ICS 67.100
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GB

National Food Safety Standard

GB ×××—2009
replace GB 19645—2005 GB5408.1-1999

Modified milks

Foreword

This standard replaces the hygienic requirements in GB 19645-2005 <Hygiene Standard of Pasteurized milk and Sterilized milk>, GB5408.1-1999 <Pasteurized milk> and GB 5408.2-1999<Sterilized milk>.

This standard is proposed and administrated by Ministry of Health of PR China.

This standard replaces all previous standards, those issued editions are:

---GB5408.1-1999 and GB5408.1-1985

-- GB 19645-2005

Modified milk

1 Scope

This standard specified the requirement of modified milk, it covers the terms and definition, specification, food additives and nutritional fortifier, processing, package, labeling, Storage, transportation and testing.

This Standard applies to processing, circulating and supervision of modified milk.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, the parties reached an agreement in this standard were encouraged to research the possibility of using the latest version of these documents. For undated reference documents, the latest version applies to this standard.

GB 2760 Hygienic standard for uses of food additives

GB 2761 Maximum limits for mycotoxin in foods

GB2762 Maximum limits for contaminants in foods

GB 4789.2 Microbiological examination in foods —Aerobic plate count

GB4789.3 Microbiological examination in foods—Enumeration of coliforms

GB 4789.4 Microbiological examination in foods — Examination of *Salmonella*

GB 4789.10 Microbiological examination in foods—Detection of *Staphylococcus aureus*

GB 4789.18 Microbiological examination in foods— Examination of milk and milk products

GB 4789.26 Microbiological examination in foods—Examination of commercial sterilization of canned food

GB ××× Determination of Fat in foods for infants and young children, raw milk and dairy products

GB ××× Determination of acidity in raw milk and dairy products

GB 5009.5 Determination of protein in foods

GB 7718 General Standards for the labeling of Pre-packed food labels

GB 12693 Good manufacturing practice for dairy products

GB 13432 General standards for the labeling of Pre-packed foods for special dietary uses

GB 14880 Hygienic standard for the use of nutritional fortification substances in food

GB 19301 Raw milk

3 Terms and definition

The following terms and definition will be applied for this standard.

3.1 modified milks

Use more than 80% cow or sheep milk or recombined milk as main materials, and other ingredients, add or not add food additives and nutritional fortification substances, through the process of Pasteurization or Sterilization or similar heat treatment, to produce liquid products including flavored milk and nutrition fortified milk.

4 Specifications

4.1 Requirement of raw material

4.1.1 Raw milk: should meet the requirement of GB19301.

4.1.2 Other materials: should comply with the corresponding hygiene standard and related regulations.

4.2 Sensory requirements

With original taste and flavor of this kind of products its own, without odors and impurities

4.3 Physical and chemical requirements

Should meet the requirement in table 1

Table 1 Physical and chemical requirements

Item	Requirements
Fat[a] /(g/100g) ≥	2.5
Protein (g/100g)	
Cow milk ≥	2.3
Goat milk ≥	2.3
[a] Not apply to skimmed or partly skimmed milk.	

4.4 Contaminates

It should meet the requirement in GB2762.

4.5 Maximum limits for mycotoxin

It should meet the requirement in GB2761.

4.6 Microbiological requirements

The products treated by UHT process should conform to commercial sterilization; the other kinds of product should meet the requirement in table 2.

Table 2 Microbiological requirements

Item	Sampling plan and requirements
Aerobic plate count	n=5,c=2,m=50000cfu/mL,M=100000cfu/mL
Coliforms	n=5,c=2,m=1cfu/mL,M=5cfu/mL
Staphylococcus aureus	n=5, c=0,m=0 cfu/25g
Salmonella	n=5,c=0,m=0cfu/25g,

5 Food additives and nutritional fortification substances

5.1 The quality of food additives and nutritional fortification substances should comply with the corresponding standard and related regulations.

5.2 Each kind of food additives or nutritional fortification substances used and its usage should conform to the regulation in GB2760 and GB 14880.

