

Grain Inspection Hand Book

Montana Standards

Book 1 – Chapter 5

Camelina

GRAIN INSPECTION HANDBOOK
BOOK 1, CHAPTER 5
CAMELINA SEED

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5.1 – DEFINITION OF CAMELINA SEED

Camelina Seed (Camelina sativa) shall consist of 50.0 percent or more of whole camelina seed before the removal of dockage and not more than 10.0 percent of other grains.

Whole kernels are kernels with one-fourth or less of the kernel removed.

Basis of Determination: Normally, a visual appraisal of the sample is sufficient to determine if it meets the definition of camelina seed. However, if analysis is necessary, make the determination before the removal of dockage on a portion of approximately 10 grams.

5.2 – PERCENTAGES

Determine percentages on a weight basis to a nearest tenth percent except for stones and ergot. Report stones and ergot to the nearest hundredth percent. Calculate percent by dividing the weight of the material removed by the weight of the portion used and multiplying by 100.

Upon request by applicant, stones will be recorded by count as well as by the percentage.

Table No. 1 – How Factors Are Recorded

NEAREST TENTH PERCENT	NEAREST HUNDREDTH PERCENT	BY COUNT
Damaged Kernels (Total) Dockage Heat-Damaged Kernels Green Damaged Kernels Sound Test Weight per Bushel	Ergot Stones	Animal Filth Garlic Bulblets Glass Insects Large Debris Stones Unknown Foreign Substance(s) or a Commonly Recognized Harmful or Toxic Substance(s)

5.3 – BASIS OF DETERMINATION

Distinctly Low Quality: The determination of distinctly low quality is made on the basis as a lot as a whole at the time of sampling when a condition exists that may or may not appear in the representative sample and/or the sample as a whole.

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Certain Quality Determinations: Each determination of rodent pellets, bird droppings, other animal filth, broken glass, dockage, live insect infestation, large stones, temperature, garlic, and unknown foreign substance(s), and a commonly recognized harmful toxic substance(s) is made on the basis of the sample as a whole. When a condition 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.

All Other Determinations: Other determinations not specifically provided for under the general provisions are made on the basis of grain when free from dockage, except the determination for odor is made on either the basis of grain as a whole or the grain when free from dockage.

Table No. 2 – Basis of Determination

Lot as a Whole	Sample Before the Removal of Dockage	After the Removal of Dockage	After the Removal of Dockage and Hand Picked Dockage
Distinctly Low Quality Infestation Heating Odor	Infestation Dockage Odor Animal Filth Glass Unknown Foreign Substances Kind of Grain	Stones Ergot Odor Hand Picked Dockage	Damaged Kernels (Total)

A general procedure based on the “basis of determination” definition is followed in the inspection and grading of camelina seed. However, the procedure may vary according to the test required to determine the grade. The following sections of this chapter are arranged in a logical sequence typically followed in the inspection and grading of camelina seed.

5.4 – HEATING

Camelina Seed developing a high temperature from excessive respiration is considered heating. Heating camelina seed in its final stages usually produces a sour or musty odor. Care should be taken not to confuse camelina seed that is heating with camelina seed that is warm and moist because of storage in bins, railcars, or other containers during hot weather.

Basis of Determination: Determine heating on evidence obtained at the time of sampling.

5.5 – ODOR

Basis of Determination: Determine odor on evidence obtained at the time of sampling and on the sample either before or after the removal of dockage. Odors detected at the time of sampling must be recorded on the work record.

Table No. 3 – Odor Classification Examples

SOUR	MUSTY	COMMERCIALY OBJECTIONABLE FOREIGN ODORS
Boot Fermenting Insect (acid) Pigpen Smoke <u>A/</u>	Ground Insect Moldy	Animal hides Decaying animal & vegetable matter Fertilizer Fumigant Insecticide Oil products Skunk Smoke (evidence of fire-burnt material) Strong weed
<p><u>A/</u> Consider smoke odors as sour unless there is evidence of fire-burnt material.</p>		

Odors from Heat-Damaged Camelina Seed: When heat-damaged kernels are present, camelina seed gives off an odor very similar to smoke. Camelina Seed containing a “smoke” odor is considered as having a “Sour” odor unless evidence of a fire-burnt material is present in the lot or the original sample. If evidence of a fire-burnt material is present in the lot or the sample, the smoke odor is considered a commercially objectionable foreign odor.

