



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

GB 1886.83-2016

**National Food Safety Standard -- Food Additives -- Ammonium
phospholipids**

食品安全国家标准 食品添加剂 铵磷脂

(English Translation)

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1 Scope

This standard applies to edible fats (usually hardened vegetable oil) by glycerol to produce fatty acid glycerides and diglycerides mixture, Phosphorus phosphide with phosphorus pentoxide, and ammonia in the food additives derived from ammonium phospholipids.

2 Structural formula

Wherein R may be a mono- or diglyceride.

3.1 Sensory requirements

Sensory requirements shall comply with the requirements of Table 1.

Table 1 sensory requirements

The project requires a test method State of oil-like semi-solid state Take the appropriate amount of sample in a clean, dry white porcelain dish Natural light to observe its state

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 Phosphorus (calculated as P), w /% 3.0 to 3.4 Appendix A, A.3 Ammonia nitrogen (in N), w /% 1.2 to 1.5 Appendix A, A.4 Lead (Pb)/(mg/kg) $\leq$ 2.0 GB 5009.12 Appendix A Testing method A.1 General provisions the reagents and water used in this standard refer to the pure reagent and the tertiary water specified in GB/T 6682 when no other requirements are specified. Reagent Standard solution, impurity determination standard solution, preparation and products used in the absence of other requirements are marked by GB/T 601, GB/T 602, GB/T 603. The solution used in the test refers to the aqueous solution when it is not specified in the formulation of the solvent.

A.2 Identification test A.2.1 Identification of phosphate sites A.2.1.1 Reagents and materials A.2.1.1.1 anhydrous sodium carbonate.

A.2.1.1.2 Nitric acid.

A.2.1.1.3 Ammonium molybdate solution.

A.2.1.2 Identification method Weigh 1g sample, placed in porcelain evaporative dish, add 2g anhydrous sodium carbonate, in the electric furnace heating and burning, cooling with 5mL water and 5mL nitric acid dissolved residue, add 5mL ammonium molybdate, heated to boiling, resulting in yellow precipitate.

A.2.2 Identification of fatty acids and ammonium ions A 1 g sample and 25 mL of a 0.5 mol/L ethanol-potassium hydroxide solution were heated to reflux, and the end of the condenser overflowed ammonia and allowed Litmus paper color change. After refluxing for 1 h, the residue was cooled with potassium soap.

A.3 Determination of phosphorus (calculated as P) A.3.1 Reagents and materials A.3.1.1 Sulfuric acid.

A.3.1.2 Nitric acid.

A.3.1.3 perchloric acid.

A.3.1.4 ammonium vanadate-ammonium molybdate solution. Dissolve 20 g of ammonium molybdate and 1 g of ammonium vanadate separately with water, mix the two solutions, add 140 mL of nitrate Acid, diluted with water to 1000mL, mix.

A.3.1.5 standard solution of phosphorus pentoxide. Potassium dihydrogen phosphate was baked at $110^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 2 h, cooled in a desiccator and weighed 3.835 g (Accurate to 0.0005g), dissolved in water, into the 1000mL volumetric flask, diluted with water to the mark, mix. This solution 1mL containing pentoxide Phosphorus 2. 2 mg.

A.3.1.6 standard solution of phosphorus pentoxide. 50.0mL standard solution for accurate extraction of 500,000 volumetric solution in 500mL volumetric flask, Diluted with water to the mark, mix. This solution 1mL containing 0.2mg of phosphorus pentoxide.

A.3.2 Instruments and equipment Spectrophotometer. The wavelength range contains 420nm.

A.3.3 Analysis steps A.3.3.1 Preparation of sample solution. 1.5 g to 1.6 g of the sample was weighed with a small weighing flask, accurate to 0.0002 g, placed in the presence of 5 mL of sulfur Acid and 10 mL of nitric acid in a 300 mL Kjeldahl flask. In the electric plate or electric furnace on the small fire heating digestion, constantly gently shake the flask to make the sample Completely contact with acid, and then strong fire heating reaction. Repeatedly add the same amount of nitric acid (the flask should be cooled before each addition) to the sample completely Decomposition, so that the solution becomes clear and golden yellow, cooling, adding 5mL perchloric acid, heating the sample solution oxidation

and the formation of white smoke in the bottle Fog, add 5mL of water after cooling, heated to white smoke exhausted. After cooling, dilute the test solution with water, then cool, all transferred to 500mL volumetric flask, and diluted with water to the mark, shake.

