

HG

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

HG/T 2935-2006

Replacing HG 2935-2000

Feed grade ferrous sulfate

饲料级 硫酸亚铁

(English Translation)

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1 Scope

This standard specifies the requirements, test methods, inspection rules, signs, labels, packaging, transportation, storage of feed grade ferrous sulfate.

This standard applies to monohydrate or heptahydrate feed grade ferrous sulfate. This product is used as iron supplement, in feed processing.

Molecular formula: $\text{FeSO}_4 \cdot n\text{H}_2\text{O}$, $n = 1$ or $n = 7$ Relative molecular mass: 169.92 ($n = 1$), 278.01 ($n = 7$) (according to the international relative atomic mass in 2001)

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 1250 Rules for expression and judgement of limiting values

GB/T 6003.1-1997 Test sieves of metal wire cloth

GB/T 6678 General principles for sampling chemical products

GB/T 6682-1992 Water for laboratory use - Specifications (eqv ISO 3696:1987)

GB 10648 Feed label

GB/T 13079-1999 Determination of total arsenic in feeds

GB/T 13080-2004 Determination of lead in feeds - Method using atomic absorption spectrometry

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 are required in the test, shall be prepared according to the provisions of HG/T 3696.1,

HG/T 3696.2, HG/T 3696.3.

5.3.1 Reagents

5.3.1.1

Potassium ferricyanide solution

100 g/L.

5.3.1.2

Barium chloride solution

50 g/L.

5.3.2.1 Identification of sulfate ion

Take a little specimen. Add water to dissolve it. Add barium chloride solution dropwise to form a white precipitate. This precipitate is insoluble in hydrochloric acid and nitric acid.

5.3.2.2 Identification of ferrous ions

Take a little specimen. Add water to dissolve it. Add potassium ferricyanide solution dropwise to form a dark blue precipitate.

5.4.1 Method summary

After the specimen is dissolved, add sulfur-phosphorus mixed acid. Use sodium diphenylamine sulfonate as indicator. Use potassium dichromate standard titration solution for titration to determine the content of ferrous sulfate and iron.

5.4.2 Reagents

5.4.2.1

Thion-phosphorus mixed acid

Add 150 mL of sulfuric acid and 150 mL of phosphoric acid to 700 mL water. Mix well.

5.4.2.2**Potassium dichromate standard titration solution**

C ($1/6K_2Cr_2O_7$) ~ 0.05 mol/L.

5.4.2.3**Sodium diphenylamine sulfonate indicator solution**

5 g/L

5.4.3 Analytical procedures

Weigh about 0.2 g of specimen (accurate to 0.0002 g). Place it in a 250 mL conical flask.

Add 30 mL of water to dissolve it. Add 10 mL of sulfur-phosphorus mixed acid, 2 drops of sodium diphenylamine sulfonate indicator solution. Immediately use potassium dichromate standard titration solution to titrate, until the solution turns purple, which is solution, which is consumed by titrating the blank solution, in milliliters (mL); c - The exact value of the concentration of potassium dichromate standard titration solution, in moles per liter (mol/L); m - The value of sample mass, in grams (g);

M - The molar mass value $M(FeSO_4 \cdot 7H_2O) = 278.0$ [or measured by iron (Fe), its molar mass value $M(Fe) = 55.84$], when ferrous sulfate heptahydrate product is measured by ferrous sulfate heptahydrate ($FeSO_4 \cdot 7H_2O$), in gram per mole (g/mol).

Take the arithmetic mean value of parallel determination results as measurement result; the absolute difference of two parallel determination results is not more than 0.3% for ferrous sulfate; it is not more than 0.1% for the iron content.

5.5.1 Silver diethyldithiocarbamate - spectrophotometric method

(arbitration method)

5.5.1.1 Method summary

In acidic medium, arsenic is reduced by zinc to generate arsine gas, then it is introduced into silver diethyldithiocarbamate [$Ag(DDTC)$] solution for absorption, so as to form yellow or brownish red silver sol. The color depth is directly proportional to the content of arsenic. It is subject to colorimetric determination by a spectrophotometer.

5.5.1.2 Reagents and materials**5.5.1.2.1**

Silver diethyldithiocarbamate ($Ag-DDTC$)-triethylamine-chloroform solution:

5.5.1.2.2

Arsenic standard solution

1 mL solution contains 50 µg of arsenic (As). Use a pipette to pipette 5.00 mL of arsenic standard solution, which is prepared according to HG/T 3696.2. Place it in a 100 mL volumetric flask. Dilute to the mark. Shake well.

5.5.1.2.3

Arsenic standard solution

1 mL of solution contains 1 µg of arsenic (As). Use a pipette to pipette 2.00 mL of arsenic standard solution (5.5.1.2.2), into a 100 mL volumetric flask. Add 1 mL of hydrochloric acid. Dilute to the mark. Shake well. Prepare it before use.

5.5.1.2.4

Sulfuric acid solution

1 + 4.

5.5.1.2.5

Tartaric acid solution

200 g/L.

5.5.1.2.6

Lead acetate absorbent cotton.

5.5.1.2.7

Potassium iodide solution

150 g/L.

5.5.1.2.8

Stannous chloride hydrochloric acid solution

Dissolve 40 g of stannous chloride ($\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$) in 50 mL of hydrochloric acid solution (1 + 1). Use water to dilute it to 100 mL.

5.5.1.2.9

Arsenic-free zinc particles

Particle size (3.0 ± 0.2) mm.

5.5.1.3 Instruments and equipment

Same as Chapter 4 of GB/T 13079-1999.

5.5.1.4 Analytical procedures