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

**GB/T 5526-2024**

Replacing GB/T 5526-1985

**Animal and vegetable fats and oils-Determination of relative  
density**

动植物油脂 相对密度的测定

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## Foreword

This document was drafted in accordance with the rules given in GB/T 1.1-2020 "Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents".

This document replaces GB/T 5526-1985 "Animal and vegetable fats and oils - Determination of relative density". Compared with GB/T 5526-1985, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- Changed the scope of application of the document (see Chapter 1 of this Edition; Chapter 1 of Edition 1985);
- Added the digital density meter method as Method One (see Chapter 4 of this Edition) and the density meter method as the Method Four (see Chapter 7 of this Edition);
- Added the principle (see 5.1 and 6.1 of this Edition);
- Deleted "reagents" (see 1.2 and 2.2 of Edition 1985);
- Changed some operating steps (see 5.3 and 6.3 of this Edition; 1.3 and 2.3 of Edition 1985);
- Changed the calculation method and calculation formula (see 5.4 and 6.4 of this Edition; 1.4 and 2.4 of Edition 1985);
- Deleted the allowable difference of the double test results of the liquid specific gravity balance method (see 1.4 of Edition 1985);
- Added the precision requirements for the relative density meter (hydrometer) method and the density bottle method (see 5.5 and 6.5 of this Edition).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The issuing authority shall not be held responsible for identifying any or all such patent rights.

This document was proposed by State Administration of Grain and Material Reserves.

This document shall be under the jurisdiction of National Technical Committee on Grain and Oil of Standardization Administration of China (SAC/TC 270).

The drafting organizations of this document. Anhui Provincial Grain and Oil Product Quality Supervision and Inspection Station, Standard Quality Center of State Grain and Material Reserves Administration, Tianjin Food Safety Testing Technology Research Institute, Guangxi Zhuang Autonomous Region Grain and Oil Quality Inspection Center, Hefei Food and Drug Inspection Center, Liaoning Provincial Grain and Material Reserve Affairs Service Center, Jiangsu Provincial Grain and Oil Quality Monitoring Center, Shandong Grain and Oil Testing Center, Hubei Grain, Oil and Food Quality Supervision and Inspection Center, Kunming Grain, Oil and Feed Product Quality Inspection Center, Shaanxi Grain Quality and Safety Center, Ningxia Hui Autonomous Region Grain and Oil Product Quality Inspection

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Versions of standard substituted by this document are.

- It was first published in 1985 as GB/T 5526-1985; - This is the first revision.

Animal and vegetable fats and oils -- Determination of relative density

## 1 Scope

This document describes the digital densimeter method, the relative density meter (hydrometer) method, the density bottle method and the densimeter method for the determination of the relative density of animal and vegetable fats and oils.

This document is applicable to the determination of relative density of animal and vegetable fats and oils. Among them, Method One is applicable to the determination of relative density of liquid and semi-solid animal and vegetable fats and oils; Method Two, Method Three and Method Four are applicable to the determination of relative density of liquid animal and vegetable fats and oils.

## 2 Normative references

This document has no normative references.

## 3 Terms and definitions

There are no terms or definitions that require definition in this document.

### 4.1 Principle

The U-tube oscillation method is used. The specimen is introduced into a U-tube with one end fixed. The U-tube is made to oscillate at a certain characteristic frequency using an excitation device. The square of the oscillation frequency is linearly related to the density or relative density of the specimen in the U-tube.

### 4.2 Instruments

The digital density meter should have automatic viscosity correction and temperature thermal balance functions, and the accuracy should meet the following requirements.

#### **4.3.1 Before testing, calibrate the instrument according to the requirements of the**

instrument manual.

4.3.2 Determination of relative density of liquid grease. Set the temperature of the U- tube to 20°C. Use a syringe to evenly inject the specimen into the clean and dry U-tube and fill it. The temperature balance is stable at  $(20 \pm 0.05)^\circ\text{C}$ . Confirm that there are no bubbles in the U-tube through the bubble detection function or through the observation window. When the instrument stably displays the relative density value, record the value.

#### **4.4 Calculation**

Calculate the relative density according to formula (1).

#### **4.5.1 Repeatability limit**

The absolute difference between two independent measurement results obtained under repeatability conditions is no greater than 0.0003.

### **5.1 Principle**

At 20°C, measure the buoyancy of the bob in water and the specimen respectively. Since the volume of water displaced by the bob is the same as the volume of the specimen displaced, the density of the specimen can be calculated based on the buoyancy of the bob in water and in the specimen. The relative density of the specimen can be calculated based on the ratio of the specimen density to the density of water at the same temperature.

### **5.3 Steps**

Place the bracket on a flat table, with the crossbeam on the knife edge and a weight on the hook. Adjust the lifting knob to a suitable height. Turn the zero-adjustment knob to make the two pointers coincide. Remove the weight. Hang the glass bob. Fill the glass cylinder with water to four-fifths. Put it in a constant temperature water bath and let the glass bob sink into the glass cylinder. Adjust the water temperature to 20°C (i.e. the temperature indicated by the thermometer in the glass bob).

### **5.4 Calculation**

The relative density of the specimen at 20°C is calculated according to formula (2).

### **6.1 Principle**