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Corn Quality Standard

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Report Highlights:

On March 28, 2009, the Standardization Administration of China published the final National Standard for Corn (GB1353-2009) which will come into force on September 1, 2009. The draft was notified to the WTO on July 3, 2008 for comments. The report contains an UNOFFICIAL translation of the standard.

Includes PSD Changes: No
Includes Trade Matrix: No
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Executive Summary

On March 28, 2009, the Standardization Administration of China published the National Standard for Corn (GB1353-2009), which will come into force on September 1, 2009. This standard specifies the terms and definitions, classifications, quality and hygienic requirements, inspection rules and methods, and labeling, packaging, transportation and storage requirements for corn. The draft of this standard was notified to the WTO on July 3, 2008 as TBT/N/CHN/403.

Compared with the draft, the final version contains minor changes. The most significant ones are about corn classification and the corn quality indicators.

The trade impact of this standard remains unclear. However, attention should be paid to the grade indicators and other quality indicators.

Special thanks to the Beijing office of the U.S. Grains Council for their assistance in reviewing and translating this measure.

This report contains an UNOFFICIAL translation of the standard.

BEGIN TRANSLATION

National Standard of the People's Republic of China

GB1353-2009

Replaces GB1353-1999

Corn

Issued on March 28, 2009

Implemented on September 1, 2009

Issued by the General Administration of Quality Supervision, Inspection and Quarantine and the Standardization Administration of China

Foreword

All technical content of this standard is mandatory.

This standard replaces *GB 1353-1999 Corn* upon implementation.

The main technical differences between this standard and *GB 1353-1999* are as follows:

---- Grade indicators have been adjusted with the number of grades increased from three to five and an off-grade added;

---- The indicators for unsound kernels have been adjusted and new indicators are set corresponding to each grade;

---- Inspection rules are increased.

---- Rules for labeling are increased;

---- The method for determination of test weight in Annex A is revised;

---- Annex B is added.

Annex A and Annex B to this standard are normative.

This standard will replace GB 1353-1999 from the implementation date of this standard.

This standard was proposed by the State Administration of Grain.

This standard is under the jurisdiction of National Grain and Edible Oil Standardization Technical Committee.

This standard was drafted mainly by the following organizations: The Standard and Quality Center of State Administration of Grain, Jilin Grain Administration, Liaoning Grain Administration, Heilongjiang Grain Administration, Hebei Grain Administration, Henan Grain Administration, Inner Mongolia Grain Administration, Shanxi Grain Administration, Shaanxi Grain Administration, China Grain Reserves Corporation, China Grain Reserves Corporation Jilin Branch, Corn Institute of Jilin Academy of Agricultural Sciences, Henan University of Technology, Academy of State Administration of Grain, COFCO Wuhan Scientific Research and Design Institute.

The main drafters of this standard are: Du Zheng, Tang Ruiming, Long Lingli, Zhu Zhiguang, Xie Huamin, Li Yue, Xie Yuzhen, Song Changquan, Feng Xizhong, Zhang Yuqin, Yu Wei, Xu Xiangying, Xiao Lirong, Lu Huili, Wang Xiaoguang, Wang Heng, Dang Xianmin, Gong Fusheng, Gu Xiangming, Cai Zhuo, Wang Fengcheng, Lin Jiayong, Yang Haipeng.

All previous editions replaced by this standard are as follows: GB1353-1978, GB1353-1986, GB1353-1999.

Corn

1 Scope

This standard specifies the terms and definitions, classification, quality and hygienic requirements, inspection methods, inspection rules, and labeling, packaging, storage and transport requirements for corn.

This standard is applicable to purchase, storage, transport, processing and sale of commercial corn.

This standard is not applicable to the special corn varieties not mentioned herein.

