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# Official Grain Grading Guide

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## 15. Safflower seed

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## Determination of dockage

### Definitions

Dockage is assessed and recorded to the nearest 0.1%.

Dockage is defined under the Canada Grain Act as “any material intermixed with a parcel of grain, other than kernels of grain of a standard of quality fixed by or under this Act for a grade of that grain, that must and can be separated from the parcel of grain before that grade can be assigned to the grain.” Dockage is removed by following the cleaning procedures described in this section of the guide.

The sample as it arrives is referred to as the uncleaned or dirty sample. Its weight is the **gross weight** of the sample. Dockage is assessed on the gross weight of the sample.

### Dockage not reported

- ▲ **Important:** Dockage is not reported for
  - *Safflower Seed, Sample Canada Account Fireburnt*
  - *Safflower Seed Sample Salvage*
  - *Safflower Seed, Sample Condemned*

### Normal cleaning procedures

- ▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.

1. Set up the Carter dockage tester as follows:

Feed control	#7
Air control	#7
Riddle	none
Top sieve	blank
Centre sieve	none
Bottom sieve	none
Sieve cleaner control	

2. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
  - Official samples should be at least 900 grams.
  - Unofficial samples must be at least 750 grams.
3. Sieve portions of approximately 250 grams at a time.
4. Sift the sample over a No. 15 round-hole sieve nested over a No. 6 slotted sieve or a No. 6 buckwheat sieve or both, with a blank sieve on the bottom.
5. Turn on the Carter dockage tester.
6. Pour into the hopper the part of the sample that has passed through the No. 15 round-hole sieve.

7. From the material remaining on the top of the No. 15 round-hole sieve, handpick all whole or broken safflower seeds and return them to the cleaned sample.
8. Determine dockage, using the list that follows, under *Composition of dockage*.

### **Composition of dockage**

- Foreign material removed by the No. 15 round-hole sieve
- Material removed by the No. 6 slotted, the No. 6 buckwheat sieve, or both
- Material removed by aspiration; except sound whole safflower seeds
- Soft earth pellets handpicked from the clean sample constituting up to 2.5% of the sample by weight—if the percentage of soft earth pellets is 2.5% or more, soft earth pellets becomes a grading factor.

### **Optional analysis**

Where a shipper requests special cleaning of a carlot of grain at a terminal or transfer elevator, and the elevator manager agrees, dockage material will be analyzed for the presence of grain. The percentage and grade of any grain contained in the dockage will be reported and elevator stocks will be adjusted on the basis of the analysis. Agreement of the shipper and unload elevator must be conveyed to the CGC in writing prior to the analysis being performed.

### **Procedures**

1. Analyze the official sample.
2. Record the following on inspection records:
  - The percentage by gross weight to the nearest 0.1% and the grade of safflower seed.
  - The percentage by gross weight to the nearest 0.1% and the grade of grain separable from dockage.
  - The percentage of dockage.

#### **Example**

*95.0% Safflower Seed, No. 1 CAN*

*4.0% Domestic Mustard Seed, No. 1 CAN Oriental*

*1.0% dockage*

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## Grading

### Important definitions

#### Net weight of sample

The sample after cleaning and removal of dockage is referred to as the cleaned sample. Its weight is the net weight of the sample. Percentages by weight for grading refer to percentages of the cleaned sample, the net weight.

#### Kernel counts (K)

A kernel count is the number of kernel-sized pieces of a foreign material in 500 g of a sample.

- To do kernel counts you must have 500 grams of cleaned sample.
- All grading is done on representative portions divided down from the cleaned sample using a Boerner-type divider.

#### Hazardous substances in samples

Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances. Hazardous substances are defined in the Regulations as “any pesticide, herbicide or desiccant.”

#### Representative portion for grading

All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider.

When the grading factor is . . .	Then use . . .
Normal	Optimum portion size
Severe	Minimum portion size or more (do not use less)

Values in the table represent a range of recommended portions sizes.

#### Representative portion of safflower seed for grading, grams

Grading factor	Minimum	Optimum	Export
Damage	100	100	100
Dehulled	100	100	100
Empty hulls	100	250	250
Excreta	working sample	working sample	working sample
Heated	100	100	100
Matter other than cereal grains	100	250	250
Odour	working sample	working sample	working sample
Other grains	100	250	250
Rotted	100	100	100
Soft earth pellets	100	100	100
Stones	250	500	1000

## Grading factors

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### Contaminated grain

▲ **Important:** Wear gloves and a mask to handle any sample that is suspected of containing contaminated grain.

Contaminated is defined in the “*Canada Grain Act*” as; “Contaminated means, in respect of grain, containing any substance in sufficient quantity that the grain is unfit for consumption by persons or animals or is adulterated within the meaning of the regulations made pursuant to sections B.01.046(1), B.15.001 and B.15.002(1) of the *Food and Drugs Act*.”

Samples deemed to be contaminated by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada are graded *Safflower Seed, Sample Condemned*.

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### Damage (DMGE)

Damaged seeds are frosted, green, broken, heated, insect-damaged or otherwise unsound.

