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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 1886.100-2015

National Food Safety Standard -- Food Additives -- Disodium edetate

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1 Scope

This standard applies to food additives disodium edetate.

2 molecular formula, relative molecular mass and structural formula

Formula 2.1 $C_{10}H_{14}N_2Na_2O_8 \cdot 2H_2O$

2.3 relative molecular mass

372.24 (according to 2007 international relative atomic mass)

3.1 Sensory requirements

Sensory requirements shall comply with the requirements of Table 1.

Table 1 Sensory requirements

Project requires test methods Color status white Crystalline powder The sample was placed in a clean, dry white porcelain dish, under natural light, observed Color and status

3.2 Physical and Chemical Indicators

Physical and chemical indicators should be consistent with the provisions of Table 2.

Table 2. Physical and chemical indicators

Item Index Test Method The content of disodium edetate (In $C_{10}H_{14}N_2Na_2O_8 \cdot 2H_2O$ meter), w /%

99.0 to 101.0 Appendix A A.3 pH 4.3 ~ 4.7 in Appendix A A.4 Nitrilotriacetic acid, w /% <= 0.1 A.5 Appendix A Calcium (Ca) by test A.6 in Appendix A Lead (Pb)/(mg/kg) <= 10.0 GB

5009.12

Appendix A Testing method

A.1 General Provisions This standard reagents and water in the absence of other specified requirements, refer to the three water analytical reagent and GB/T 6682 regulations. test The required standard solution, standard solution for measuring impurities, formulations and products, did not indicate when the other requirements according to GB/T 601, GB/T 602 And the provisions of GB/T 603 was prepared. Solution was used in the tests did not indicate what is formulated with solvent, it refers to an aqueous solution.

A.2 Identification Test A.2.1 weighed amount of sample preparation 50mg/sample solution mL, take a platinum wire, moistened with hydrochloric acid solution, dipped into the sample solution, the colorless fire Flame burning, the flame was bright yellow.

A.2.2 5mL water added to the tube, add 2 drops of ammonium thiocyanate test solution and 2 drops of ferric chloride test solution. The solution was dark red. Added 50mg Sample solution crimson disappear.

A.3 Determination of disodium edetate content (C10H14N2Na2O8 . 2H2O basis)

A.3.1 Reagents and materials A.3.1.1 calcium carbonate.

A.3.1.2 hydrochloric acid solution. 2.7mol/L.

A.3.1.3 sodium hydroxide solution. 1mol/L.

A.3.1.4 hydroxy naphthol blue indicator.

A.3.2 Analysis step Accurately weigh 5.0000g sample was transferred to a 250mL volumetric flask, add water, dissolve and dilute to the mark, this is a sample solution. accurate Weigh 200mg of calcium carbonate, placed in 400mL beaker, was added 10mL of water, the slurry was shaken. Cover the surface of the dish, along the mouth of the beaker insert shift Tube, 2mL was added at a concentration of 2.7mol/L hydrochloric acid solution, and shake to dissolve calcium carbonate. Rinsing with water down to the outer surface of the pipette, the table Side dish and side walls beaker and diluted to 100mL. With stirring (preferably with a magnetic stirrer) by 50mL sample solution add about Buret 30mL. Then add 15mL concentration of 1mol/L sodium hydroxide solution and 300mg hydroxy naphthol blue indicator and continue with the sample Titration to the blue end.

A.3.3 Calculation Results Disodium edetate content (C10H14N2Na2O8 . 2H2O meter) mass fraction w1, according to equation (A.1) Calculated.

w1 = 929.8 x V x 100% (A.1)

Where.

929.8 --- conversion factor;

M --- mass of calcium carbonate, in milligrams (mg);

V --- volume of the sample solution consumed during titration, in milliliters (mL).

A.4 pH measurement Weighed amount of sample, formulated at a concentration of 10mg/mL sample solution, and then with a pH meter.

A.5 Determination of nitrilotriacetic acid A.5.1 Instruments and Equipment High performance liquid chromatograph. equipped with UV detector, detection wavelength of 254nm.

A.5.2 reference chromatographic conditions A.5.2.1 Column. 4.6mm x 15cm, packing octyl bonded to silicon 5mm ~ 10mm porous microparticles of silica (Zorbax8 Or other equivalent); or other equivalent column.

A.5.2.2 Flow rate. about 2mL/min.

A.5.2.3 Injection volume. about 50uL.

Retention time A.5.2.4 nitrilotriacetic acid and disodium edetate were 3.5min and 9min.

A.5.3 Analysis step A.5.3.1 Preparation of stationary phase Methanol solution of tetrabutyl ammonium hydroxide in 200mL water was added 10mL of 25% concentration, with 1mol/L phosphoric acid solution is adjusted to pH to 7.5 +/- 0.1. The solution was transferred to a 1000mL volumetric flask, add 90mL of methanol, and then diluted with water to volume, and mix with 0.5um membrane filtration, deaeration standby.

A.5.3.2 Preparation of copper nitrate solution At a concentration of 10mg/mL.

A.5.3.3 Preparation of standard stock solution The 100mg nitrilotriacetic acid was transferred to a 10mL volumetric flask, add 0.5mL ammonia, mix, diluted with water to the mark.

A.5.3.4 Preparation of standard solutions 1.0g sample will be transferred to 100mL volumetric flask, add 100uL stock standard solution, dilute to the mark with a copper nitrate solution, mix uniform. If desired, ultrasound may be dissolved.

A.5.3.5 Preparation of sample solution 10mg/mL, the solvent is a copper nitrate solution.

System suitability test A.5.3.6 A.5.3.6.1 suitability requirements 1 Separation of nitrilotriacetic acid and disodium edetate is not less than 4.0.

A.5.3.6.2 suitability requirements 2 The results replicate injections of the relative standard deviation <=2.0%.

A.5.3.7 Determination In A.5.2 reference chromatographic conditions, respectively standard solution and sample solution chromatographic analysis, record the chromatograms, calculate the peak response We should value.

A.5.4 results found Response in the sample solution nitrilotriacetic acid peaks should not

exceed the standard solution and the sample solution was nitrilotriacetic acid peak response Should the value of the difference (<=0.1%).

A.6 calcium (Ca) Test Weighed amount of sample, formulated at a concentration of 50mg/mL of the sample solution, add 2 drops of methyl red test solution in the sample solution with concentration To 6mol/L of aqueous ammonia. Was added dropwise at a concentration of 3mol/L hydrochloric acid until the solution was just acidic and then oxalic acid is added 1mL Ammonium test solution (3.5g of ammonium oxalate was dissolved in 100mL of water). There should be no precipitate formed.