

Directive

9180.70

3-25-02

INSPECTION OF CRACKED CORN

1. PURPOSE

This directive establishes uniform procedures for the analysis of cracked corn as "Not Standardized Grain" under the U.S. Grain Standards Act (USGSA).

2. REPLACEMENT HIGHLIGHTS

This is a new directive.

3. GENERAL INFORMATION

- Inspection of cracked corn is upon request and on a factor only basis.
- All quantities referenced in this directive are approximate unless otherwise specified.
- There are no classes, subclasses, or numerical grades for cracked corn.
- In addition to the whole kernel and cracked corn analysis described in this directive, an applicant may request an analysis for other quality factors such as moisture, test weight per bushel, and aflatoxin.
- Use an approved divider to obtain subportions of a sample for analysis unless otherwise specified.
- Official inspection personnel shall document inspection information during sampling and inspection.
- There are four inspection levels under USGSA regulations: original inspection, re-inspection, appeal inspection, and board appeal inspection.

4. DEFINITION OF CRACKED CORN

Cracked corn, as described in this directive, is Not Standardized Grain that consists of broken kernels of shelled dent corn and/or shelled flint corn. Cracked corn kernels are kernels that are chipped or broken and not 100% intact from their original shape and size.

The sample **must not** meet the definition of corn (i.e., grain consisting of 50% or more of whole kernels of shelled dent corn and/or shelled flint corn and not more than 10% of other standardized grains) to be considered as cracked corn.

Visually examine the sample to determine if it meets the definition of corn or cracked corn. If an analysis is necessary, make the determination on a 250-gram representative portion on the basis of the sample as a whole. From the 250-gram portion remove all whole kernels (i.e., kernels with less than one fourth broken off) of corn and, if necessary, other standardized grains and calculate the percentage of whole kernels of corn and other standardized grains.

5. BASIS OF DETERMINATION

All determinations are based on the sample as a whole.

6. TEST WEIGHT PER BUSHEL

Test weight per Winchester bushel (2,150.42 cubic inches) is determined using an approved device according to procedures prescribed in FGIS instructions.

Determine test weight on a representative portion of the original sample with a quantity sufficient to overflow the kettle. Record test weight results on the work record as displayed on the electronic scale or in whole and tenth pounds to the nearest tenth pound. Record the test weight on the certificate in whole and tenth pounds.

If requested, convert the pounds per bushel (lbs./Bu) result to kilograms per hectoliter (kg/hl) using the following formula: $\text{lbs./Bu} \times 1.287 = \text{kg/hl}$ and record in the "Remarks" section in whole and tenths.

7. MOISTURE

Moisture is the water content in cracked corn and is determined by using the Dickey-john GAC-2100 instrument utilizing the corn calibrations.

Determine moisture on a representative portion of the original sample and record the percentage of moisture on the certificate to the nearest tenth percent.

8. WHOLE KERNELS, CRACKED CORN, AND OTHER MATERIAL

Determine the percentage of whole kernels, cracked corn, and other material in a sample using a 250-gram portion of the original sample. Determine all whole kernels of corn. For this instruction consider only kernels that are 100% intact.

Remove all recognizable pieces of corn from the remainder of the work portion. This material functions as cracked corn. The material remaining in the sample after the removal of whole corn kernels and cracked corn is "other material."

Calculate the percentage of whole kernels, cracked corn, and other material in the sample as shown in the following example and report the test results to the nearest tenth percent on the work record and certificate.

	Weight of Sample Portion (grams)	Weight of Separation (grams)	Actual %	Certified %
Whole Kernels	250	32.10	12.80	12.8
Cracked Corn	250	210	84.00	84.0
Other Material	250	7.90	3.20	3.2

9. AFLATOXIN TESTING

Samples may be tested for aflatoxin using only FGIS-approved quantitative or qualitative test kits.

The minimum sample size is based on the type of lot. Applicants may request a sample size larger than the minimum sample size.

Lot Type	Minimum Sample Size (lbs.)/ grams
Trucks	2 pounds / approximately 908 grams
Railcars	3 pounds / approximately 1,362 grams
Barges/Sublots	10 pounds / approximately 4,540 grams

NOTE: A 10-pound sample size is also recommended, but not required, for submitted samples.

Perform aflatoxin testing and certification in accordance with the applicable instructions in the Aflatoxin Handbook.

10. STARLINK TESTING

Samples may be tested for the presence of StarLink™ corn using FGIS-approved lateral flow test kits. The applicant must state the sample size (e.g., 400 kernels, 800 kernels) for the basis of testing.

Testing is based on the gram weight that is equivalent to the test portion size (e.g., 400 kernels equals 115 grams) as shown in the table below.

<u>Sample Size (Kernels)</u>	<u>Sample Size (Grams)</u>
100 kernels	29 (\pm 5 grams)
200 kernels	58 (\pm 5 grams)
300 kernels	86 (\pm 5 grams)
400 kernels	115 (\pm 5 grams)
500 kernels	143 (\pm 5 grams)
600 kernels	172 (\pm 5 grams)
700 kernels	200 (\pm 5 grams)
800 kernels	229 (\pm 5 grams)
1600 kernels	458 (\pm 10 grams)
2400 kernels	687 (\pm 15 grams)

Follow the testing and certification procedures as found in FGIS Directive 9181.1, "Testing for StarLink™ Corn - Lateral Flow Test Strip Method."

11. OTHER FACTORS/CONDITION

Examine samples for other factors (e.g., odor) or conditions (e.g., insect infestation) that may have an effect on the overall quality of the cracked corn. Make the determination(s) on a 1,000-gram portion if an analysis is necessary. When a condition/factor exists that may not appear in the representative sample, the determination may be made on the basis of the lot as a whole at the time of sampling according to procedures prescribed in FGIS instructions. Note any of these factors/conditions in the "Remarks" section of the certificate.

12. CERTIFICATION

Cracked corn is certified as "Not Standardized Grain" on Official Grain Inspection Certificates. To certify cracked corn, cross out the words "Grade and Kind" on the grade line of the certificate and write/type the words "Not Standardized Grain."

For certificates that have preprinted factor result blocks (e.g., test weight per bushel, moisture) enter the appropriate test results.

For all other determined factors without preprinted results blocks (whole/cracked kernels, other material, aflatoxin, StarLink™), enter the test results in the "Remarks" section of the certificate. The percentages of cracked corn, whole kernels, and other material are certified to the nearest tenth percent.

The applicant for service has the option of requesting certification of one individual factor (e.g., cracked corn), two factors (e.g., cracked corn, whole kernels), or all three factors (i.e., cracked corn, whole kernels, other material).

List the applicable result(s) on the certificate using the example listed below as a guideline.

Cracked corn ()%, Whole kernels ()%, Other Material ()%

At the request of the applicant for service, the percentages of cracked corn and other material can be combined and reported as a single factor using the following statement.

Cracked corn and other material ()%, Whole kernels ()%

/s/David Orr

David Orr, Director
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