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

GB 437-2009

Replacing GB 437-1993

Copper sulfate (For crops use)

硫酸铜(农用)

(English Translation)

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1 = Ba

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1 --- Erlenmeyer flask;

2 --- rubber stopper;

3 --- arsenic measuring tube;

4 --- nozzle;

5 --- glass cap.

100 --- total volume of sample solution, in milliliters (mL).

3 and incorporated in the filtrate, adding water to the mark, the standby.

100 --- total volume of sample solution, in milliliters (mL).

4.5 Determination of insoluble matter

5 mass fraction of water-insoluble matter (%) according to equation (5) is calculated.

4.6 Determination of acidity

6 = Ba

4.7 product testing and acceptance

5 marking, labeling, packaging, storage, security

5.1 copper sulfate marking, labeling, packaging, should comply with the provisions of GB 3796.

5.3 sulfate package airiness, dry place.

Foreword

This standard in Chapter 3, Section 5 is mandatory, the rest are recommended.

This modification uses standard FAO Specifications 44.2s/T C/S (1989) "copper sulfate" (CopperSulfate).

This standard modification method using foreign advanced standards for the redrafted law.

This standard and FAO specification "copper sulfate" (CopperSulfate) The main technical differences.

Standard control --- water-insoluble substance present is $\leq 0.2\%$, acidity of $\leq 0.2\%$, FAO specifications uncontrolled these two indicators.

This standard is a revision of GB 437-1993 "copper sulfate" is.

This standard and GB 437-1993 "copper sulfate" The main differences.

--- cancel the non-agricultural use of copper sulfate specifications and at the same time canceled and classification;

--- This standard increased the impurity arsenic, lead and cadmium control targets as. arsenic content $\leq 25\text{mg/kg}$, the mass fraction of lead

$\leq 125\text{mg/kg}$ and cadmium content $\leq 25\text{mg/kg}$.

The standard proposed by China Petroleum and Chemical Industry Association.

This standard by the National Pesticide Standardization Technical Committee (SAC/TC133).

This standard is drafted. Shenyang Chemical Research Institute.

Participated in the drafting of this standard. Otis Qingdao Biotechnology Co., Ltd., Jiangsu dragon Chemical Co., Ltd.

2 Normative references

Terms of the following documents become provisions of this standard by reference in this standard. For dated reference documents, all later

Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to agreements based on this standard

Whether the latest versions of these documents. For undated references, the latest version applies to this standard.

Preparation GB/T 601 standard titration solution Chemicals

GB/T 1604 pesticide regulations for acceptance of goods

GB/T 1605-2001 sampling commercial pesticides

GB 3796 pesticide packaging General

3.1 Appearance

Blue or blue-green crystals, with no visible foreign matter.

3.2 Technical Specifications

Copper sulfate should meet the requirements of Table 1.

Table 1 copper sulfate Control Project Index

Item Index

Copper sulfate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) content /% ≥ 98.0

Arsenic mass fraction $a/(\text{mg/kg}) \leq 25$

Pb mass fraction $a/(\text{mg/kg}) \leq 125$

Cadmium mass fraction $a/(\text{mg/kg}) \leq 25$

Water insoluble /% ≤ 0.2

Acidity (H_2SO_4 basis) /% ≤ 0.2

When a normal production, the mass fraction of arsenic, lead and cadmium content mass fraction was measured at least once every three months.

Test Method 4

4.1 Sampling

In accordance with GB/T 1605-2001 of "original drug product sampling" approach.

Determining Sample packages with random number table method, the final sample

The amount should be less than 100g.

4.2.1 heating

After heating, the color should be blue to white, water was added to restore the color blue after cooling.

4.2.2 Precipitation

It was added dropwise a solution of barium chloride in the presence of hydrochloric acid, a white precipitate.

Determination of the mass fraction of copper sulfate 4.3

4.3.1 Method summary

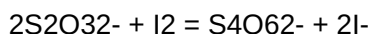
Samples dissolved in water, under acidic conditions, adding an appropriate amount of potassium iodide was reacted with divalent copper, iodine precipitates equimolar to indicate starch

Agent, sodium thiosulfate standard titration solution precipitated iodine titration. From the

volume of consumption of sodium thiosulfate standard titration solution, the sample is calculated sulfur

Acid copper content.

The following reaction formula.



4.3.2 Reagents and solutions

Potassium iodide;

Nitric acid;

Glacial acetic acid;

NaF. saturated solution;

Sodium carbonate. saturated solution;

Acetic acid. phi (CH_3COOH) = 36%;

Starch indicator solution. rho (starch) = 5g/L;

Sodium thiosulfate standard titration solution. Ba ($\text{Na}_2\text{S}_2\text{O}_3$) = 0.2mol/L, according to GB/T 601 and calibration formulations.

4.3.3 Determination Step

About 1g sample was weighed (accurate to 0.0002g) in 250mL Erlenmeyer flask, 100mL of water was added to dissolve, plus three drops of concentrated nitric acid, boiling,

Cooling, saturated sodium carbonate solution was added dropwise until a trace precipitate appears, then 4mL acetic acid solution was added, the solution was slightly acidic

Resistance, plus 10mL saturated sodium fluoride solution, 5g of potassium iodide titration with standard sodium thiosulfate solution titrated to a pale yellow solution. plus

Starch indicator solution 3mL, continue titration to the disappearance of the blue.

4.3.4 computing

The mass fraction of copper sulfate in the sample 1 (%) according to equation (1).

$$1 = \text{Ba}$$

$$\text{Qiao} \cdot \text{M} \cdot$$

(1)

Where.