



Official Grain Grading Guide

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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 samples graded
 - *Fababeans, Sample Canada Account Fireburnt*
 - *Fababeans, Sample Salvage*
 - *Fababeans, Sample Condemned*

Normal cleaning procedures

- ▲ **Important:** Wear gloves and a mask to handle any samples that you suspect may contain hazardous substances.
1. Using a Boerner-type divider, divide the uncleaned sample to obtain a representative portion.
 - Official samples should be at least 900 grams.
 - Unofficial samples should be at least 750 grams.
 2. Choose the appropriate hand sieve for the size of fababean.
 - No. 8 slotted
 - No. 9 slotted
 - No. 11 slotted
 3. Sieve the samples over the appropriate slotted sieve, using approximately 250 g at a time, to remove all readily removable material.
 4. Determine dockage, using the list under *Composition of dockage*.

Composition of dockage

- Material handpicked from the sieved sample, including all coarse foreign vegetable matter such as pods, stems, straw, and thistle tops
- All material removed by sieving
 - ▲ **Important:** Do not handpick mineral matter, ergot, sclerotinia, or large-seeded grains other than fababeans from the sieved sample.
- Soft earth pellets, if they are 10.0% or less of the uncleaned sample by weight

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 fababeans.
 - 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% Fababeans, No. 1 CAN

4.0% Domestic Mustard Seed, No. 1 CAN Oriental

1.0% dockage

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 net weight.

Kernel counts (K)

A kernel count is the number of kernel-sized pieces of a foreign material in 500 g of cleaned 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 portions 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 following table represent a range of recommended portions.

Representative portion of fababeans for grading, grams

Grading factor	Minimum	Optimum	Export
Damage	100	250	250
Excreta	working sample	working sample	working sample
Fireburnt	500	working sample	working sample
Foreign material	100	500	500
Heated or rotted	100	250	500
Insect parts	working sample	working sample	working sample
Mouldy	100	250	500
Odour	working sample	working sample	working sample
Perforated	100	250	250
Sclerotinia	250	1000	1000
Splits	100	250	500
Stones	250	500	1000

Grading factors

Blackened

Fababeans are blackened when their seed coats are very dark blue to black.
See *Damage*.

Representative portion for analysis

Minimum—100 g

Optimum—250 g

Export—250 g

Colour (CLR)

Colour is evaluated on the cleaned sample after the removal of damaged and split fababeans.

Terms used to describe colour in the grade determinants tables

Term	Characteristics
Reasonably good natural colour	Fababeans are moderately immature, with lightly adhered soil, moderately discoloured from storage or other natural causes, such as mottling.
Fair colour	Fababeans are immature but not green, have moderate amounts of adhered soil, or are otherwise moderately discoloured from natural causes, such as mottling.
Poor colour	Fababeans have a dark discolouration covering less than half of the hull, where there is no penetration of the cotyledon.

Other terms used to describe colour

Term	Characteristics
Sunburned or oxidation	Fababeans have undergone normal discolouration of the seed coats during storage. The colour varies from light tan to brown to very dark brown, depending on the duration and conditions of storage.
Immature	Fababeans are normal size and greenish, but not distinctly green.

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 *Fababeans, Sample Condemned*.

Cracked (CRKD)

Fababeans with a discoloured exposed cotyledon are considered cracked. See *Damage*.

Representative portion for analysis

Minimum—100 g

Optimum—250 g

Export—250 g

Cracked seed coats (CSDC)

Fababeans with cracked seed coats are considered sound if the halves of the kernels are held firmly together and the beans are not otherwise damaged.

Representative portion for analysis

Minimum—100 g

Optimum—250 g

Export—250 g

Damage (DMG)

Damage includes

- Blackened or cracked
- Sprouting
- Distinct immaturity
- Distinct deterioration or discolouration by weather or disease
- Insect damage
- Heat or mould damage
- Any other damage that seriously affects appearance or quality

Representative portion for analysis

Minimum—100 g

Optimum—250 g

Export—250 g

Discoloured (DCLR)

Fababeans are considered discoloured if the discolouration on the seed coat covers more than half the bean or when the discolouration penetrates the cotyledon. See *Damage*.

Representative portion for analysis

Minimum—100 g

Optimum—250 g

Export—250 g

Procedures

If the penetration of the discolouration is not obvious, cut the cotyledon crosswise in the discoloured area to determine the extent of the discolouration.