#### Representative portion for analysis

Minimum—100 g

Optimum—100 g

Export—100 g

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### Dehulled (DHULL)

Intact safflower seeds are called “achenes” which consists of the hull containing the seed. Dehulled seeds are broken or whole seeds without hulls.

#### Representative portion for analysis

Minimum—100 g

Optimum—100 g

Export—100 g

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### Earth pellets (EP)

- Hard earth pellets are pellets that do not crumble under light pressure. See *Stones*.
  - Soft earth pellets are pellets that crumble under light pressure. See *Soft earth pellets*.
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### Empty hulls (HULLS)

Intact safflower seeds are called “achenes” which consists of the hull containing the seed. Empty hulls are achenes with intact hulls but which contain no seeds. This also includes hulls having less than one-third of the seed attached.

#### Representative portion for analysis

Minimum—100 g

Optimum—250 g

Export—250 g

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**Excreta (EXCR)**

▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain excreta.

**Representative portion for analysis**

Minimum—working  
sample

Optimum—working  
sample

Export—working  
sample

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**Fertilizer pellets (FERT PLTS)**

Fertilizer pellets are typically either small, round and white or irregular shaped and pink or red. Fertilizer pellets are not considered a hazardous substance however there is no visible means of assuring that material resembling fertilizer pellets is not some other contaminant.

**Representative portion for analysis**

Minimum—working  
sample

Optimum—working  
sample

Export—working  
sample

**Procedures**

- Handpick any fertilizer pellets and determine the concentration basis the net working sample.
- Fertilizer pellets are assessed as stones when the concentration does not exceed 1.0% of the net sample weight.
- Samples containing fertilizer pellets in excess of 1.0% of the net sample weight are graded *Safflower Seed, Held IP Suspect Contaminated Grain*.

**Note:** Canadian Grain Commission personnel should refer to ISO national work instruction “*Suspect Contaminated Grain, Handling Procedures*” for procedures to be followed when handling samples containing fertilizer pellets.

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**Foreign material**

Foreign material in safflower seed includes other grains, sclerotinia, soft earth pellets and stones.

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**Heated (HTD)**

Heated seeds have the colour or odour typical of grain that has heated or deteriorated in storage. Heated kernels include kernels discoloured from artificial drying, but not charred kernels.

**Representative portion for analysis**

Minimum—100 g

Optimum—100 g

Export—100 g



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**Matter other than cereal grains (MOTCG)**

Matter other than cereal grains refers to weed seeds and other grains that are not readily removable and may include

- Peas, lentils, beans, corn, other domestic or wild seeds
- Ergot and sclerotinia sclerotiorum

**Representative portion for analysis**

Minimum—100 g

Optimum—250 g

Export—250 g

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**Odour (ODOR)**

There is no numeric tolerance for odour. Consider

- The basic quality of the sample
- The type and degree of the odour
- The presence of visible residue causing the odour

**Representative portion for analysis**Minimum—working  
sampleOptimum—working  
sampleExport—working  
sample

If odour is the grade determinant and there is . . .	Then the grade is . . .
An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt	<i>Safflower Seed, Sample Canada, Account Odour</i>
An excessive heated odour	<i>Safflower Seed, Sample Canada, Account Heated</i>
An excessive fireburnt odour	<i>Safflower Seed, Sample Canada, Account Fireburnt</i>

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**Other grains (OGRN)**

Other grains in safflower seed include wheat, rye, triticale, barley, oats and groats, including wild oat groats, that remain in the cleaned sample.

**Representative portion for analysis**

Minimum—100 g

Optimum—250 g

Export—250 g

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**Rotted (ROT)**

Seeds have the colour or odour typical of grain that has heated or deteriorated in storage. Rotted seed is considered in combination with heat-damaged kernels.

**Representative portion for analysis**

Minimum—100 g

Optimum—100 g

Export—100 g

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### Soft earth pellets (SEP)

Soft earth pellets are pellets that crumble under light pressure—if they do not crumble, they are considered stones. These pellets can be

- Earth and fertilizer pellets
- Any non-toxic material of similar consistency

#### Representative portion for analysis

Minimum—100 g      Optimum—100 g      Export—100 g

Soft earth pellets in safflower seed are considered as *Foreign material*.

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### Stones (STNS)

Stones are hard shale, coal, hard earth pellets, and any other non toxic materials of similar consistency. Fertilizer pellets are assessed as stones when constituting 1.0% or less of the net sample weight. (See *Fertilizer pellets* for specific procedures to be followed when samples contain fertilizer pellets.)

#### Representative portion for analysis

Minimum—250 g      Optimum—500 g      Export—1000 g

#### Procedures

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.
  - In western Canada samples of grain containing stones in excess of “basic grade” tolerances, up to 2.5% are graded *Safflower Seed, Rejected “basic grade” Account Stones*. The “basic grade” refers to a grade established in the Canada Grain Regulations (grades listed in the first column in grade determinant tables) that would have been assigned to the sample if it contained no stones.
  - In eastern Canada samples of grain containing stones in excess of grade tolerances are degraded to lower grades. Samples containing stones in excess of the tolerance of the lowest grade established by regulation up to 2.5% are graded *Safflower Seed, Sample Canada Account Stones*.
  - In western and eastern Canada grain containing more than 2.5% stones is graded *Safflower Seed, Sample Salvage*.

