

U.S. DEPARTMENT OF AGRICULTURE  
GRAIN INSPECTION, PACKERS AND STOCKYARDS  
ADMINISTRATION  
FEDERAL GRAIN INSPECTION SERVICE  
STOP 3630  
WASHINGTON, D.C. 20090-3630

DON HANDBOOK  
CHAPTER 3  
8-30-04

CHAPTER 3

SAMPLE PREPARATION

<u>Section Number</u>	<u>Section</u>	<u>Page Number</u>
3.1	SAMPLE SIZE AND PREPARATION .....	3-1
3.2	GRINDING SAMPLES .....	3-2



### 3.1 SAMPLE SIZE AND PREPARATION

A sample of approximately 200 grams, with dockage and stones removed, is required for the DON testing and file sample (100 grams work portion, 100 grams file portion). An additional sample may be required if subsequent review inspections are requested. A similar sample size is recommended for submitted samples.

Obtain samples according to the guidelines in the Grain Inspection Handbook, Book I, "Grain Sampling." From the 100-gram ground work portion, divide (using a Boerner divider) out a portion of 50 grams for DON testing and weigh on an FGIS-approved type scale with a minimum division size of 0.1 gram.

### 3.2 GRINDING SAMPLES

Grind approximately 100 grams (dockage and stone free) of grain using a Romer Mill-Model 2a, Udy Grinder, Perten Falling Number Mill, Bunn Commercial Coffee Grinder, or an equivalent device that meets FGIS' performance requirements.

**SAFETY NOTE: OPERATOR MUST OBSERVE SAFETY PRECAUTIONS AND WEAR EYE PROTECTION WHEN OPERATING THE GRINDER. SEE THE OPERATOR'S MANUAL FOR MORE SAFETY TIPS.**

The grinding apparatus must be adjusted to produce a particle size that is sufficiently fine enough to obtain a homogeneous blend. Generally, a sufficiently coarsely ground sample of wheat resembles whole wheat flour, while a sample that is too coarsely ground has the appearance of bulgur or semolina. Avoid over-grinding or pulverizing a sample because it produces an excessively powdery mix that will slow down the filtration process.

a. Procedures for Checking the Performance of the Grinder.

To check the performance of equipment used for grinding **small grains (e.g., wheat and barley)**, use the following procedures:

- (1) Grind a sample portion of approximately 100 grams of relatively dry wheat (i.e., 13 percent or less moisture).
- (2) Weigh the entire portion that was ground.
- (3) Sieve the portion across a standard No. 20 wire woven sieve.
- (4) Weigh the portion that passed through the sieve.

(5) Determine the percent of fine material, by weight, as follows:

Fines = weight from step (4) divided by the weight from step (2) X 100.

For locations that perform mycotoxin testing on coarse (e.g., corn) and small grains, perform the check using a 100-gram sample portion of corn having a moisture content of 14 percent or less.

b. Optimum Particle Size.

The optimum range for particles of coarse and small grain passing through the No. 20 sieve is between 60 and 75 percent. Whenever the ground particles appear to be too coarse, or the results of a grinder check indicate that less than 50 percent of the ground portion passes through the No. 20 sieve, the grinder should be adjusted or repaired to meet the optimum range requirements.

Grinding apparatuses must be checked periodically to determine whether they are producing a final product that meets the particle size requirements as listed above. Official personnel shall determine the frequency of the checks based on a number of items that include visual observation of the ground product, number of samples ground since last check, and time (number of days) since the last check was performed. Record all particle check results in a convenient location for future reference purposes.