# LS

FOOD INDUSTRY STANDARD OF THE

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# LS/T 6117-2016

# Inspection of grain and oils - Determination of test weight - Waterlogged suspend method

粮油检验 容重测定 水浸悬浮法

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# Inspection of grain and oils - Determination of test weight - Waterlogged suspend method

## 1 Scope

This Standard specifies the principle, instruments and equipment, operation methods and result calculation for the determination of test weight of corn, wheat and other grains by the waterlogged suspend method.

This Standard applies to the rapid determination of test weight of grains such as corn and wheat.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB 5491, Inspection of grain and oilseeds - Methods for sampling and sample reduction

GB/T 5498, Inspection of grain and oils - Determination of test weight

LS/T 6401, Test instrument of grain and oils - Waterlogged suspend method to measure grain bulk density - Technical requirements and test method

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1 Waterlogged suspend method

The method of submerging the grain sample to be tested in water and hanging it to measure the test weight.

## 4 Principle

Using the principle of buoyancy, weigh a whole grain sample of a certain mass and put it into a measuring vessel; completely immerse it in water; remove air bubbles; weigh the mass of the grain in this state; calculate the density of the sample; convert it to the test weight of standard water (for example: corn 14.0%).

# 5 Instruments and equipment

Waterlogged suspend method test-weight device: see Appendix A for the schematic diagram of the instrument structure. The instrument shall meet the requirements of LS/T 6401.

# 6 Operation methods

## 6.1 Instrument preparation

**6.1.1** Prepare the instrument according to the instruction manual.

**6.1.2** Place the test-weight device on a stable operating platform, and fill the operating water tank with tap water to the marked line. Soak the measuring vessel in the operating water tank. Adjust the test-weight device to the level and turn on the power. Use standard weights to calibrate the weighing device according to the instructions.

**6.1.3** If the test-weight device is not used for a long time or used continuously for more than 100 times, it shall be calibrated according to the requirements of the instrument instruction manual.

## 6.2 Constant mass measuring vessel

**6.2.1** The absolute value of the difference between the water temperature and the ambient temperature is ≤5 °C, and the ambient temperature shall generally be 5 °C ~ 40 °C.

**6.2.2** Cover the measuring vessel and fasten it tightly; hang it on the lower scale hook of the weighing device; suspend it in the operating water tank for weighing; record the weighing value as $m_1$ after the weighing value is stable.

## 6.3 Sample preparation

### 6.3.1 Sampling and dividing

Perform sampling and dividing according to GB 5491.

### 6.3.2 Sample preparation

**6.3.2.1** Separate two parts of approximately 1 000 g each from the average sample. According to the specified sieve layer (corn upper sieve ϕ12.0 mm, lower sieve ϕ3.0 mm; wheat upper sieve ϕ4.5 mm, lower sieve ϕ1.5 mm), sieve in 4 times, and the mass of each screening is about 250 g. Sort out the large impurities on the upper sieve and discard the undersize of the lower sieve; combine the grain grains on the upper and lower sieves; mix them as the samples to be tested.

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