Musty of Sour Odors: High temperatures resulting from excessive respiration causes camelina seed to heat and give off a Musty or Sour odor.

Musty or sour odors in camelina seed includes musty, sour, earthy, moldy, ground odor, or a rancid, sharp, and acrid insect odor. An acrid insect odor (usually referred as “lesser grain borer” odor) is considered sour. An insect odor other than acrid (usually referred to as “bran bugs” odor) is considered musty.

Commercially Objectionable Foreign Odor: Commercially objectionable foreign odor are odors that are foreign to grain and render it unfit for normal commercial usage.

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Fumigant or insecticide odors are considered objectionable foreign odors if they linger and do not dissipate. When a sample of camelina seed contains a fumigant or insecticide odor that prevents a determination as to whether any other odor(s) exist(s), apply the following guidelines:

- A. Allow the sample to aerate in an open metal container not to exceed four (4) hours; and
- B. If the fumigant odor persists after four (4) hours, consider the sample as having a commercially objectionable foreign odor and grade it accordingly.

The inspector(s) is responsible for making the final determination for all odors. A consensus of experienced inspectors is used, whenever possible, on samples containing marginal odors. The consensus approach is not required if no odor or a distinct odor is detected.

5.6 – ANIMAL FILTH, GLASS AND UNKNOWN FOREIGN SUBSTANCE

Basis of Determination: Determine animal filth, glass, and unknown foreign substances on the basis of the sample as a whole (approximately 500 grams).

5.7 – DISTINCTLY LOW QUALITY

Consider camelina seed distinctly low quality when it is obviously of inferior quality and the existing grade factors or guidelines do not properly reflect the inferior condition.

Basis of Determination: Use all available information to determine whether the camelina seed is of distinctly low quality. Determine distinctly low quality on the lot as a whole or the sample as a whole.

Large Debris: Camelina Seed containing two or more stones, pieces of glass, pieces of concrete, or other pieces of wreckage or debris which are visible to the sampler and are too large to enter the sampling device is considered distinctly low quality.

Other Unusual Conditions: Camelina Seed that is obviously affected by other unusual conditions (including diatomaceous earth) which adversely affects the quality of the camelina seed and cannot be properly graded by use of the grading factors specified or defined in the standards is considered distinctly low quality.

Table No. 4 –Factors

FACTOR	LINE SLIDE	NUMBER/WEIGHT LIMITS <u>1/</u>	BASIS
Animal Filth	OF-31.0	3 or more	Lot/Sample
Glass		1 or more	Lot/Sample
Heating		Presence	Lot
Large Debris*		2 or more	Lot/Sample
Odor		Presence	Lot/Sample
Other Unusual Conditions*		Presence	Lot/Sample
Stones		Any number in excess of 0.05% or count?	Lot/Sample
Unknown Foreign Substance(s) Or a Commonly Recognized Harmful or Toxic Substance(s) <u>2/</u>		1 or more	Lot/Sample

1/ Record count factors to the nearest whole number

2/ Includes palletized material other than feed pellets which are considered foreign material.

* For distinctly Low Quality, see section 3.9.

Stones: Are concreted, earthy, or mineral matter and other substances of similar hardness which will not disintegrate readily in water.

5.8 – DOCKAGE AND HAND PICKED DOCKAGE

Dockage: Is material, other than camelina seed (except for underdeveloped, shriveled, and small pieces of camelina seed) that can be easily removed with sieves and / or a cleaning device.

Basis of Determination: The machine dockage determination is made on a representative portion of the original sample; (Submitted sample 500 grams, entire sample when less than 500 grams).

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Handpicked dockage is determined on a representative portion of (about 10 grams) of the original sample.

