



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

GB 5009.3-2016

**National food safety standard - Determination of Moisture
Content in Foods
(English Translation)**

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Foreword

This Standard replaces GB/T 5009.3-2010 National food safety standard
Determination of moisture in foods, GB/T 12087-2008 Starch - Determination
of moisture content - Oven-drying method, GB/T 18798.3-2008 Instant tea in

solid form - Part 3.Determination of moisture content, GB/T 21305-2007
Cereals and cereal products - Determination of moisture content - Routine
reference method, GB/T 5497-1985 Inspection of grain and oilseeds;
Methods for determination of moisture content, GB/T 8304-2013 Tea -
Determination of Moisture Content, GB/T 12729.6-2008 Spices and
condiments - Determination of moisture content(entrainment method), GB/T
9695.15-2008 Meat and meat products - Determination of moisture content,
GB/T 8858-1988 Method for determination of dry matter and water content in
fruit and vegetable products, SN/T 0919-2000 Method for the determination of
moisture of tea for import and export.

Compared with GB 5009.3-2010, the main modifications in this Standard are
as follows.

- modified the scopes of Method 1 - Direct drying method, Method 2 -
Decompression drying method, Method 3 - Distillation method and
Method 4 - Karl Fischer volumetric method;
- modified the reagents, precision, annotation and analysis steps of
Method 1 - Direct drying method;
- modified the analysis steps of Method 3 - Distillation method;
- deleted the description of the Karl Fischer coulomb method of Method 4
- Karl Fischer volumetric method.

National Food Safety Standard

Determination of Moisture Content in Foods

1 Scope

This Standard specifies the determination method for moisture content in
foods.

Method 1 (Direct drying method) of this Standard is applicable to the
determinations of moisture content in foods such as vegetables, cereals and
their products, aquatic products, soy products, dairy products, meat products,

braised food products, grain (moisture content of less than 18%), oil (moisture content of less than 13%), starch and tea at 101°C ~ 105°C; not applicable to the sample of which the moisture content is less than 0.5g/100g. Method 2 (Decompression drying method) is applicable to the determination of moisture content in high temperature easily decomposed sample and more moisture samples (such as sugar, monosodium glutamate and other food); not applicable to the determination of moisture in sugars added with other raw materials (such as cream candy, soft sweets); not applicable to the sample of which the moisture content is less than 0.5g/100g (excluding sugar and monosodium glutamate). Method 3 (Distillation method) is applicable to the determination of moisture in fruit of more water and more volatile ingredients, spices and condiments, meat and meat products; not applicable to the sample of which the moisture content is less than 1g/100g. Method 4 (Karl Fischer volumetric method) is applicable to the determination of trace moisture in foods; not applicable to the determination of moisture in foods containing oxidizing agents, reducing agents, basic oxides, hydroxides, carbonates, boric acid. Karl Fischer volumetric method is applicable to the sample of which the moisture content is greater than 1.0×10^{-3} g/100g.

Method 1 -- Direct drying method

2 Principle

Using the physical properties of water in food, at 101.3kPa (one atmospheric pressure), the temperature of 101°C ~ 105°C, it shall use volatile method to determine the dry weight loss in sample, including absorbent water, partially crystallized water and substances that are volatile under these conditions. Calculate the moisture content by the weighing values before and after drying.

3 Reagents and materials

Unless otherwise stated, the reagents used in this method are of analytical grade and water is Grade 3 water specified in GB/T 6682.

3.2.1 Hydrochloric acid solution (6 mol/L). weigh 50 mL of hydrochloric acid, dilute it with water to 100 mL.

3.2.2 Sodium hydroxide solution (6 mol/L). weigh 24 g of sodium hydroxide, dissolve it in water and dilute it with water to 100 mL.

5.1 Solid sample. take a clean flat aluminum or glass weighing bottle, place in the 101°C ~ 105°C dryer. The cap is obliquely attached to the bottle. Heat for 1.0 h. Remove the cover. Place it in dryer to cool 0.5 h. Weigh. Repeat drying till the mass difference of twice before and after shall not exceed 2 mg. That is constant weight. Mix the sample evenly to the particles less than 2 mm. The samples that are not easily ground should be chopped as much as possible.

5.2 Semi-solid or liquid sample. take a clean weighing bottle. Add 10 g of sea sands (during the experiment, the mass of sea sand can be increased as needed) and a glass bar. Place in the 101°C ~ 105°C dryer to dry about 1.0 h. Take out. Place into the dryer to cool for 0.5 h. Then weigh. Repeat drying till constant weight. Weigh 5 g ~ 10 g of samples (nearest to 0.0001 g). Place in the weighing bottle.

6 Expression of results

The moisture content in sample shall be calculated according to equation (1).

7 Precision

The absolute difference between the two independent determinations obtained under repeatability shall not exceed 10% of the arithmetic mean.