

21. Faba beans

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Determination of dockage

Definitions

Dockage is not assessed on faba bean samples that meet the commercially clean specifications set out in the faba bean export shipments section. All samples must be analyzed to determine if they meet commercial cleanliness standards prior to dockage being assessed. The analysis of samples which are clearly not commercially clean may consist of a visual assessment. For example, if there is no doubt that a sample contains more than 0.2% of foreign material then dockage will be assessed using the procedure defined under **Determination of dockage**. Where there is any doubt regarding whether the sample is commercially clean the sample must be analyzed.

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 procedure described in this chapter

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
 - Faba beans, Sample Canada Account Fireburnt
 - Faba beans, Sample Salvage
 - Faba beans, Sample Condemned
 - Unofficial samples declared as processed

Normal cleaning procedure

- ▲ **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 shall be at least 1 kg.
 - Unofficial samples shall be at least 1 kg.
 2. Choose the appropriate hand sieve for the size of faba bean.
 - 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. Handpick all coarse vegetable matter such as pods, stems, straw, thistle tops from the sieved sample.

▲ **Important:** Do not handpick mineral matter, ergot (ERG), sclerotinia (SCL), or large-seeded grains other than faba beans from the sieved sample.

5. Handpick all grasshoppers, other insects and insect parts from the sieved sample.

Composition of dockage

- All material removed by sieving, handpicking or both, as defined in **the Normal cleaning procedure**.
- Soft earth pellets (SEP), up to a maximum of 10% of the gross weight of the sample, handpicked from the clean sample

Commercially clean

Commercially clean samples exiting a primary elevator can have up to 0.8% finely broken faba beans removed by the No. 8 slotted sieve deducted as dockage. Samples exiting a primary elevator are considered commercially clean when meeting the requirements set out in the table below.

Definition of commercial cleanliness, Faba beans

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

Optional analysis

Where a shipper requests special cleaning of a carlot of grain at a terminal 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.

Procedure

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 faba beans.
 - 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% Faba beans, No. 1 Canada

4.0% Domestic Mustard Seed, No. 1 Canada 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.

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 section 1 of the *Canada Grain Regulations* as “any pesticide, desiccant or inoculant”.

Processed sample

An unofficial sample of grain declared to be conditioned or cleaned to meet end user specifications, and whereas, the determination of dockage and/or determination of commercially clean are not performed or reported.

Rounding rules

Rounding rules are outlined in [schedule 3 of the Canada Grain Regulations](#). When official inspection results are expressed numerically, they should be expressed to the same decimal precision as the applicable tolerance in the primary and export grade determination tables.

Non-registered varieties

A registered variety refers to varieties of crops that have been granted variety registration in Canada. Species, kinds or types of crops subject to variety registration in Canada are listed in Schedule III of the *Seeds Regulations*. Not all crops are subject to registration. The Canadian Food Inspection Agency (CFIA) is responsible for the registration of varieties in Canada. Consult the CFIA’s [database of varieties registered in Canada](#) online to determine if a given variety is registered in Canada.

Where grain of any kind is not a registered variety under the *Seeds Act*, no person shall, except with the permission of the Canadian Grain Commission, assign a statutory grade to that grain which is higher than the lowest grade established by regulation for that kind of grain.

Representative portions for grading

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

The optimum representative portion is the representative sample size within the minimum and maximum range used to obtain the most accurate result when assessing an objective factor. It is determined by taking into consideration the tolerance and concentration of the objective factor being assessed.

Representative portion of faba beans for grading (in grams)

Grading factor	Sample portion size range	
	Minimum	Maximum
Damage	100 g	250 g
Excreta	working sample	working sample
Fertilizer pellets	working sample	working sample
Fireburnt	working sample	working sample
Foreign material	100 g	working sample
Heated or rotted	250 g	working sample
Insect parts	working sample	working sample
Mouldy	250 g	working sample
Odour	working sample	working sample
Perforated	100 g	250 g
Sclerotinia sclerotiorum	500 g	working sample
Splits	100 g	500 g
Stones	working sample	working sample
Treated seed	working sample	working sample

Grading factors

Blackened

Faba beans are blackened when their seed coats are very dark blue to black. See **Damage (DMG)**.

Colour (CLR)

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

Terms used to describe colour in the grade determination tables

Term	Characteristics
Reasonably good natural colour	Faba beans are moderately immature, with lightly adhered soil, moderately discoloured from storage or other natural causes, such as mottling.
Fair colour	Faba beans are immature but not green, have moderate amounts of adhered soil, or are otherwise moderately discoloured from natural causes, such as mottling.
Poor colour	Faba beans 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	Faba beans 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	Faba beans are normal size and greenish, but not distinctly green.