Earth pellets

- 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*.

Ergot (ERG)

Ergot is a plant disease producing elongated fungus bodies with a purplish-black exterior, a purplish-white to off white interior, and a relatively smooth surface texture.

Representative portion for analysis

Minimum—500 g

Optimum—1000 g

Export—1000 g

Excreta (EXCR)

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

There is no tolerance for excreta in fababeans.

Representative portion for analysisMinimum—working
sampleOptimum—working
sampleExport—working
sample

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 analysisMinimum—working
sampleOptimum—working
sampleExport—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 *Fababeans, 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.

Fireburnt (FBNT)

Fireburnt fababeans are beans charred or scorched by fire. A cross-section of a fireburnt bean resembles charcoal with numerous air holes. The air holes result in a low weight bean which crumbles easily under pressure.

Representative portion for analysis

Minimum—500 g

Optimum—working
sampleExport—working
sample**Procedures**

Samples containing any fireburnt seeds are graded *Fababeans, Sample Canada Account Fireburnt*.

Foreign material (FM)

Foreign material is any material other than whole or split fababeans.

Representative portion for analysis

Minimum—100 g

Optimum—500 g

Export—500 g

Green (GR)

Fababeans that are distinctly green from immaturity are considered damaged. See *Damage*.

Representative portion for analysis

Minimum—100 g

Optimum—250 g

Export—250 g

Heated (HTD)

Fababeans are considered heated or rotted if they are materially discoloured as a result of heating or rotting. Seed coats appear dark brown to black. The cotyledon tissue of dissected beans appears tan or brown. See *Damage*.

Representative portion for analysis

Minimum—100 g

Optimum—250 g

Export—500 g

Insect parts (I PARTS)

Insect parts refers to pieces of insects such as grasshoppers and lady bugs that remain in the sample after cleaning or processing. Samples are analyzed for the percentage of insect fragments and graded according to established tolerances.

If pulse crops come into contact with insects during the harvesting process, it may result in seed staining and earth adhering to the seed and may result in samples having an objectionable odour. Samples containing staining of this nature will be considered to be earth tagged and graded according to colour definitions. Samples having a distinct objectionable odour not associated with the quality of the grain will be graded *Type of Grain Sample Account Odour*.

Representative portion for analysisMinimum—working
sampleOptimum—working
sampleExport—working
sample

Mouldy (MLDY)

Fababeans are considered mouldy if they show clear evidence of mildew or mould.

Representative portion for analysis

Minimum—100 g

Optimum—250 g

Export—500 g

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
sample

Optimum—working
sample

Export—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>Fababeans, Sample CW/CE Account Odour</i>
An excessive heated odour	<i>Fababeans, Sample CW/CE Account Heated</i>
An excessive fireburnt odour	<i>Fababeans, Sample CW/CE Account Fireburnt</i>

Perforated (PERF)

Fababeans are considered perforated if they show clear evidence of hull perforations caused by insects or disease.

Representative portion for analysis

Minimum—100 g

Optimum—250 g

Export—250 g

Rime

White rime is the adhered lining of the seed pod.

- Fababeans that are completely and densely covered with white rime are considered damaged. See *Damage*.
- When the rime is sparse enough to expose the soundness of the bean, the bean is sound and the rime is considered in the general appearance of the sample.

Representative portion for analysis

Minimum—100 g

Optimum—250 g

Export—250 g

Rotted (ROT)

See Heated.

Sclerotinia sclerotiorum (SCL)

Sclerotinia sclerotiorum is a fungus producing hard masses of fungal tissue, called *sclerotia*. The sclerotia vary in size and shape, have a coarse surface texture, vary in exterior color from dark black to gray to white and have a pure white interior.

Representative portion for analysis

Minimum—250 g

Optimum—1000 g

Export—1000 g

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—500 g

Export—500 g

Procedures

- Earth pellets may be removed as dockage. See *Normal cleaning procedures*.
 - If soft earth pellets are over 10.0% of the gross weight of the sample, they become a grading factor, included in the tolerance for *Foreign Material*.
1. Return the pellets to the sample.
 2. Handpick soft earth pellets from a representative portion of the cleaned sample.
 3. If soft earth pellets are the grade determinant, grade the sample *Fababeans, Sample Canada Account Admixture*.
-

Splits (SPLTS)

Splits include

- Halves or smaller pieces of fababeans
- Halves that are loosely held together by cracked seed coats
- Fababeans with cracked cotyledons, such as from artificial drying

Splits do not include fababeans that are otherwise damaged.

