



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

GB 5009.239-2016

National food safety standard - Determination of Acidity in Food

食品安全国家标准 食品酸度的测定

(English Translation)

Issued on: August 31, 2016

Implemented on: March 1, 2017

**Issued by: National Health and Family Planning Commission of the
People's Republic of China**

Table of Contents

Foreword...	3
1 Application Scope...	4
Method I Phenolphthalein Indicator Method...	4
2 Principle...	4
3 Reagents and Materials...	4
4 Apparatus...	5
5 Analytical Procedure...	6
6 Expression of Analytical Results...	10
7 Accuracy...	13
Method II pH Method...	13
8 Principle...	13
9 Reagents and Materials...	13
10 Apparatus...	14
11 Analytical Procedure...	14
12 Expression of Analytical Results...	15
13 Accuracy...	16
Method III Potentiometric Titrator Method...	16
14 Principle...	16
15 Reagents and Materials...	16
16 Apparatus...	16
17 Analytical Procedure...	16
18 Expression of Analytical Results...	18
19 Accuracy...	19

Foreword

This Standard replaces GB 5413.34-2010, National Food Safety Standard - Determination of Acidity in Milk and Milk Products, GB/T 22427.9-2008, Starch and Derived Products - Determination of Acidity and GB/T 5517-2010, Inspection of Grain and Oils - Determination of Acidity in Grain and Produce.

Compared with GB 5413.34-2010, GB/T 22427.9-2008 and GB/T 5517-2010, the

major changes of this Standard are as follows.

-- it changes the standard name into "National Food Safety Standard -

Determination of Acidity in Food";

-- it integrates the methods for the determination of acidity in food specified in GB

5413.34-2010, GB/T 22427.9-2008 and GB/T 5517-2010.

National Food Safety Standard -

Determination of Acidity in Food

1 Application Scope

This Standard specifies the methods for the determination of acidity in milk and milk products, starch and derived products, grain and grain products.

The first method of this Standard applies to the determination of acidity in milk and milk products, starch and derived products, grain and grain products; the second method applies to the determination of acidity in milk powder; the third method applies to the determination of acidity in milk and milk products.

Method I Phenolphthalein Indicator Method

2 Principle

Use phenolphthalein as the indicator after the treatment of specimen; use 0.100 0 mol/L sodium hydroxide standard solution to titrate to neutral; use the volume of sodium hydroxide consumed to determine the acidity of specimen by calculation.

3 Reagents and Materials

Unless specified otherwise, all reagents used for this method are analytically pure and the water is of grade 3 as specified in GB/T 6682.

3.2.1 Sodium hydroxide solution standard solution (0.100 0 mol/L)

Weigh 0.75 g of working chemical potassium acid phthalate which has been dried to constant weight in an electric drying oven at 105°C ~ 110°C; add 50 mL of water free of carbon dioxide to dissolve; add 2 drops of phenolphthalein indicator (10 g/L); use prepared sodium hydroxide solution to titrate until the solution appears pink; maintain

it for 30 s. Meanwhile, carry out blank test.

3.2.2 Reference solution

Dissolve 3 g of cobalt sulfate heptahydrate in water; add dropwise to 100 mL.

3.2.5 Distilled water free of carbon dioxide

Boil water for 15 min to expel carbon dioxide; cool and confine the water.

4.7 Pulverizer. it is capable of pulverizing specimen so that more than 95% of specimen passes sieve CQ16 [equivalent to pore diameter 0.425 mm (mesh number 40)]; it will not generate heat in the grinding chamber when pulverizing specimen.

5.1.1 Specimen preparation

Transfer all specimen to a clean, dry container (with a seal lid) which is about 2 times of the volume of specimen; immediately put on the lid; rotate and oscillate repeatedly to mix up specimen. During the operation, efforts shall be taken to avoid specimen from exposure to the air.

5.1.2 Determination

Weigh 4 g of specimen (accurate to 0.01 g) to place into 250 mL conical flask. Use measuring cylinder to take 96 mL of water of about 20°C (3.2.5) to dissolve specimen once again; stir before allowing to stand for 20 min.

5.1.3 Blank titration

Use 96 mL of water (3.2.5) to conduct blank test; read the millimetres of sodium hydroxide standard solution consumed (V_0). The volume of sodium hydroxide consumed by blank shall not be less than 0, or else, distilled water as required shall be prepared and used once again.

5.2.1 Preparation of reference solution

Add 2.0 mL of reference solution to conical flask containing an equivalent volume of corresponding solution; rotate it gently to mix up; then obtain standard reference colour. If several similar products are to be determined, the reference solution can be used for

the whole determination process, but the time shall not be more than 2 h.

5.2.4 Condensed milk

Weigh 10 g (accurate to 0.001 g) of specimen mixed up to place in 250 mL conical flask; add 60 mL of water newly boiled and cooled to room temperature; mix up; add

2.0 mL of phenolphthalein indicator; use sodium hydroxide standard solution for titration after mixing up; rotate the flask while adding dropwise until the colour is similar to that of reference solution and does not fade away within 5 s.

5.2.5 Casein

Weigh 5 g (accurate to 0.001 g) of specimen ground and mixed up to place into conical flask; add 50 mL of water (3.2.5); store for 4 h ~ 5 h at room temperature (18°C ~ 20°C) or heat to 45°C in water bath and maintain it at the temperature for 30 min; add another

5.2.6 Blank titration

Use an equivalent volume of water (3.2.5) to conduct blank test; read the millimetres of sodium hydroxide standard solution consumed (V_0) (applicable to 5.2.2, 5.2.4 and 5.2.5). Use 30 mL of neutral ethanol-diethyl ether mixture to carry out blank test; read the millimetres of sodium hydroxide standard solution consumed (V_0) (applicable to 5.2.3).

5.3.1 Specimen pretreatment

Specimen shall be mixed up.

5.4.1 Specimen preparation

Take 80 g ~ 100 g of specimen mixed up; use pulverizer to pulverize specimen so that more than 95% of specimen passes sieve CQ16 [pore diameter 0.425 mm (mesh number 40)]; mix up all specimen sieved after pulverization; place in ground flask; and immediately determine specimen prepared.