3$) was 0.02804mol/L.

3.13 Potassium iodate standard solution II

Weigh 3.5667g pre-drying to constant weight basis KIO_3 at 130 °C in 400mL beaker, add 40g potassium iodide (3.1), 1.0g of anhydrous sodium carbonate (3.2), 200mL of water, stirring until completely dissolved, transferred to 1000mL volumetric flask to volume with water, mix Uniform, placed 24h, the concentration of Ba ($1/6\text{KIO}_3$) of 0.1000mol/L.

4 Step, Analysis

Figure 1 shows the ready distillation system, wherein the distillation bottles 300mL flasks I, receiving bottles 500mL flasks II, to be filled

50mL of water and 7g sodium hypophosphite (3.4), a condenser and a glass condenser 200mL of snake.

4.1 Sample

The samples were prepared over 0.125mm (120 mesh) sieve and dried at 105 °C to constant weight, the simultaneous determination of the moisture.

4.2 Determination of the number of Independently measured three times and averaged.