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Methyltin mercaptide

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Table of Contents

Methyltin mercaptide

1 Scope

This Standard specifies the requirements, test methods, inspection rules, marking, packaging, storage, transportation, quality certificate, and contents of contract (or order form) of methyltin mercaptide.

This Standard applies to methyltin mercaptide produced from tin and isooctyl thioglycolate as raw materials.

2 Normative references

The following documents are indispensable for the application of this document. For the dated references, only the editions with the dates indicated are applicable to this document. For the undated references, the latest edition (including all the amendments) are applicable to this document.

GB/T 601 Chemical reagent - Preparations of reference titration solutions

GB/T 603 Chemical reagent - Preparations of reagent solutions for use in test methods (neq ISO 6353-1:1982)

GB/T 3143 Color determination method of liquid chemicals (Hazen unit - Platinum-cobalt scale)

GB/T 4472 Determination of density and relative density for chemical products

GB/T 6488 Liquid chemicals - Determination of refractive index at 20 Celsius

GB/T 6678 General principles for sampling chemical products

GB/T 6680 General rules for sampling liquid chemical products

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

GB/T 8170 Rules of rounding off for numerical values and expression and judgement of limiting values

GB/T 10247 Methods of viscosity measurement

GB/T 10574.1 Methods for chemical analysis of tin-lead solders - Determination of tin content

The determination of sulfur content shall be carried out in accordance with the provisions of Appendix A.

5.4 Determination of density

Use the method of GB/T 4472 for determination.

5.5 Determination of viscosity

Use the "2 Capillary tube method" in GB/T 10247 for determination.

5.6 Determination of light transmittance

The determination of light transmittance shall be carried out in accordance with the provisions of Appendix B.

5.7 Determination of chromaticity

Use the method of GB/T 3143 for determination.

5.8 Determination of refractive index

Use the method of GB/T 6488 for determination.

5.9 Determination of acid value

The determination of acid value is carried out in accordance with the provisions of Appendix C.

5.10 Visually inspect the color and appearance of the product.

6 Inspection rules

6.1 Inspection and acceptance

6.1.1 The product shall be inspected by the quality and technical supervision department of the supplier, to ensure that the product conforms to the provisions of this Standard or the contract (or order form). It shall fill out the product quality certificate.

6.1.2 The purchaser shall inspect the received products according to the provisions of this Standard. If the inspection result does not conform to this Standard or the content of the contract (or order form), it shall be submitted within 30 days from the date of receipt of the product. The supplier and the purchaser shall negotiate and resolve it. If arbitration is required, both the supplier and the purchaser shall jointly collect the arbitration samples from the purchaser.

6.2 Batch grouping

product batch number, testing items, sampling date, etc. At the same time, paste a seal on the seal of the sample container. The seal must be signed by both the supplier and the purchaser.

6.5 Determination of inspection results

6.5.1 The rounding and determination of the numerical value of inspection results shall be carried out in accordance with GB/T 8170.

6.5.2 If one of the inspection results of the product quality index does not conform to the provisions of 4.3 of this Standard or the contract (or order form), it shall take double the specimen quantity specified in 6.4.2.1 from this batch of products to repeat the test. If the repeated test results are all conformity, this batch of products is determined to be conformity. If the repeated test results still do not meet the requirements of 4.3 of this Standard, this batch is determined to be nonconformity.

6.5.3 When the color and appearance quality do not meet the requirements of this Standard, the barrel shall be determined to be nonconformity.

7 Marking, packaging, storage, transportation

7.1 Marking

Each barrel of product shall indicate:

a) Manufacturer's name and trademark;

b) Product name;

c) Executive standard and designation;

d) Product batch number and mass;

e) Production date, manufacturer address, and user instructions, etc.

7.2 Packaging, storage, transportation

7.2.1 Packaging.

It shall be packed in Teflon iron barrels or polyethylene blow-molded barrels, 250 kg/barrel. It can also be packaged according to user requirements.

7.2.2 Storage and transportation.

Store the product in a cool and dry place; after use, seal it immediately. During transportation, this product shall be protected from rain and sunlight, and be handled with care.

Appendix A

(Normative)

Determination of sulfur content in methyltin mercaptide - Iodometric titration

A.1 Scope

This part specifies the method for the determination of sulfur content in methyltin mercaptide.

This part applies to the determination of sulfur content in methyltin mercaptide. Determination range: 5.00%~15.00%.

A.2 Method summary

Dissolve the specimen in absolute ethanol; use iodine standard solution to titrate to yellow as the end point.

A.3 Reagents

A.3.1 Absolute ethanol.

A.3.2 Iodine standard solution [$c(1/2I_2)$=0.05 mol/L].

A.3.2.1 Preparation: Weigh 32.8 g of iodine and 87.5 g of potassium iodide; dissolve in 100 mL of water; dilute to 5000 mL and shake well; store in a brown bottle.