6 Production Process

The production should meet the requirement of GB12693.

7 Package

Container and package material should meet the requirements of the corresponding standard and related regulation.

8 Labeling

8.1 The labeling should meet the requirement of GB7718 or GB13432 and the corresponding

national regulation.

8.2 The product used 100% milk powder as raw material should be labeled as ‘recombined milk’ in the place next to its product name. The product partly used milk powder as raw material should be labeled as ‘contain ××% recombined milk’, which ‘××%’ is the percentage of milk powder account to total milk solid in modified milk.

9 Storage and transportation

9.1 Storage

The products should be stored in dry and well- ventilated environment. It is not allowed to contact with goods which is toxic, deleterious, volatile, and corrosive or with odor. Modified milk products should be stored in 2-6℃ if the product is not treated by sterilization process.

9.2 Transportation

The products should transport under the condition of no exposure in sun or raining. During transportation, no contact with goods which is either toxic, deleterious, or other factors which will affect the quality of products. Those products without the process of sterilization should transport at the temperature of 2-6℃.

10 Test methods

10.1 Sensory Test

Uniformed liquid without precipitation, coagulation and impurity, it shall be the original taste and flavor, no odors.

10.2 Physical and chemical analysis

10.2.1 Fat: According to GB ××.

10.2.2 Protein: According to GB 5009.5

10.2.3 Non-fat milk solid

10.2.3.1 First method

Prepare a glass vessel with the diameter of 5-7cm, put in 20g finely prepared sea sand, dry in oven at temperature of 95-105℃ for 2 hours, transfer to desiccators, cool for 0.5h and weigh on the analytical balance to the nearest 0.1mg. Weigh 5.0g sample in the above vessel, steam in water bath until dry, wipe the water drop outside the vessel, put it into the oven again at temperature of 95-105℃ for 3 h, transfer to desiccators, cool for 0.5h and weigh on the analytical balance, repeat it until difference between two results not more than 1.0mg. The total solid content is calculated according to formulation 1, Non-fat milk solid is calculated according to formulation 2:

$$X = \frac{m1-m2}{m3-m2} \times 100 \qquad \text{……..(1)}$$

Where:

X is the mass fraction of total solid, as a percentage, of the test sample.

m1 is the mass, in grams, of the vessel with sea sand and total solid;

m2 is the mass, in grams, of the vessel with sea sand;

m3 is the mass in grams, of the vessel with sea sand and the test portion.

$$X = X\,1 - X2 \qquad \text{…….(2)}$$

Where:

X is the mass fraction of non-fat milk solid, as percentage (g/100g), of the test sample;

X1 is the mass fraction of total solid, as percentage (g/100g), of the test sample

X2 is the mass fraction of Fat, as percentage (g/100g), of the test sample.

The result is expressed with two significant digits, the absolute difference between two independent single test results shall not be more than 5% of arithmetic mean.

10.2.3.2 Second method

With the formulation 3 and formulation 2, total solid can be calculated according to the density meter readings and Fat content.

$X3= 0.25x1 + 1.2x2 +0.14$ …….. (3)

Where :

X3 is the mass fraction of total solid, as percentage, of the test sample;

X1 is reading in density meter;

X2 is the mass fraction of fat, as percentage (g/100g), of the test sample.

If 20℃/4℃ density meter is used, the result must plus 2^o to the reading before calculating according to formulation 3. The non-fat milk solid content can be calculated according to formulation 2.

10.2.4 Acidity: According to GB ×××.

10.3 Microbiological test

The instruments and materials for analysis and sampling plan and sample preparation should meet the requirement of GB4789.18.

10.3.1 Aerobic plate count: according to GB 4789.2

10.3.2 Coliforms: according to GB4789.3

10.3.3 Salmonella: According to GB4789.4.

10.3.4Staphylococcus aureus: According to GB4789.10.

10.3.5 Commercial sterilization: According to GB 4789.26