2 Normative References Cited

The following documents contain provisions which, through reference in this text, constitute provisions of this standard. For dated references, all their subsequent amendments (excluding corrections) or revisions do not apply to this standard. However, parties that have reached an agreement according to this standard are encouraged to explore the possibility of using the latest editions of these documents. For undated references, their latest editions apply to this standard.

GB 2715 Hygienic Standard for Grain

GB/T 5490 General Rules for Inspecting Grain, Oilseeds and Vegetable Oils

GB 5491 Inspection of Grain and Oilseeds — Methods for Sampling and Sample Reduction

GB/T 5492 Inspection of Grain and Oilseeds — Methods for Identification of Color, Odor and Taste

GB/T 5493 Inspection of Grain and Oilseeds — Methods for Determination of Varieties and Their Mixture

GB/T 5494 Inspection of Grain and Oilseeds — Methods for Determination of Foreign Matter and Unsound Kernels

GB/T 5497 Inspection of Grain and Oilseeds — Methods for Determination of Moisture Content

GB/T 5498 Inspection of Grain and Oilseeds — Methods for Determination of Test Weight

GB 13078 Hygienic Standard for Feeds

LS/T 3701 HGT-1000 Test Weight Apparatus for Grain

3 Terms and Definitions

The following terms and definitions apply to this standard.

3.1 Test weight

The mass of corn kernel in unit volume, in g/L

3.2 Unsound Kernel

Corn kernels that are damaged but that still have use-value, including injured kernel, spotted kernel, broken kernel, sprouted kernel, moldy kernel and heat-damaged kernel

3.2.1 Injured kernel

Moth-eaten corn kernels with bores or tunnels

3.2.2 Spotted kernel

Corn kernels with disease speckles which have caused damage to embryo or endosperm

3.2.3 Broken kernel

A corn kernel at least one-fifth of which is broken

3.2.4 Sprouted kernel

A corn kernel whose sprout or radical has broken through the epidermis, or whose sprout or radical has not yet broken through the epidermis but whose epidermis at the embryo has already been ruptured or obviously uplifted by the sprout, showing signs of sprouting

3.2.5 Moldy kernel

Corn kernels with mold on the surface

3.2.6 Heat-damaged kernel

Corn kernels that have obviously changed in color or been damaged due to heating, including natural heating and artificial drying

3.2.6.1 Nature heat-damaged kernel

A corn kernel whose embryo or endosperm has obviously changed in color due to excessive respiration during storage

3.2.6.2 Drying heat-damaged kernel

A deformed or swollen corn kernel whose epidermis, embryo, or endosperm has obviously changed in color due to drying

3.3 Mixture

Some other kind of corn is mixed into the present kind of corn.

3.4 Foreign matters

Other matters than the corn kernel, including throughs, inorganic impurity and organic impurity

3.4.1 Throughs

Matters that can pass through a F 3.0mm circular screen

3.4.2 Inorganic impurity

Soil, sand stone, small pieces of broken bricks/tiles and other inorganic matters

3.4.3 Organic impurity

Corn kernels without use-value, other kinds of grain and other organic matters

3.5 Color and odor

The natural color, luster and odor inherent to a batch of corn

4 Classification

Corn can be classified into following three types according to the color of the seed coat.

4.1 Yellow corn

Corn with yellow or yellow-reddish seed coat kernels no less than 95 percent.

4.2 White corn

Corn with white, white-yellowish or white-pinkish coat kernels no less than 95 percent.

4.3 Mixed corn

Corn that does not fall into the categories of 4.1 and 4.2

5 Quality Requirement and Hygienic Standard

5.1 Quality Requirement

Refer to Table 1 for quality requirements for different kinds of corns. Among them test weight can be taken as the indicator for gradation. Grade 3 is the medium grade.

Table 1 Quality Indicators of Corn

Grade	Test Weight/g/L.	Unsound Kernel/ .%.		Foreign matter/ .%.	Moisture/ .%.	Color and odor
		Total weight	Wherein: Moldy kernel			
1	=720	=4.0	=2.0	=1.0	=14.0	Normal
2	=685	=6.0				
3	=650	=8.0				
4	=620	=10.0				
5	=590	=15.0				
Off-grade	.590	—				

Note: The symbol "—" signifies things not required.

