

ICS 67.060



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

GB/T 5491-2025

Replacing GB/T 5491-1985

Inspection of grain and oil seeds - Sampling and dividing

粮食、油料检验 扦样、分样法

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1 Scope

GB/T 5491-2025 is the Chinese national standard covering taking a sample that actually represents the lot - the number and pattern of probe points in a heap, a wagon or a ship's hold, the compositing, and the dividing down to the test portion without introducing a bias. Every other grain test rests on this one, and it replaces GB/T 5491-1985 - a standard forty years old. In force from 1 May 2026. Issued on 31 October 2025, it has been in force since 1 May 2026, replacing GB/T 5491-1985.

This Document defines the relevant terms and definitions for grain and oil seed sampling and dividing; and specifies general requirements, sampling and dividing tools, and sampling and dividing methods. This Document applies to static and dynamic sampling and dividing of grains and oil seeds.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

GB/T 5490 Inspection of grain and oils - General rules LS/T 3545 Machine of grain and oils

- Sample divider used in inspection LS/T 3547 Grain and oil machinery - Technical requirements and test method for bulk grain sampler with power-operated LS/T 3548 Grain and oil machinery - Technical requirements and test method sampler for packaged grain sampler with power-operated

3 Terms and Definitions

For the purposes of this Document, the terms and definitions given in GB/T 5490 and the following apply.

3.1 Inspection lot A single delivery of grains and/or oil seeds with the same properties, as specified in the contract or transport documents. NOTE. Generally, it refers to grains or oil seeds of the same type, year, batch, grade, transport unit, or storage unit.

3.2 Inspection unit An inspection unit is defined within an inspection lot.

3.3 Sampling The process of obtaining representative samples using appropriate tools and prescribed methods.

3.4 Dividing The process of selecting appropriate tools, thoroughly mixing the aggregated sample; and then progressively reducing it to obtain the submitted sample, the retained sample, the laboratory sample, and the test sample.

3.5 Static sampling The sampling process when the object under test is in a static state.

3.6 Dynamic sampling The sampling process when the object under test is in a dynamic state.

4 General Requirements

4.1 Sampling and dividing shall include the following steps, as detailed in Appendix A.

--- Develop a sampling plan;

--- Collect a sufficient number of spot samples to form an aggregated sample;

--- Mix the aggregated sample;

--- Reduce the aggregated sample to submitted samples, retained samples, and laboratory samples according to the prescribed dividing method.

4.2 Ensure that the used instruments or equipment are clean and free from contamination; and prevent sample contamination during the sampling process.

4.3 The entire sampling process shall be completed in the shortest possible time; and the collected samples shall be placed in a clean sample container (5.5).

4.4 Appropriate sampling devices and dividing methods shall be selected based on the actual condition of the object under test (its own condition and environmental condition) and

the test requirements. See Appendix B for a legend of a static grain sampling device. See Appendix C for a legend of a dynamic grain sampling device. See Appendix D for a legend of a dividing device.

4.5 If any localized dampness, condensation, heat, clumping, obvious mold, obvious insect infestation, or abnormal color and odor are found before sampling, the grains and oil seeds in the areas with abnormal conditions shall be sampled separately.

5.1.1 Manual sampler for packaged grains

5.1.1.1 Single-tube sampler for large grains Approximately 75 cm in total length, with a probe length of approximately 55 cm and a mouth width of

1.8 cm. The top is pointed or duckbill-shaped, with an outer diameter of

2.2 cm. Suitable for sampling large grains such as corn and soybeans; see B.1.

5.1.1.2 Single-tube sampler for small and medium-sized grains Approximately 70 cm in total length, with a probe length of approximately 45 cm, a mouth width of approximately 1 cm. The top is pointed, with an outer diameter of approximately

1.5 cm. Suitable for sampling small and medium-sized grains such as wheat, paddy rice, rice, millet, mung beans, red beans, and rapeseed; see B.1.

5.1.1.3 Single-tube sampler for powdered grains Approximately 55 cm in total length, with a probe length of approximately 35 cm, a mouth width of approximately

0.6 cm ~

0.7 cm. The top is pointed, with an outer diameter of approximately 1 cm. Suitable for sampling powdered grains such as wheat flour and corn flour; see B.1.

5.1.2 Manual samplers for bulk grains

5.1.2.1 Thin-walled sleeve sampler Available in three total lengths. 1 m, 2 m, and 4 m. It has three inlet holes, each approximately 15 cm long and

1.5 cm wide at the opening, with a top length of approximately 7 cm and an outer diameter of approximately

2.2 cm. Suitable for sampling bulk grains such as wheat and paddy rice; see B.2.1.

5.1.2.2 Thick-walled sleeve sampler Available in three total lengths. 1 m, 2 m, and 4 m. It has three inlet holes, each approximately 15 cm long and

1.8 cm wide at the opening, with a top length of approximately 7 cm and an outer diameter of approximately

2.8 cm. Suitable for sampling bulk grains such as corn and soybeans; see B.2.1.

5.1.2.3 Ellis cup sampler Made of lightweight aluminum, used for sampling from a grain stream running on a conveyor belt; see C.4.

5.1.2.4 Sampling shovel It is mainly used for sampling or bag dumping sampling of mobile grains and oil seeds, and extra-large grains and oil seeds.

5.2 Electric sampler

5.2.1 Fixed automatic grain sampler It is composed of a sampling rod, rotating arm, moving device, column, grain conveying pipe, negative pressure vacuum system, and electrical control system, etc. It is mainly used for automatic sampling of packaged or bulk grains in uncovered transport vehicles; the sampling port of the sampling rod shall be able to reach any position of the grain on the vehicle; see B.2.2.

5.2.2 Mobile electric suction grain sampler It is composed of a multi-hole end tube, sampling head, connector, sampling tube, discharge gate, storage box, vacuum chamber, hose, etc. It is designed and manufactured based on the negative pressure principle; and shall meet the requirements for deep bulk grain sampling; see B.2.3. When sampling by using this type of sampler, if the impurity content of the sample is greater than 1.0%, and relevant parties raise objections to the test results, the sampler described in

5.2.3 shall be used to resample and test the impurity content, or the relevant parties shall negotiate and confirm the requirements for correcting the impurity content test results.

5.2.3 Mobile electric bulk grain sampler It is composed of a motor, a negative pressure vacuum system, a handle, a grain suction port, a sampling connecting rod (outer tube), and a connecting sampling bucket (inner tube), etc. It shall comply with the provisions of LS/T 3547; see B.2.4.

5.2.4 Mobile electric suction packaged grain sampler It is composed of a machine head, filter screen, buffer sample collector, handle, sample dispensing port, sample connecting rod, sample receiving cup, and grain suction port, etc. It shall comply with the provisions of LS/T 3548; see B.2.5.

5.3 Sample divider It includes sample dividing plates, bell-shaped sample dividers, Riffle sample dividers, Canadian-style sample dividers, automatic sample dividers, etc.; see Appendix D.

5.4 Sample dividing cloth or padding The sample dividing cloth can be a thicker plastic sheet or other fabric. The padding material can be a smooth, flat wooden board or glass plate, etc.

5.5 Sample containers The commonly used containers include sample tubes, sample bags, sample bottles, etc.