Contaminated grain (CONTAM GRN)

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

Grain is contaminated for the purposes of the *Canada Grain Act* if the grain contains any substance in sufficient quantity that the grain is either

- (a) adulterated for the purposes of the *Food and Drugs Act*; or
- (b) contaminated within the meaning of the regulations made under section 51 of the *Safe Foods for Canadians Act*.

Treated seed

Treated seed is grain that has been adulterated with an agricultural chemical for agronomic purposes. The types of agricultural chemicals used to treat seed include pesticides, fungicides and inoculants. 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 standard for pesticide and fungicide seed treatments for cereal (including corn) is red or pink. The colour standard for pesticide and fungicide seed treatments for canola is blue; however, green has also been used. Pulse crop (including soybeans) pesticide and fungicide seed treatments are typically blue or green. The coatings or stains may appear greasy or powdery and the surface area covered may range 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.

Extraneous material

Can be defined as glass, metal, wood (including wood pellets), plastic or any other material not already defined in the Official Grain Grading Guide.

Procedure

If a sample is suspected of being coated with a pesticide, desiccant, inoculant or if the sample contains evidence of extraneous material, including any foreign chemical substance other than fertilizer pellets (FERT PLTS), the sample shall be graded 'Faba beans, Held IP Suspect Contaminated Grain' and submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded 'Faba beans, Sample Condemned'.

Cracked (CRKD)

Faba beans with a discoloured exposed cotyledon are considered cracked.
See **Damage (DMG)**

Cracked seed coats (CSDC)

Faba beans with cracked seed coats are considered sound if the halves of the kernels are held firmly together and the beans are not otherwise damaged.
See **Damage (DMG)**

Damage (DMG)

Damage includes

- Blackened or cracked
- Sprouting (SPTD)
- Distinct immaturity
- Distinct deterioration or discolouration by weather or disease
- Insect damage (I DMG)
- Heated (HTD) or mouldy (MLDY)
- Any other damage that seriously affects appearance or quality

Discoloured (DCLR)

Faba beans 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 (DMG)**.

Procedure

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 (EP)

- Hard earth pellets are pellets that do not crumble under light pressure.
See **Stones (STNS)**
 - Soft earth pellets are pellets that crumble under light pressure.
See **Soft earth pellets (SEP)**
-

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.

Excreta (EXCR)

Excrement from any animal including mammals, birds and insects.

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

Extraneous material

See **Contaminated grain (CONTAM GRN)**

Fertilizer pellets (FERT PLTS)

Fertilizer pellets are a manufactured plant nutrient product used by producers in the production of grain. They are typically small, round or irregular shaped and usually white, grey, brown, pink or reddish in colour.

Procedure

- Handpick any fertilizer pellets and determine the concentration in the net working sample.
- Fertilizer pellets are assessed as stones (STNS) 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 'Faba beans, Held IP Suspect Contaminated Grain'. The sample should be submitted to the Canadian Grain Commission. Determination as to whether grain is contaminated will be made by the Grain Research Laboratory in consultation with the Chief Grain Inspector for Canada. Samples deemed to be contaminated are graded 'Faba beans, Sample Condemned'.

Fireburnt (FBNT)

Fireburnt faba beans 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.

Procedure

Samples containing any fireburnt seeds are graded 'Faba beans, Sample Canada Account Fireburnt'.

Foreign material (FM)

Foreign material is any material other than whole or split faba beans.

Green (GR)

Faba beans are considered green if they show distinctly green colour throughout the seed when cut to expose the cotyledons.

See **Damage (DMG)**

Heated (HTD)

Faba beans are considered heated or rotted if they are materially discoloured as a result of heating or rotting (ROT). Seed coats appear dark brown to black. The cotyledon tissue of dissected beans appears tan or brown.

See **Damage (DMG)**

Heated seeds of other grains are included in the tolerance for heated.

Insect parts (I PARTS)

Insect parts refers to whole or pieces of insects such as grasshoppers, lady bugs and other insects that remain in the sample after cleaning or processing.

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 'Faba beans, Sample CW/CE Account Odour'.

Mouldy (MLDY)

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

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

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	Faba beans, Sample CW/CE Account Odour
An excessive heated odour	Faba beans, Sample CW/CE Account Heated
An excessive fireburnt odour	Faba beans, Sample CW/CE Account Fireburnt

Perforated (PERF)

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

Rime (RIME)

White rime is the adhered lining of the seed pod.

- Faba beans that are completely and densely covered with white rime are considered damaged.

See **Damage (DMG)**

- 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.
-

Rotted (ROT)

See **Heated (HTD)**

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.