Representative portion for analysis

Minimum—100 g

Optimum—250 g

Export—500 g

Sprouted (SPTD)

Fababeans in which the hull is parted over the area of the germ as a result of sprouting are considered damaged. See *Damage*.

Representative portion for analysis

Minimum—100 g

Optimum—250 g

Export—250 g

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 *Fababeans, 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 *Fababeans, Sample Canada Account Stones*.
 - In western and eastern Canada grain containing more than 2.5% stones is graded *Fababeans, Sample Salvage*.

Examples: Western Canada

Excerpt from grade determinant tables for
Fababeans, Canada

Grade name	Stones %
No. 1 Canada	0.1
No. 2 Canada	0.2
No. 3 Canada	0.5

Basic grade:..... *Fababeans, No. 2 Canada*

Reason for basic grade:..... 2.0% Damage

If the above sample contained	Grade in western Canada
0.4% stones	<i>Fababeans, Rejected No. 2 Canada Account Stones</i>
1.0% stones	<i>Fababeans, Rejected No. 2 Canada Account Stones</i>
3.0% stones	<i>Fababeans, Sample Salvage</i>

Examples: Eastern Canada

Excerpt from grade determinant tables for
Fababeans, Canada

Grade name	Stones %
No. 1 Canada	0.1
No. 2 Canada	0.2
No. 3 Canada	0.5

Basic grade:..... *Fababeans, No. 2 Canada*

Reason for basic grade:..... 2.0% Damage

If the above sample contained	Grade in eastern Canada
0.4% stones	<i>Fababeans, No. 3 Canada</i>
1.0% stones	<i>Fababeans, Sample Canada Account Stones</i>
3.0% stones	<i>Fababeans, Sample Salvage</i>

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 *Fababeans, 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.

Varieties

Fababeans are graded without reference to variety.

Primary and export grade determinants tables

Fababeans, Canada (CAN)

Grade name	Standard of quality	Splits %	Damage				Foreign material				
	Degree of soundness		Heated or rotted %	Mouldy %	Perforated damage %	Total %	Excreta %	Insect parts %	Sclerotinia %	Stones or shale %	Total %
No. 1 Canada	Reasonably well matured, reasonably good natural colour	6	Nil	Nil	1	4	0.01	0.02	0.05	0.1	0.2
No. 2 Canada	Fairly well matured, fair colour	9	3K	6K	3	6	0.01	0.02	0.05	0.2	0.5
No. 3 Canada	Cool and sweet, excluded from higher grades on account of immaturity, poor colour or damage	12	1	2	3	10	0.01	0.02	0.05	0.5	2
Grade, if No. 3 specs not met		<i>Fababeans, Sample Canada Account Splits</i>	<i>Fababeans, Sample Canada Account Heated</i>	<i>Fababeans, Sample Canada Account Mouldy</i> <i>Kernels</i>	<i>Fababeans, Sample Canada Account Damaged</i>	<i>Fababeans, Sample Canada Account Damaged</i>	<i>Fababeans, Sample Canada Account Excreta</i>	<i>Fababeans, Sample Canada Account Admixture</i>	<i>Fababeans, Sample Canada Account Admixture</i>	2.5% or less— <i>Fababeans, Rejected (grade) Account Stones, or Fababeans, Sample Canada Account Stones</i> Over 2.5%— <i>Fababeans, Sample Salvage</i>	<i>Fababeans, Sample Canada Account Admixture</i>

K Number of kernel-sized pieces in 500 g

Export shipments

Shipments can be commercially clean or not commercially clean.

Commercially clean

Dockage is not reported for commercially clean shipments. A deduction for finely broken fababeans removed by the No. 8 slotted sieve as dockage is allowed

- On shipments not for direct export, of up to 0.75%
- On shipments for direct export, of up to 1.0%

Definition of commercial cleanliness, Fababeans

Grade name	Foreign material	
	Material passing through No. 8 slotted sieve, including handpicked material %	Total %
No. 1 Canada	0.1	0.2
No. 2 Canada	0.1	0.2
No. 3 Canada	0.1	0.2

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 direct deduction of up to 0.2% to take into account the buildup of attritional material.

Grading

Where no export standards exist, fababeans on export are graded in accordance with primary grade standards.