A.3.2.2 Calibration: Weigh 1.5 g of benchmark arsenic trioxide (accurate to 0.0001 g); add 40 mL of sodium hydroxide solution [c(NaOH)=1 mol/L] to dissolve; add 2 drops of phenolphthalein indicator (10 g/L); use sulfuric acid solution [$c(1/2H_2SO_4)$=1.0 mol/L] for neutralization. Add 3 g of sodium bicarbonate solution to dissolve; transfer to a 200 mL volumetric flask; use water to dilute to the mark and shake well. Pipette 10 mL of arsenic trioxide solution (this solution contains 0.0075 g of arsenic trioxide per milliliter). Add 20 mL of saturated sodium bicarbonate solution, 3 mL of starch (10 g/L); use the prepared iodine standard solution to titrate, until the solution turns blue; do a blank test at the same time.

According to formula (A.1), calculate the actual concentration of iodine standard solution:

$$c = \frac{m}{(V_1 - V_0) \times 0.049\ 46} \qquad \cdots\cdots (A.1)$$

Where:

c - The actual concentration of iodine standard solution, in moles per liter (mol/L);

V_1 - The volume of the iodine standard solution consumed by the titration of arsenic trioxide during calibration, in milliliters (mL);

V_0 - The volume of the iodine standard solution consumed by the titration of blank test solution during calibration, in milliliters (mL);

0.04946 - The molar mass of arsenic trioxide, in grams per mole (g/mol);

m - The mass of arsenic trioxide, in grams (g).

A.4 Analytical procedure

A.4.1 Test portion

Weigh 0.2 g of the specimen, accurate to 0.0001 g.

A.4.2 Number of determinations

Perform two determinations independently and take the average value.

A.4.3 Blank test

Do a blank test with the test portion.

A.4.4 Place the test portion (4.1) in a 150 mL conical flask; add 40 mL of absolute ethanol and shake well. Use iodine standard solution to titrate to yellow as the end point.

A.5 Calculation of analysis result

The sulfur content is calculated in terms of the mass fraction w(S) of sulfur. The value is expressed in %; is calculated according to formula (A.2).

$$w(S) = \frac{c \cdot (V_1 - V_2) \times 0.032}{m} \times 100 \qquad \cdots\cdots (A.2)$$

Where:

c - The actual concentration of iodine standard solution, in moles per liter (mol/L);

V_1 - The volume of the iodine standard solution consumed by the titration of test portion solution during the determination, in milliliters (mL);

V_2 - The volume of the iodine standard solution consumed by the titration of blank solution during the determination, in milliliters (mL);

0.032 - The molar mass of sulfur, in grams per mole (g/mol);

Appendix B

(Normative)

Determination of light transmittance in methyltin mercaptide - Spectrophotometry

B.1 Scope

This part specifies the method for the determination of light transmittance in methyltin mercaptide.

This part applies to the determination of light transmittance in methyltin mercaptide. Determination range: 0.00%~100.0%.

B.2 Method summary

Use distilled water as the standard solution. Set its light transmittance (T) as 100%. The light transmittance of the tested specimen is obtained relative to the standard solution.

B.3 Apparatus

B.3.1 Visible spectrophotometer.

B.3.2 Cuvette (2 cm).

B.4 Analytical procedure

B.4.1 Adjust the wavelength knob to move the wavelength to the desired position.

B.4.2 Put distilled water in one of the cuvettes; put the test specimen in the rest. Place the cuvette in the colorimetric stand inside the sample cell; close the sample cell cover.

B.4.3 Push the distilled water into the optical path and display the (T) state.

B.4.4 Press the "100%" key, to display that the sample cell is open. Press the "0%" key, to display "T0.0".

B.4.5 Cover the sample cell cover and press the "100%" key, until "T100.0" is displayed.

B.4.6 Push the specimen to be tested into the optical path; display the (T) value of the specimen.

B.5 Allowable error

Appendix C

(Normative)

Determination of acid value in methyltin mercaptide - Sodium hydroxide titration

C.1 Scope

This part specifies the method for the determination of acid value in methyltin mercaptide.

This part applies to the determination of acid value in methyltin mercaptide. The determination range is 0.1 mg/g~100.00 mg/g.

C.2 Method summary

Dissolve the specimen in an organic solvent; add phenol red indicator; use the standard solution of sodium hydroxide to titrate to light red as the end point.

C.3 Reagents

C.3.1 Isopropyl alcohol.

C.3.2 Sodium hydroxide standard solution (0.1 mol/L): Preparation and calibration are carried out according to GB/T 601.

C.3.3 Phenol red: Weigh 0.1 g of phenol red indicator in 14.2 mL of 0.02 mol/L sodium hydroxide solution; use water to dilute to 250 mL.

C.4 Analytical procedure

C.4.1 Test portion

Weigh 1.5 g~2.0 g of the specimen (accurate to 0.0001 g).

C.4.2 Number of determinations

Perform two independent determinations and take the average value.

C.4.3 Blank test

Do a blank test with the test portion.

C.4.4 Determination

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