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Examples: Western Canada

Excerpt from grade determinant tables for  
Safflower Seed, Canada

Grade name	Stones
No. 1 Canada	3K
No. 2 Canada	3K
No. 3 Canada	3K

K Number of kernel-sized pieces in 500 g

Basic grade:..... *Safflower Seed, No. 2 Canada*

Reason for basic grade:..... 4.0% Dehulled

If the above sample contained	Grade in western Canada
6K stones	<i>Safflower Seed, Rejected No. 2 Canada Account Stones</i>
3.0% stones	<i>Safflower Seed, Sample Salvage</i>

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Examples: Eastern Canada

Excerpt from grade determinant tables for  
Safflower Seed, Canada

Grade name	Stones
No. 1 Canada	3K
No. 2 Canada	3K
No. 3 Canada	3K

K Number of kernel-sized pieces in 500 g

Basic grade:..... *Safflower Seed, No. 2 Canada*

Reason for basic grade:..... 4.0% Dehulled

If the above sample contained	Grade in eastern Canada
6K stones	<i>Safflower Seed, Sample Canada Account Stones</i>
3.0% stones	<i>Safflower Seed, Sample Salvage</i>

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## Treated seed and other chemical substances

### Treated seed

Treated seed is grain that has been coated with an agricultural chemical for agronomic purposes. These seed dressings contain a dye to render the treated seed visually conspicuous. The colour of the dye varies depending upon the type of treatment and the type of grain. The current Canadian colour standards for pesticide seed treatments are: cereals—pink or red, canola—baby blue or green. Seed treated with an inoculant may have a green stain. The coatings or stains may appear greasy or powdery and surface area distribution ranges from tiny flecks to complete coverage.

### Other chemical substances

Other chemical substances refers to any chemical residues either adhering to the kernel or remaining in the sample and to samples having a chemical odour of any kind.

- ▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain contaminated grain.

### Representative portion for analysis

Minimum—working  
sample

Optimum—working  
sample

Export—working  
sample

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of any foreign chemical substance other than fertilizer pellets, the sample shall be graded *Safflower Seed, Held IP Suspect Contaminated Grain*.

**Note:** Canadian Grain Commission personnel should refer to ISO national work instruction “*Suspect Contaminated Grain, Handling Procedures*” for specific procedures to be followed when handling samples suspected of containing treated seed or other chemical substances.

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## Varieties

Safflower seed is graded without reference to variety.

## Primary and export grade determinants tables

### Safflower Seed, Canada (CAN)

Grade name	Standard of quality	Damage		Foreign material			Hulls	
	Degree of soundness	Heated %	Total %	Matter other than cereal grains %	Stones	Total %	Empty hulls %	Dehulled seeds %
No. 1 Canada	Well matured, good natural colour	Nil	3	0.2	3K	0.5	0.5	2
No. 2 Canada	Reasonably well matured, may be moderately weather-stained	Nil	10	0.5	3K	2	1	5
No. 3 Canada	Excluded from higher grades on account of weather-stained, may have the odour associated with low-quality seed but not distinctly sour, musty or rancid	1	10	1	3K	5	2	8
Grade, if No. 3 specs not met		<i>Safflower Seed, Sample Canada Account Heated</i>	<i>Safflower Seed, Sample Canada Account Damaged</i>	<i>Safflower Seed, Sample Canada Account Admixture</i>	2.5% or less— <i>Safflower Seed, Rejected (grade) Account Stones or Safflower Seed, Sample Canada, Account Stones</i> Over 2.5%— <i>Safflower Seed, Sample Salvage</i>	<i>Safflower Seed, Sample Canada Account Admixture</i>	<i>Safflower Seed, Sample Canada Account Hulls</i>	<i>Safflower Seed, Sample Canada Account Dehulled</i>

K Number of kernel-sized pieces in 500 g

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## Export shipments

Export shipments can be commercially clean or not commercially clean.

### Commercially clean

Shipments defined as commercially clean may contain up to 2.5% by weight of dockage.

Dockage is reported to the nearest

- 0.1% for samples representing commercially clean shipments loaded from a single terminal or transfer elevator
- 0.01% for composite samples representing shipments loaded from more than one terminal or transfer elevator

### Not commercially clean (NCC)

Shipments that do not meet the standards for commercial cleanliness are referred to as not commercially clean. Such shipments are permitted only with the permission of the CGC.

For samples representing not commercially clean shipments approved by the CGC for shipment from terminal and transfer elevators, dockage is reported to the nearest

- 0.1% for samples representing commercially clean shipments loaded from a single terminal or transfer elevator
  - 0.01% for composite samples representing shipments loaded from more than one terminal or transfer elevator
- less a deduction of up to 0.2%.

### Grading

Safflower seed on export is graded in accordance with primary grade standards and specifications.