Procedure: The procedure for determining machine dockage shall be ascertained by using a Carter Day Dockage tester. Settings are as follows:

- A. Air is 3
- B. Feed is 3
- C. No riddle – if sample contains an abundance of unthreshed seed pods.
- D. 25 riddle – if sample contains an abundance of wild oats.
- E. NO 2 sieve in top carriage
- F. NO 7 sieve in middle carriage
- G. Blank sieve in the bottom carriage

Hand Picked Dockage: Is all material other than camelina seed that remains in the sample after machine dockage.

Computing Total Dockage: In computing the total dockage, all mechanically separated dockage shall be computed on the basis of the sample as a whole. Handpicked dockage is added to the mechanically separated dockage to determine the total dockage.

Certification: Record the Total Dockage and the percentage to the nearest tenth percent as part of the grade designation (e.g. MT No. 1 Camelina Seed, Total Dockage 2.1%) and in the “Remarks” section of the certificate. As follows:

Mechanical Dockage 2.0%

Handpicked Dockage 0.1%

Total Dockage 2.1%

5.9 – SPECIAL GRADE AND SPECIAL GRADE DESIGNATIONS

Special grade draw attention to unusual conditions in the grain and are made part of the grade designation.

The definitions and examples of the designations for special grades in cultivated camelina seed are:

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- A. Ergoty Camelina Seed. Camelina seed that contains more than 0.05 percent ergot in a 250 gram sample shall be considered Ergoty.

Example: MT. Camelina Seed, Ergoty, Total Dockage 1.2%

Ergot is a hard, reddish-brown or black grain – like mass of certain parasitic fungi that replaces the kernels of cultivated camelina seed and other grains. When determining the presence of ergot, refer to Interpretive Line Slide No: OF - 12.0.

Basis of Determination: Determine ergoty on a dockage-free portion of approximately 250 grams.

Certification: When applicable, record the “Ergoty” on the pan ticket and the certificate in accordance with Section 3, Grade Designations. Record the percentage of ergot to the nearest hundredth percent on the pan ticket and upon request in the “Remarks” section of the certificate.

- B. Garlicky Camelina Seed. Camelina seed that contains more than two green garlic bulblets or an equivalent quantity of dry or partially dry bulblets in approximately a 500 gram portion shall be considered Garlicky camelina seed.

Example: MT Camelina Seed, Garlicky, Total Dockage 0.7%

Basis of Determination: Determine garlicky before the removal of dockage on a portion of approximately 500 grams.

Characteristics of Bulblets:

- A. Green garlic bulblets are bulblets which have retained all their husks intact.
- B. Dry or partially dry garlic bulblets are bulblets which have lost all or part of their husks. Consider bulblets with cracked husks as dry.
- C. Three dry or partially dry garlic bulblets are equal to one green bulblet. Garlic bulblets apply in the determination of “Garlicky” but also function as dockage or other material as the case may be. (Reference: Interpretive Line Slide No’s OF-13.0 and OF -13.1)

Certification: When applicable, record the word “Garlicky” on the pan ticket and the certification in accordance the Section 3, Grade Designations. Upon request, record the number of garlic bulblets in whole and thirds on the pan ticket and the “Remarks” section of the certificate.

- C. Infested Camelina Seed. Camelina seed that is infested with live weevils or other live insects injurious to stored grain.

Example: MT Camelina Seed, Infested, Dockage 10.0%

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The presence of any live weevil or other live insects injurious to stored grain found in the work sample indicates the probability of infested and indicates that the camelina seed must be carefully examined to determine if it is infested. In such cases, examine the work sample the file sample before reaching a conclusion as to whether or not the camelina seed is infested. Do not examine the file sample if the work portion is free from insect.

Live weevils shall include rice weevils, granary weevils, maize weevils, cowpea weevils, and lesser grain borers. Other live insects injurious to stored grain include grain beetles, grain moths, vetch bruchids, and larvae.

Basis of Determination: Determine infestation on the lot as a whole and/ or before the removal of dockage. For specific guidelines, see Table No. 5.

