

HG

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HG 2934-2000

Feed grade zinc sulphate (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 zinc sulfate.

This standard applies to feed grade zinc sulfate, which is produced by reacting zinc-containing raw materials with sulfuric acid. This product is used as a zinc supplement in the feed, after pretreatment.

Molecular formula: $\text{ZnSO}_4 \cdot \text{H}_2\text{O}$ Relative molecular mass: 179.47 (according to the international relative atomic mass in

1997)

Molecular formula: $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ Relative molecular mass: 287.56 (according to the international relative atomic mass in

1997)

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. The versions indicated at the time of publication of this standard are valid. All standards are subjected to revision, AND parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable.

GB/T 601-1988 Chemical reagent - Preparations of standard volumetric solutions GB/T

602-1988 Chemical reagent - Preparations of stock standard solutions GB/T 603-1988
Chemical reagent - Preparations of reagent solutions for use in test methods GB/T
6678-1986 General principles for sampling chemical products GB/T 6682-1992 Water for
laboratory use - Specifications (neq ISO 3696:1987) GB/T 8450-1987 Determination
method of arsenic in food additives (arsenic spot method)

5.1.1 Reagents and materials

5.1.1.1

Chloroform.

5.1.1.2

Acetic acid solution

1 + 10.

5.1.1.3

Sodium sulfate solution

250 g/L.

5.1.1.4

Dithizone carbon tetrachloride solution

1 + 100.

5.1.1.5

Barium chloride solution

50 g/L.

5.1.2.1 Identification of zinc ions

Weigh 0.2 g of specimen. Dissolve it in 5 mL water. Pipette 1 mL of the test solution.

Use acetic acid solution to adjust the pH of the solution to 4 ~ 5. Add 2 drops of sodium sulfate solution. Add few drops of disulfiram carbon tetrachloride solution and 1 mL of chloroform. After shaking, the organic layer shows purple red.

5.1.2.2 Identification of sulfate ion

Dissolve the specimen in water. Add barium chloride solution, to produce a white precipitate, which is insoluble in hydrochloric acid solution.

5.2.1 Method summary

Dissolve zinc sulfate in sulfuric acid solution. Add appropriate amount of water. Add ammonium fluoride solution, thiourea, ascorbic acid, as masking agent. Use acetic acid-sodium acetate solution, to adjust pH value to 5 ~ 6. Use xylenol orange as indicator.

Titrate with disodium ethylenediaminetetraacetic acid standard titration solution, until the solution turns from purple red to bright yellow, which is the end point.

5.2.2 Reagents and materials

5.2.2.1

Potassium iodide.

5.2.2.2

Ascorbic acid.

5.2.2.3

Thiourea solution

200 g/L.

5.2.2.4

Ammonium fluoride solution

200 g/L.

5.2.2.5

Sulfuric acid solution

1 + 1.

5.2.2.6

Acetic acid-sodium acetate buffer solution

PH = 5.5.

5.2.5 Tolerance

Take the arithmetic mean of the parallel determination results, as the measurement result. The absolute difference of parallel determination results: zinc sulfate monohydrate and zinc sulfate heptahydrate is not more than 0.2%, zinc (Zn) is not more than 0.15%.

5.3.1 Method summary

In acidic medium, potassium iodide and stannous chloride will reduce As (V) to As (III); generate arsenic spot with nascent hydrogen on the mercury bromide. It is compared with the standard arsenic spot.

5.3.2 Reagents and materials

5.3.2.1

Hydrochloric acid.

5.3.2.2

Potassium carbide.

5.3.2.3

Arsenic-free metal zinc.

5.3.2.4

Stannous chloride solution

400 g/L.

5.3.2.5

Arsenic standard solution

1 mL solution contains 0.001 mg of As.

Preparation: Use a pipette to pipette 1.00 mL of arsenic standard solution, which is prepared according to GB/T 602. Place it in a 100 mL volumetric flask. Use water to dilute it to the mark. Shake well. This solution is prepared before use.

5.3.2.6

Mercury bromide test paper.

5.3.2.7

Lead acetate cotton.

5.3.3 Instruments and equipment

Arsenic fixer.

5.3.4 Analytical procedures

Weigh (1.0 ± 0.01) g of specimen. Place it in the jar of the arsenic fixer. Add a small amount of water to moisten it. Add 6 mL of hydrochloric acid, to dissolve the specimen.

Use water to dilute it to 70 mL. Add 1 g of potassium iodide and 0.2 mL of stannous chloride solution. Shake well. Let it stand for 10 min. Add 2.5 g of arsenic-free metal zinc. Immediately plug the arsenic measuring tube, which was pre-installed with lead acetate cotton and mercury bromide test paper. Place it in a dark place, at 25 ~ 30 °C for 1 ~ 1.5 h. The brown-yellow color of the mercury bromide test paper shall not be deeper than the color spots, which are produced by the standard.

The standard is to use a pipette to pipette 5 mL of arsenic standard solution. Place it in the jar of the arsenic fixer. Use water to dilute it to 70 mL. Add 6 mL of hydrochloric acid. The following operations are performed at the same time and method as the specimen.