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

GB/T 26523-2011

Refined cobaltous sulfates

精制硫酸钴

(English Translation)

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1 Scope

This Standard specifies the requirements, test methods, inspection rules, marking, labeling, packaging, transportation and storage of refined cobaltous sulfates.

This Standard applies to refined cobaltous sulfates that are mainly used in industries such as chemical industry, electroplating industry, battery industry, chemical reagents.

2 Normative references

The following documents are indispensable for the application of this document.

For dated references, only the dated version applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 191-2008, Packaging - Pictorial marking for handling of goods

GB/T 3049-2006, Chemical products for industrial use - General method for determination of iron content - 1,10-Phenanthroline spectrophotometric method

GB/T 6678, General principles for sampling chemical products

GB/T 6682-2008, Water for analytical laboratory use - Specification and test methods

GB/T 8170, Rules of rounding off for numerical values & expression and judgment of limiting values

GB/T 9724-2007, Chemical reagent - General rule for the determination of pH

GB/T 16488-1996, Water quality - Determination of petroleum oil, animal and vegetable oils

- Infrared photometric method

HG/T 3696.1, Inorganic chemical products - Preparations of standard volumetric solutions for chemical analysis

HG/T 3696.2, Inorganic chemical products - Preparations of standard solutions for chemical analysis immediately with water. In severe cases, treat immediately. When flammable products are used, it is strictly forbidden to use an open flame for heating.

5.2 General provisions

The reagents and water that are used in this Standard, when no other requirements are specified, refer to analytical reagents and grade-III water which is specified in GB/T 6682-2008. All the reagents and water that are used in the atomic absorption method in the Standard refer to the guaranteed reagents and the grade-II water that is specified in GB/T 6682-2008. The standard titration solutions, impurity standard solutions, preparations and products that are used in the test shall be prepared in accordance with the provisions of HG/T 3696.1, HG/T 3696.2, HG/T 3696.3 when no other requirements are specified.

5.3 Appearance inspection

Under natural light, visually judge the appearance.

5.4.1 Method summary

In an acid solution, add hydroxylamine hydrochloride to the test solution to reduce the iron; cobalt and thiocyanate form cobalt thiocyanate $[\text{Co}(\text{SCN})_4]$

2- blue complex; in the presence of acetone, use Ethylene Diamine Tetraacetic

Acid (EDTA) standard titration solution and cobalt to form a complex; when it reaches the end point, the blue color disappears.

5.4.2 Reagents

5.4.2.1

Hydroxylamine hydrochloride.

5.4.2.2

Ammonium thiocyanate.

5.4.2.3

Acetone.

5.4.2.4

Saturated ammonium acetate solution.

5.4.2.5 Ethylene Diamine Tetraacetic Acid standard titration solution: c(EDTA)

~ 0.05 mol/L.

5.4.3 Analysis steps

Weigh about 0.35 g ~ 0.40 g of sample, accurate to 0.000 2 g; put in 250 mL conical flask; add 50 mL of water, 0.25 g of hydroxylamine hydrochloride; add

10 g of ammonium thiocyanate; add 4 mL of saturated ammonium acetate

5.5.2.3 Zinc standard solution: 1 mL of solution contains 0.01 mg of zinc (Zn).

Pipette 1 mL of the zinc standard solution that is prepared according to HG/T 3696.2; place it in a 100 mL volumetric flask; use water to dilute to the mark; shake well.

5.5.2.4 Iron standard solution: 1 mL of solution contains 0.1 mg of iron (Fe).

Pipette 10 mL of the iron standard solution that is prepared according to HG/T 3696.2; place it in a 100 mL volumetric flask; use water to dilute to the mark; shake well.

5.5.2.5 Copper standard solution: 1 mL of solution contains 0.1 mg of copper (Cu).

Pipette 10 mL of the copper standard solution that is prepared according to HG/T 3696.2; place it in a 100 mL volumetric flask; use water to dilute to the mark; shake well.

5.5.2.6 Lead standard solution: 1 mL of solution contains 0.1 mg of lead (Pb).

Pipette 10 mL of the lead standard solution that is prepared according to HG/T 3696.2; place it in a 100 mL volumetric flask; use water to dilute to the mark; shake well.

5.5.2.7 Cadmium standard solution: 1 mL of solution contains 0.01 mg of cadmium (Cd).

Pipette 1 mL of the cadmium standard solution that is prepared according to

HG/T 3696.2; place it in a 100 mL volumetric flask; use water to dilute to the mark; shake well.

5.5.2.8 Manganese standard solution: 1 mL of solution contains 0.1 mg of manganese (Mn).

Pipette 10 mL of the manganese standard solution that is prepared according to HG/T 3696.2; place it in a 100 mL volumetric flask; use water to dilute to the mark; shake well.

5.5.2.9 Acetylene: high purity.

5.5.3 Instruments and apparatuses

Atomic absorption spectrophotometer: it is equipped with nickel hollow cathode lamp, zinc hollow cathode lamp, iron hollow cathode lamp, copper hollow cathode lamp, lead hollow cathode lamp, cadmium hollow cathode lamp and manganese hollow cathode lamp.

In sulfuric acid solution, use potassium permanganate to oxidize chromium to hexavalent; hexavalent chromium forms a purple complex with diphenylcarbazide in sulfur-phosphorus mixed acid solution; after using isoamyl alcohol for extraction, at a wavelength of 545 nm, use a spectrophotometer to measure its absorbance.

5.8.2 Reagents

5.8.2.1

Sodium nitrite solution.

5.8.2.2

Sulfuric acid solution

1+2.

5.8.2.3

Phosphoric acid solution

1+2.

5.8.2.4

Urea solution

200 g/L.

5.8.2.5

Potassium permanganate solution

40 g/L.