National Standard of the People's Republic of China

GB 5413.39—2010

National Food Safety Standard

Determination of Nonfat Total Milk Solids in Milk and Milk Products

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Preface

This Standard replaces *GB 5409-85 Analytical Method of Milk* and *GB/T 5416-85 Analytical Method of Cream*.

The issuance status of all previous editions replaced by this Standard is:

——GB/T 5409-85;

——GB/T 5416-85

National Food Safety Standard
Determination of Nonfat Total Milk Solids in Milk and Milk Products

1. Scope

This Standard specifies the determination method of nonfat total milk solids in raw milk, pasteurized milk, sterilized milk, modulation milk and fermented milk.

This Standard is applicable to the determination method of nonfat total mild solids in raw milk, pasteurized milk, sterilized milk, modulation milk and fermented milk.

2. Cited Normative Documents

The cited normative documents are indispensable for the application of this Standard. For the cited documents indicated with date, all of its subsequent amendment lists (not including errata) or revisions are not applicable to this Standard. The latest versions including all subsequent amendment lists of all cited documents without date indicated are applicable to this Standard.

3. Principle

When determining the nonfat total milk solids content in the sample, it is obtained by deducing non-milk ingredients content such as fat and sucrose from total solid content.

4. Reagents and Materials

Unless otherwise specified, all reagents used in this Standard shall be of analytical grade, and water used shall be the third class water specified in GB/T 6682.

4.1 Flat-bottomed pan box: pan box made of stainless steal, aluminum or glass with lid of height 20mm-25mm and Dia. 50mm-70mm.

4.2 Short glass rod: fit for the diameter of the pan box, able to leaning on the pan box wall without effect on lid putting.

4.3 Quarts sand and sand: pass 500μm sieve while left on 180μm sieve. Pass the following suitability test: Put about 20g of marine sand into a pan box together with the short glass rot. Dry it at 100□±2□ for 2h in a drying oven without lid. Cool it to the room temperature in a desiccator with the lid on. Weigh accurately to 0.1mg. Wet the marine sand with 5ml of water. Mix it with the short glass rod. Dry for another 4h in the drying oven. Cool it to the room temperature in the desiccator with the lid on. Weigh accurately to 0.1mg. The difference between two weighing shall not be above 0.5mg. If it is above 0.5mg, treat the marine sand with following procedures before use:

Dip the marine sand in hydrochloric acid solution (25%, v/v) for 3 days with stirring from time to time. Pour out the supernatant as much as possible. Wash the marine sand with water to neutral. Heat the marine sand at 160□ for 4h. Repeat the suitability test above.

5. Instrument and Equipment

5.1 Balance: sense 0.1mg.

5.2 Drying oven.

5.3 Water bath pot.

6. Analytical procedure

6.1 Total Solid Content Determination

Put about 20g of quartz sand or marine sand (4.3) into a flat-bottom pan box (4.1). Dry it at 100□±2□ for 2h in a drying oven and then cool it in a desiccator for 0.5h and weigh it. Repeat the procedures to dry the sample to the constant weight. Weigh accurately 5.0g (to 0.0001g) sample to a pan box dried to the constant weight. Evaporate to dryness with water batch. Wipe of the water on the outside surface of the pan box. Dry it at 100 □±2 □ for 3h in a drying oven. Take it out and cool it for 0.5h in a desiccator and weigh it. Then dry it at 100 □±2 □ for 1h in the drying oven. Take it out, cool and weigh it. Repeat drying and cooling for 1h until the difference between two consecutive weights is not more than 1.0mg. Calculate the total solid content in the sample with Formula (1):

$$X = \frac{m_1 - m_2}{m} \times 100 \quad \cdots\cdots (1)$$

Where:

X—— the total solid content in the sample, g/100g;

m_1——the total weight of pan box, marine sand and sample after drying, g;

m_2——the total weight of pan box and marine sand, g;

m——the weight of sample, g.

6.2 The determination of fat content (test according to the procedures specified in GB 5413.3.

6.3 The determination of sucrose content (test according to the procedure specified in GB 5413.5).

7. Presentation of Test Result

$$X_{NFT} = X - X_1 - X_2 \quad \cdots\cdots (2)$$

Where:

X_{NFT}——the content of nonfat total milk solid content in the sample, g/100g;

X—— the total solid content in the sample, g/100g;

X_1——the fat content in the sample, g/100g;

X_2——the sucrose content in the sample, g/100g.

The final result shall be expressed as the average of two independent determination results under the same test condition, with three significant figures retained.