5.2 Hygienic standard

5.2.1 For corn used for food, GB 2715 and related national regulations shall be followed.

5.2.2 For corn used for feedstuff, GB 13078 and related national regulations shall be followed.

5.2.3 For corn used for other purposes, related national standards and regulations shall be followed.

5.2.4 For plant quarantine, related national standards and regulations shall be followed.

6 Inspection Method

6.1 For sampling and sample reduction, GB 5491 shall be followed.

6.2 For color and odor inspection, GB/T 5492 shall be followed.

6.3 For classification and mixture inspection, GB/T 5493 shall be followed.

6.4 For foreign matter and unsound kernel inspection, GB/T 5494 shall be followed.

6.5 For moisture inspection, GB/T 5497 shall be followed.

6.6 Annex A shall be followed for test weight inspection. The test weight of corn with a moisture content of no more than 18% shall be measured directly. Corn with a moisture content of more than 18% shall undergo a drying process as specified in Annex B before having its test weight measured.

7 Inspection Rule

7.1 Refer to GB/T 5490 for the general rule for inspection.

7.2 The inspection lot of corn shall be of the same type, the same place of origin, the same year of harvest, the same transportation unit and the same storage unit.

7.3 Determination rule: the test weight shall meet the requirements of corresponding grade in Table 1 and other indicators shall meet related national regulations.

8 Labeling

8.1 The name, type, grade, place of origin, and month and year of harvest of the products shall be indicated on the package or in the attached documents.

8.2 Labeling of GM corn shall meet related national regulations.

9 Packaging, Storage and Transport

9.1 Packaging

The package shall be clean, fast, durable unbroken with tight seams so that the products would not leak. Packaging shall not cause contamination or produce strange odor to the product inside.

9.2 Storage

The product shall be stored in a clean and dry warehouse that is rainproof, damp-proof, insect-resistant and rat-resistant without strange odor. It may not be co-stored together with poisonous matters, harmful matters or matters with high moisture content.

9.3 Transport

The product shall be transported with vehicles and containers that meet the hygienic standard. During the course of transportation, the product shall be protected from rain and contamination.

Annex A

(Normative Annex)

Measurement Method of Corn Test Weight

A.1 Instruments and Appliances

A.1.1 GHCS-1000 grain test weight apparatus or HGT-1000 grain test weight apparatus (the outlet diameter of the hopper is 40mm). Basic parameters and major technical requirements shall meet the requirements of LS/T 3701.

A.1.2 Grain sieve: the sieve mesh of the upper layer is 12.0mm in diameter, and the lower, 3.0mm. The sieve has a bottom and cover.

A.2 Preparation of Samples

Separate two samples as test samples from primary samples according to inspection methods, each of which weighs about 1000g. Each test sample shall be set onto the sieve layer as specified in A.1.2, and shall be screened twice. Take away the screened sample from the lower layer and mix it evenly, which is then used as the sample for test weight's measurement.

A.3 Operational procedure

A.3.1 GHCS-1000 grain test weight apparatus

A.3.1.1 Open the case and take out all parts and choose the hopper with an outlet diameter of 40mm. Install and adjust the parts according to the instruction, then weigh the capacity cylinder with a vent tower on an electronic scale and zero-clear it.

A.3.1.2 Take the capacity cylinder down and remove the vent tower from it, then install the capacity cylinder on the pedestal of the iron plate securely. Insert the sheet and put the vent tower onto the capacity cylinder. Finally, place the intermediate cylinder.