Table No. 5 – Insect Infestation Guide

SAMPLE DESIGNATION	INFESTED LEVEL <u>1/</u>
REPRESENTATIVE SAMPLE- Applies to submitted sample, lots probe-sampled, and D/T- sampled railcars/Trucks. Examine work portion and file sample. (Do Not examine file sample if work portions is insect free.)	2 lw * or 1 lw + 5 oli* 10 oli*
LOT AS A WHOLE (STATIOARY) – Applies at the time of sampling for lots probe-sampled.	Same
LOT AS A WHOLE (CONTINUOUS LOADING)- <u>2/</u> Applies to: -each railcar when inspected under Cu-Sun. -each sub sample for sacked grain lots. -each component sample for barge lots and ship lots <u>3/</u>	Same
* lw = live weevil, oli = Other live insects injurious to stored grain.	
<u>1/</u> Sample containing infestation at these levels are infested.	
<u>2/</u> Minimum sampling rate for online operations is 500 grams per 2,000 bushels.	
<u>3/</u> Minimum component size is approximately 10,000 bushels.	

Certification: When applicable, record the word “Infested” on the pan ticket and certificate in accordance with Section 3, Grade Designation.

5.10- PROCESSING THE WORK SAMPLE

At this point, determinations have been made for kind of grain, infestation, heating, odor, animal filth, glass, unknown foreign substances, garlic bulblets, distinctly low quality, sample grade criteria, test weight per bushel, dockage, stones and ergot. Now divide the work sample into fractional portions for those determinations required after the removal of machine separated dockage and handpicked dockage. Table No. 6 shows portions sizes. Note that the sample may require as many as six cuts using the Boerner divider for the determination of some of the factors.

Table No. 6 – Approximate Analytical Portion Sizes

FACTOR	GRAMS
Hand Picked Dockage	10
Damaged Kernels	5
Heat-Damaged Kernels	5
Distinctly Green Kernels	5

5.11 – DAMAGED KERNELS

Damage must be distinct. In general, a kernel of camelina seed shall be considered damaged when the damage is distinctly apparent and of such character as to be recognized as damaged for commercial purpose.

Damaged Camelina Seed: Camelina and pieces of camelina seeds that are frost – damaged, distinctly green-damaged, heat –damaged, immature, mold-damaged, rimed – damaged, or sprout-damaged.

- A. Frost Damaged: Camelina and pieces of camelina seeds which are distinctly shriveled or shrunken (frost damaged) to the degree illustrated shall be considered damage. (Reference: Interpretive line print canola3.0)
- B. Distinctly Green-Damaged Kernels: Camelina and pieces of camelina seeds kernels which are a distinct green throughout the kernel. (Reference: Interpretive line print canola1.0)
- C. Heat-Damaged Kernels: Camelina and pieces of camelina seeds which are materially discolored and damaged by heat. Heat damaged kernels will be a dark brown color.
- D. Damaged by Heat Camelina: Camelina and pieces of camelina which are damaged as result of heat but which are not materially discolored a light brown or caramel color.

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- E. Immature Kernels: Camelina and pieces of camelina seeds which are immature with a wrinkled appearance. Immature kernels should not be mistaken for frost damaged kernels.
- F. Mold Damaged: Camelina and pieces of camelina seeds containing the amount of surface mold depicted shall be considered damage. (Reference: Interpretive line print canola3.0)
- G. Rimed Damaged: Camelina and pieces of camelina seeds which are completely covered with a whitish, frosted coloration (rime) shall be considered damage. (Reference: Interpretive line print canola3.0)
- H. Sprout Damage: Camelina and pieces of camelina seeds that are sprouted shall be considered damage. (Reference: Interpretive line print canola4.0)

Note: Remember camelina is a smaller grain than canola. This should be taken into consideration when making the determination for damages.

Basis of Determination: The determination for damaged kernels shall be made on a representative portion cut from the work sample after the removal of dockage and handpicked dockage. Use the portion which was used for picking handpicked dockage. Note: This portion must be reweighed.

Certification: Show the percentages of damaged kernels on the work record and certificate to the nearest tenth of percent.