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Replacing GB/T 5494-2008

Inspection of grain and oils - Determination of foreign matter and unsound kernels of grain and oilseeds

粮油检验 粮食、油料的杂质、不完善粒检验

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Foreword

This Standard is drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard replaces GB/T 5494-2008 “Inspection of grain and oils - Determination of foreign matter and unsound kernels of grain and oilseeds”.

As compared with GB/T 5494-2008, the main technical changes of this Standard are as follows:

- Modify the table for provisions on inspection sample mass (see Table 1; Table 1 of the 2008 edition);
- ADD the operation steps and calculation formula for the inspection of millet grain in millet (see 6.2.1, 7.2.3);
- Modify the calculation formula for unsound kernels of rice (see 7.2.4; 7.2.6 of the 2008 edition);
- Delete the operation steps and calculation formulas for inspection of shelled barnyard millet and rice grain (see 6.2.2, 7.2.4, 7.2.5 of the 2008 edition);
- ADD provisions for specification of sieve layer during operation (see Appendix A).

This Standard was proposed by National Food and Strategic Reserves Administration.

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

Drafting organizations of this Standard: Henan Grain, Oil and Feed Products Quality Supervision and Inspection Center, Standards and Quality Center of the State Administration of Grain, Henan Food Science Research Institute Co., Ltd., Zhengzhou Food Science Institute, Liaoning Grain Reserves Co., Ltd., China Grain Wuhan Scientific Research & Design Institute, Co., Ltd.

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The previous editions of the standard replaced by this Standard were released as follows:

- GB/T 5494-1985, GB/T 5494-2008.

Inspection of grain and oils - Determination of foreign matter and unsound kernels of grain and oilseeds

1 Scope

This Standard specifies the instruments and utensils, lighting requirements, sample preparation, operation steps, and result calculation, etc. for the determination of content of foreign matter and unsound kernels of grain and oilseeds.

This Standard applies to the determination of content of foreign matter and unsound kernels of grain and oilseeds.

2 Normative references

The following documents are indispensable for the application of this document. For the dated references, only the editions with the dates indicated are applicable to this document. For the undated references, the latest edition (including all the amendments) are applicable to this document.

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

GB/T 22505 Inspection of grain and oils - Sensory analysis environment - Lighting

3 Instruments and utensils

3.1 Balance: Sensitivity is 0.01 g, 0.1 g, 1 g.

3.2 Grain sieve.

3.3 Electromagnetic sieve shaker.

3.4 Sample splitter or sample splitting plate.

3.5 Analysis tray, tweezers, etc.

The sieve automatically sieves to left and to right for 1 min respectively (110 r/min~120 r/min). After the sieve is stopped for a while, the oversize of the upper sieve and the undersize of the lower sieve are respectively poured into the analysis tray. The particles stuck in the middle of sieve pore belong to oversize.

6.1.1.2 Hand-sieve method: According to the method in 6.1.1.1, SET the sieve layer; POUR the sample into it; COVER it with a sieve cover. Then PLACE the sieve on a glass plate or a smooth tabletop; USE both hands, at a speed of 110 times/min~120 times/min, to sieve for 1 min in a clockwise direction and a counter-clockwise direction respectively. The sieving range is controlled at sieve diameter enlarged by 8 cm~10 cm. The operation after sieving is the same as that in 6.1.1.1.

6.1.2 Inspection of foreign matter of large sample

From the average sample, according to the provisions of Clause 5, SPLIT and take the sample to the large sample mass (m) specified in Table 1, accurate to 1 g. According to the sieving method specified in 6.1.1, the sieving is carried out twice (Extra-large-grain and oil are sieved four times). Then the large foreign matters on the upper sieve (The peeling grain kernel shell belongs to foreign matter) are picked up and combined with the undersize of the lower sieve, weighed (m_1), accurate to 0.01 g.

6.1.3 Inspection of foreign matter of small sample

From the samples which have been inspected for foreign matter of large sample, according to the provisions of Clause 5, SPLIT and take the sample to the small sample mass (m_2) specified in Table 1. When the small sample mass is not more than 100 g, it is accurate to 0.01 g. When the small sample mass is more than 100 g, it is accurate to 0.1 g. POUR it into the analysis tray; according to the mass standards, PICK up foreign matters and weigh (m_3), accurate to 0.01 g.

6.1.4 Mineral inspection

From the foreign matters of small sample picked, PICK up the minerals and weigh (m_4), accurate to 0.01 g.

6.1.5 Inspection of unsound kernels

While inspecting the foreign matter of small sample, according to the mass standards, PICK up unsound kernels and weigh (m_5), accurate to 0.01 g.

6.2 Inspection of foreign matter and unsound kernels of rice

6.2.1 Inspection of foreign matter

Where:

m_5 - Mass of unsound kernels, in grams (g);

m_2 - Small sample mass, in grams (g).

Under repeated conditions, the absolute difference between the two independent determination results obtained: For large-grain and extra-large-grain, it shall not exceed 1.0%; for small and medium-grain, it shall not exceed 0.5%. The average is obtained as the test result. The test result is retained to one decimal place.

7.2 Calculation of inspection results of foreign matter and unsound kernels of rice

7.2.1 The mineral or inorganic foreign matter content (w_6) is expressed in mass fraction (%) and is calculated according to formula (6):

$$w_6 = \frac{m_2'}{m'} \times 100 \qquad \cdots\cdots (6)$$

Where:

m_2'- Mineral or inorganic foreign matter mass, in grams (g);

m' - Sample mass, in grams (g).

Under repeated conditions, the absolute difference between the two independent determination results obtained shall not exceed 0.005%. The average is obtained as the test result. The test result is retained to two decimal places.

7.2.2 The total amount of foreign matter (w_7) is expressed in mass fraction (%) and is calculated according to formula (7):

$$w_7 = \frac{m_1' + m_2' + m_3'}{m'} \times 100 \qquad \cdots\cdots (7)$$

Where:

m_1'- Mass of rice bran powder, in grams (g);

m_2'- Mineral or inorganic foreign matter mass, in grams (g);

m_3'- Organic foreign matter mass, in grams (g);

m' - Sample mass, in grams (g).

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