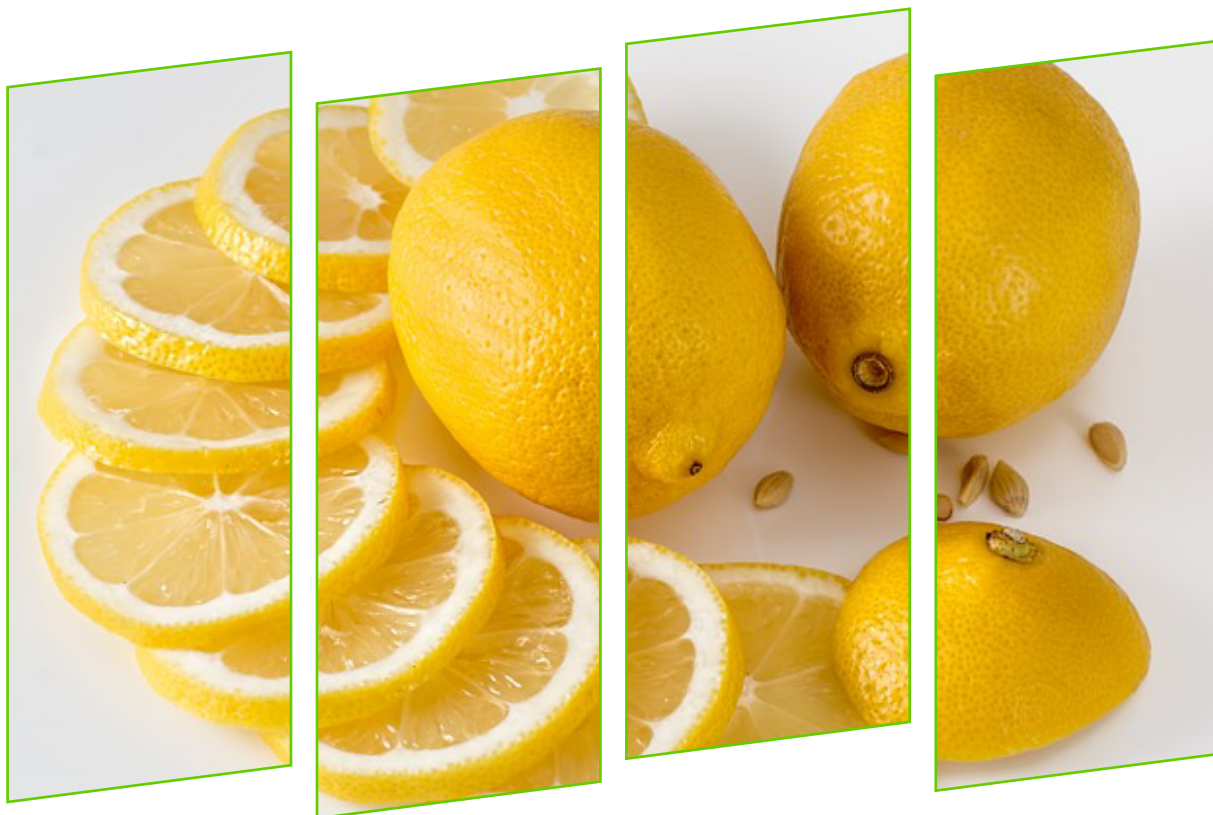




GB 5009.239-2016

National Food Safety Standard Determination of Acidity in Foods

食品安全国家标准

食品酸度的测定

National Health and Family
Planning Commission

Release Date: Aug. 31, 2016
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Translated by ChemLinked

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National Standard of the People's Republic of China

GB 5009.239-2016

In Replacement of GB 5413.34-2010 etc.

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食品酸度的测定

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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:

——the name of the standard has been revised to “National food safety standard Determination of acidity in foods”;

——the determination methods of acidity in foods in GB 5413.34-2010, GB/T 22427.9-2008 and GB/T 5517-2010 have been combined in this standard.

National Food Safety Standard

Determination of Acidity in Foods

1 Scope

This standard specifies the method for the determination of acidity in raw milk and milk products, starch and its derived products and grain and its products.

Method I in this standard applies to the determination of acidity in raw milk and milk products, starch and its derived products and grain and its products; Method II in this standard applies to the determination of acidity in milk powder; Method III applies to the determination of acidity in milk and other milk products.

Method I Phenolphthalein Indicator Method

2 Principles

After the treatment of test sample, the phenolphthalein is used as an indicator, it is titrated with 0.1000 mol/L sodium hydroxide standard solution to neutral, and the acidity of the test sample shall be calculated and determined by the consumed volume of sodium hydroxide solution.

3 Reagents and Materials

Unless otherwise specified, all the reagents used in this method are analytically pure and the water is the Grade III water specified in GB/T 6682.

3.1 Reagents

3.1.1 Sodium hydroxide (NaOH).

3.1.2 Cobaltous sulfate heptahydrate ($\text{CoSO}_4 \cdot 7\text{H}_2\text{O}$).

3.1.3 Phenolphthalein.

3.1.4 95% ethanol.

3.1.5 Ether.

3.1.6 Nitrogen: with the purity of 98%.

3.1.7 Chloroform (CHCl_3).

3.2 Reagent preparation

3.2.1 Sodium hydroxide standard solution (0.1000 mol/L)

Weigh 0.75 g of potassium hydrogen phthalate the working chemical which is dried to constant weight in the electric oven at 105 °C~110 °C, add 50 mL of carbon dioxide-free

water to dissolve, add 2 drops of phenolphthalein indicator solution (10 g/L), titrate the solution to pink with the prepared sodium hydroxide solution, and keep for 30 s. Meanwhile, perform the blank test.

Note: carbon dioxide shall be restricted in washing bottles or drying tube, in order to prevent the concentration of sodium hydroxide from being affected because of absorbing carbon dioxide. Prevent the solution from absorbing carbon dioxide (CO₂) by forming a closed system by connecting the washing bottle containing 10% sodium hydroxide solution with the burette containing sodium hydroxide solution, or by connecting the end of burette containing fresh sodium hydroxide or calcium oxide.

3.2.2 Reference solution

Dissolve 3 g of cobaltous sulfate heptahydrate with water, and dilute to 100 mL.

3.2.3 Phenolphthalein indicator solution

Weigh 0.5 g of phenolphthalein and dissolve in 75 mL of ethanol with the volume fraction of 95%, add 20 mL of water, then dropwise add sodium hydroxide (3.2.1) to pink, and dilute to 100 mL with water.

3.2.4 Neutral ethanol-ether mixture

Take ethanol and ether of same volume, dropwise add 3 drops of phenolphthalein indicator solution after mixing, and dropwise add sodium hydroxide solution (0.1 mol/L) to reddish color.

3.2.5 Carbon dioxide-free distilled water

Boil the water for 15 min, expel the carbon dioxide, cool down, and seal it.

4 Apparatus and Equipment

4.1 Analytical balance: with the sensitivity of 0.001 g.

4.2 Alkali burette: with the capacity of 10 mL and minimum scale of 0.05 mL.

4.3 Alkali burette: with the capacity of 25 mL and minimum scale of 0.1 mL.

4.4 Water bath.

4.5 Conical flask: 100 mL, 150 mL and 250 mL.

4.6 Ground-glass stoppered conical flask: 250 mL.

4.7 Crusher: with more than 95% of the crushed samples through the CQ16 sieve [equivalent to the aperture of 0.425 mm (40 mesh)], and grinding chamber generates no heat during grinding the sample.



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