A.3.3.2 Preparation of blank test solution. The number and amount of other operations and reagents are the same as those of A.3.3.1 except that no sample is added.

A.3.3.3 Preparation of colorimetric solutions. Each solution was transferred to 3 100 mL volumetric flasks according to Table A.1, 25 mL of vanadic acid Ammonium-ammonium molybdate solution, shake, dilute to the mark at 20 ° C and shake again. After standing for 10 min for determination.

Table A.1 Preparation of colorimetric solution

Capacity bottle number Remove the volume of solution/mL Test solution of phosphorus pentoxide standard working solution A 25.0 0 25.0 B 30.0 0 25.0 C 0 25.0 0 A.3.3.4 Determination. the use of 1cm cuvette, at 420nm wavelength, volumetric flask A solution to adjust the luminosity was zero, respectively, volumetric flask B solution and volumetric flask C solution absorbance.

A.3.4 Calculation of results the mass fraction w_1 of phosphorus (calculated as P) is calculated according to formula (A.1) $w_1 = A_1 A_2 \div x 0.436 \times m \times x 100\%$ (A.1) where.

A_1 - the absorbance of the solution in volumetric flask B;

A_2 - absorbance of sample test;

0.436 --- phosphorus pentoxide converted to phosphorus coefficient;

1000 --- conversion factor;

m --- the quality of the sample, in grams (g);

--- conversion factor.

A.4 Determination of ammonia nitrogen (in N) A.4.1 Reagents and materials A.4.1.1 silicone oil.

A.4.1.2 Boric acid solution. 20 g/L.

A.4.1.3 Sodium hydroxide solution. 400 g/L.

A.4.1.4 Standard titration solution for hydrochloric acid. $c(\text{HCl}) = 0.02 \text{ mol/L}$.

A.4.1.5 Bromocresol Green-Methyl Red Mixed Indicator. 5.0 mL of 1 g/L bromocresol green ethanol solution with 2.0 mL of 1 g/L methyl red Ethanol solution, diluted with 95% ethanol to 30 mL.

A.4.2 Instruments and equipment A.4.2.1 Glass tube type bottle. about 2cm in diameter and about 1.3cm in length.

A.4.2.2 Distillation apparatus. According to Figure A.1, or other nitrogen distillation apparatus with the same distillation capacity.

A.4.2.3 Distillation heating device. Steam generator.

The unit is in millimeters Description.

A - distillation bottle;

B - splash tube;

C - dropping funnel;

D --- condenser;

E --- absorption bottle.

Figure A.1

A.4.3 Analysis steps A.4.3.1 After the instrument is installed, turn on the steam generator and prepare the steam.

A.4.3.2 Weigh approximately 0.2 g of sample with a small weighing bottle, accurate to 0.0002 g. The weighing flask was placed in a distillation flask together with the sample. In steaming the 250 ml of water was added to the flask and the distillation flask was attached to the distillation unit. Remove 10.0mL boric acid solution and 1mL bromocresol green-A the base red mixed indicator solution was placed in a 500 mL conical absorption flask and connected to a distillation unit. Add the appropriate amount of water in the absorption bottle to ensure the diversion tube the outlet is located under the absorption liquid level.

A.4.3.3 Add 75 mL of sodium hydroxide solution through the separatory funnel of the distillation unit and add 20 mL to 30 mL of water as the solution will flow Flush the funnel, left 3mL ~ 5mL water when the piston closed. By passing the heated steam, after distilling at least.200 mL of distillate, use a small amount of water Flush the lower end of the diversion tube, remove the absorption bottle, stop heating. Distillation process in the distillation of a large number of bubbles, can be added 2 drops of silicone oil.

A.4.3.4 Titration solution with hydrochloric acid standard titration Absorbent liquid in the absorption bottle, titration to wine red is the end point.

A.4.3.5 Make a blank test at the same time. Blank test in addition to no sample, the other operation and add a variety of reagents and test solution measured completely the same.

A.4.4 Calculation of results Ammonia nitrogen (in N) mass fraction w_2 , calculated according to formula (A.2).

$V_0 - V_1$

$1000 \times c \times M$