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 (FERT PLTS)
- Any non-toxic material of similar consistency

Procedure

- Earth pellets may be removed as dockage. See **Normal cleaning procedures**.
- If soft earth pellets are over 10% of the gross weight of the sample, they become a grading factor, included in the tolerance for foreign material (FM).

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 'Faba beans, Sample Canada Account Admixture'.

Splits (SPLTS)

Splits include

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

Splits do not include faba beans that are otherwise damaged (DMG).

Sprouted (SPTD)

Faba beans in which the hull is parted over the area of the germ as a result of sprouting are considered damaged.

See **Damage (DMG)**

Stones (STNS)

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

Procedure

1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.
 - Samples of grain grown in western Canada containing stones in excess of basic grade tolerances, up to 2.5% are graded 'Faba beans, 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 determination tables) that would have been assigned to the sample if it contained no stones.
 - Samples of grain grown in eastern Canada 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 'Faba beans, Sample Canada Account Stones'.
 - Samples of western and eastern Canadian grain containing more than 2.5% stones are graded 'Faba beans, Sample Salvage'.

Examples: Western Canada

Excerpt from grade determination tables for
Faba beans, Canada

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

Basic grade:..... Faba beans, No. 2 Canada

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

If the above sample contained	Grade in western Canada
0.4% stones	Faba beans, Rejected No. 2 Canada Account Stones
1.0% stones	Faba beans, Rejected No. 2 Canada Account Stones
3.0% stones	Faba beans, Sample Salvage

Examples: Eastern Canada

Excerpt from grade determination tables for
Faba beans, Canada

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

Basic grade:..... Faba beans, No. 2 Canada

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

If the above sample contained	Grade in eastern Canada
0.4% stones	Faba beans, No. 3 Canada
1.0% stones	Faba beans, Sample Canada Account Stones
3.0% stones	Faba beans, Sample Salvage

Treated seed and other chemical substances

See **Contaminated grain (CONTAM GRN)**

Variety (VAR)

Only varieties registered in Canada under the *Seeds Act* are eligible for the top grades of faba beans.

The Canadian Food Inspection Agency (CFIA) is responsible for the registration of varieties in Canada. Consult the CFIA's [database of varieties registered in Canada](#) online to determine if a given variety is registered in Canada.

Primary and export grade determination table

Faba beans, Canada (CAN), standard of quality

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Degree of soundness	Reasonably well matured, reasonably good natural colour	Fairly well matured, fair colour	Cool and sweet, excluded from higher grades on account of immaturity, poor colour or damage	
Variety	Any variety of faba beans registered under the <i>Seeds Act</i>	Any variety of faba beans registered under the <i>Seeds Act</i>	Any variety of faba beans	
Splits %	6	9	12	Faba beans, Sample Canada Account Splits

Faba beans, Canada (CAN), damage

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Heated or rotted %	0.0	0.3	1.0	Faba beans, Sample Canada Account Heated
Mouldy %	0.0	0.6	2.0	Faba beans, Sample Canada Account Mouldy Kernels
Perforated damage %	1	3	3	Faba beans, Sample Canada Account Damaged
Total % Damage	4	6	10	Faba beans, Sample Canada Account Damaged

Faba beans, Canada (CAN), foreign material

Grading factor	No. 1 Canada	No. 2 Canada	No. 3 Canada	Grade, if No. 3 specs not met
Ergot %	0.05	0.05	0.05	Faba beans, Sample Canada Account Ergot
Excreta %	0.01	0.01	0.01	Faba beans, Sample Canada Account Excreta
Insect parts %	0.02	0.02	0.02	Faba beans, Sample Canada Account Admixture
Sclerotinia %	0.05	0.05	0.05	Faba beans, Sample Canada Account Admixture
Stones or shale %	0.1	0.2	0.5	2.5% or less - West - Faba beans, Rejected (grade) Account Stones, or East - Faba beans, Sample Canada Account Stones Over 2.5% - Faba beans, Sample Salvage
Total % Foreign material	0.2	0.5	2.0	Faba beans, Sample Canada Account Admixture

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean (CCLN)

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

- On shipments from a terminal elevator, not for direct export, of up to 0.8%
- On shipments for direct export, of up to 1.0%

Definition of commercial cleanliness, Faba beans

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)

Export 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 Canadian Grain Commission.

For samples representing not commercially clean shipments approved by the Canadian Grain Commission for shipment from terminal elevators, dockage is reported to the nearest 0.1%.

A direct deduction of up to 0.2% is applied to take into account the buildup of attritional material for direct exports only.

Grading

Faba beans on export are graded in accordance with the primary and export grade determination tables.