A.3.1.3 Fill up the grain cylinder with the prepared sample (ensure the switch of the hopper is closed) and flatten the top. Then cover the grain cylinder onto the intermediate cylinder and open the switch of hopper. Close the switch after the sample has dropped into the intermediate cylinder completely. Hold the joint between the intermediate cylinder and capacity cylinder, pull out the inserted sheet with even force to allow the sample and vent tower to drop into the capacity cylinder, and then insert the sheet back steadily.

A.3.1.4 Take the grain cylinder down and take up the intermediate cylinder and the capacity cylinder, then remove the remaining sample from the sheet and pull out the sheet. Finally, weight the capacity cylinder containing the sample on the electronic scale.

A.3.2 HGT-1000 grain test weight apparatus

Choose a hopper whose outlet diameter is 40mm. The installation and operation of test weight apparatus should be performed according to the test weight measurement methods of GB/T 5498.

A.4 Result

The results should be integers, and the admissible error between the two test samples shall be no bigger than 3g/L. Their arithmetic average shall be taken as the final result.

Annex B

(Normative Annex)

Technical Requirements and Operational Methods of Grain Fast-Drying Equipment

B.1 Technical Requirements

- B.1.1** Reduce the high moisture content of the corn to below 18.0% in a short period of time through infrared heating or hot air drying, supplemented by mechanical ventilation.
- B.1.2** The equipment should have such features as electronic temperature control, timing control over-temperature and over-pressure protection.
- B.1.3** Good heat insulation, electrical insulation and ventilation are needed and it also should be safe, durable, easy to clean and easy to operate.
- B.1.4** It should be capable of drying at least two samples each time with each sample being no less than 2000g.
- B.1.5** The bottom of the drying disc is meshed and good ventilation should be ensured. The sample on the disc should be within a thickness of 2 cm.
- B.1.6** The temperature within the drying chamber should be stable and the sample should be heated evenly. The moisture content of dried corn seeds should be even, and drying-heat-damaged kernels are not allowed.
- B.1.7** The exterior of the equipment should be flat and smooth; burr, paint missing, paint sagging, cracks, serious damages, corrosion and deformation are not allowed.
- B.1.8** Equipment name, manufacturer, trade mark, specifications, drying capacity and identifications required by the state are indispensable.

B.2 Major Parameters

- B.2.1** The rated power should be no less than 2.0kW; the controllable temperature should be 40? .160? ; drying temperature should be 50? .130? with an error of no more than 5..
- B.2.2** The longest time it takes to dry the moisture content to 18.0% should be no more than 30 minutes. Refer to Table B.1 for various parameters.

Table B.1 Parameters for Drying the Moisture Content of Corn to 18.0%

Original Moisture Content/ (%)	Drying Time/ (min)	Drying Temperature/ (?)
=23.0	=10	(120.130)±5
=28.0	=15	
=33.0	=20	
.33.0	=30	

Note: Drying time can also be controlled through different settings.

B.3 Equipment Testing Methods

- B.3.1** Install and adjust the equipment according to specification; raise the temperature of the adjusted equipment to about 140? .
- B.3.2** Preparation of samples: take out about 2000g from the original sample as testing sample. Set the sieve according to Annex A.1.2 and then begin sieving. Take away the materials on the lower sieve and mix up (remove the combustible organic impurities).

Test the moisture content using a fast moisture testing apparatus, which will be taken as the original moisture content.

B.3.3 Drying: spread the prepared sample on the drying disc evenly and put it in the drying chamber immediately. Set the drying time and drying temperature according to the parameters in Table B.1. If the moisture content of the sample is too high, take out the drying disc halfway during drying, turn the sample over, evenly re-spread it and continue to dry it.

B.3.4 After drying, take out the sample and cool it down to room temperature under laboratory conditions.

B.4 Result Determination

Test the moisture content of the cooled sample using a fast moisture testing apparatus. An apparatus that can reduce the corn moisture content to below 18.0% from its original moisture content within specified time is a qualified one.

B.5 Sample Drying

Dry the corn of high moisture content according to the steps of B.3 with the qualified apparatus.

END TRANSLATION