United States Department of Agriculture
Grain Inspection, Packers and Stockyards Administration
Federal Grain Inspection Service

Issuance Change

CHANGE TO ☐DIRECTIVE ☐MANUAL ☒HANDBOOK

CHANGE NO.	**TO** *(NO.)*	**TITLE**	**DATE:**
		Grain Inspection Handbook II	
101		Grain Grading Procedures, Chapter 13 Wheat	4/2/07

PURPOSE OF CHANGE

This page is revised to show the expansion of the optional alkali test methods (sodium-hydroxide or potassium hydroxide) to assist in the determination of mixtures of soft red and soft white. Additionally, the mixing time requirement for the Potassium-Hydroxide test has been revised to specify a mixing duration of 1 to 1 ½ minutes

FILING INSTRUCTIONS

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/s/ John C. Giler

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e. *Hard White Wheat. All hard endosperm white wheat varieties. There are no subclasses in this class.*

f. *Soft White Wheat. All soft endosperm white wheat varieties. This class is divided into the following three subclasses:*

(1) *Soft White Wheat. Soft endosperm white wheat varieties which contain not more than 10 percent of White Club wheat.*

(2) *White Club Wheat. Soft endosperm White Club wheat containing not more than 10 percent of other soft white wheats.*

(3) *Western White Wheat. Soft White wheat containing more than 10 percent of White Club wheat and more than 10 percent of other Soft White wheats.*

g. *Unclassed Wheat. Any variety of wheat which is not classifiable under other criteria provided in the wheat standards. There are no subclasses in this class. This class includes any wheat which is other than red or white in color.*

h. *Mixed Wheat. Any mixture of wheat which consists of less than 90 percent of one class and more than 10 percent of one other class, or a combination of classes which meet the definition of wheat.*

Basis of Determination. Determine class on a dockage-free and shrunken and broken-free portion of 15 grams. Use kernel and varietal characteristics when making this determination.

Kernel Characteristics. Kernel characteristics include the color, shape, and length of the kernel and the shape of the germ, crease, and brush. Inspection personnel should be familiar with kernel characteristics of all classes of wheat handled in their market.

Varietal Characteristics. Some varieties possess characteristics of two or more classes. Knowledge of distinct varietal characteristics is necessary in making class determinations. Inspection personnel should be familiar with the characteristics of all varieties of wheat handled in their market.

Classification of Recognized Varieties. Hard red varieties of wheat grown during the winter season in Arizona, California, Nevada, New Mexico, and Texas and marketed in these States are classed as Hard Red Winter Wheat.

Certification. For Mixed wheat, record the percentages of each class to the nearest whole percent on the certificate in accordance with section 13.3, Grade Designations.

Distinguishing Between White and Red Kernels in Hard or Soft Wheat. To assist in the detection of white and red wheat kernels in samples of Hard or Soft wheat, official personnel may use the commercially available sodium-hydroxide test kit, or the potassium-hydroxide test method developed by FGIS. The tests can serve as a useful tool when samples challenge the normal visual inspection method. Due to the resulting similarity in kernel color after the process is completed and the affect these chemical processes may have on kernel morphology, it is necessary to determine whether a sample contains different classes of white or red wheat prior to performing the test.

a. Sodium-Hydroxide Test. The sodium-hydroxide turns red wheat a dark red in color, and turns white wheat a straw yellow in color. When using the commercially available test kit, follow the procedures as provided by the test kit manufacturer.

b. Potassium-Hydroxide Test. Follow the procedures outlined below. 1/

(1) Place approximately 15 grams of wheat in a mixing jar.

(2) Add 10 grams of potassium-hydroxide (KOH) pellets.

(3) Add 40 ml of bleach.

(4) Set stirring head on jar, place jar on mixer, and mix for 1 to 1½ minutes.

(5) Pour the wheat from the mixing jar into a tea strainer and rinse with warm tap water to remove the sodium-hydroxide/bleach solution.

(6) After rinsing, lightly tap the tea strainer against the edge of the sink to remove the excess water. Gently press the bottom of the tea strainer on a dry paper towel to remove any additional water.

(7) Place the wheat on a dryer sieve and dry until the kernels are not tacky when picked up with a pair of tweezers.

(8) Remove the wheat from the drying sieve and observe the color. White wheat turns a light straw or amber color. Red wheat turns a dark brownish /red color.

Caution: Too much potassium-hydroxide (step 2) or over mixing (step 4) may remove the bran in red wheat.

1/ For equipment and materials, see section 1.17.