18. Lentils

Classes, types and varieties .............................................................................................. 18-3
   Classes .................................................................................................................... 18-3
   Varieties ................................................................................................................. 18-3

Determination of dockage .............................................................................................. 18-4
   Definitions ................................................................................................................ 18-4
   Determination of cleaning procedures ..................................................................... 18-4
   Dockage not reported .............................................................................................. 18-4
   Normal cleaning procedures ................................................................................... 18-5
   Composition of dockage .......................................................................................... 18-6
   Commercially clean (CC) ......................................................................................... 18-6
   Cleaning for grade improvement ............................................................................ 18-6

Determination of size (sizing) ....................................................................................... 18-7
   Optional analysis ..................................................................................................... 18-8

Grading ......................................................................................................................... 18-9
   Important definitions ................................................................................................. 18-9
      Net weight of sample ............................................................................................. 18-9
      Hazardous substances in samples ........................................................................ 18-9
   Representative portions for grading ........................................................................ 18-9
   Grading factors ........................................................................................................ 18-10
      Ascochyta .............................................................................................................. 18-10
      Bleached ............................................................................................................... 18-10
      Broken ................................................................................................................... 18-10
      Colour (CLR) ....................................................................................................... 18-10
      Contaminated grain ............................................................................................... 18-11
      Contrasting colours ............................................................................................... 18-11
      Copper ................................................................................................................... 18-11
      Damage (DMG) .................................................................................................... 18-11
      Earth pellets (EP) ................................................................................................. 18-12
      Ergot (ERG) ......................................................................................................... 18-12
      Excreta (EXCR) ................................................................................................... 18-12
      Fertilizer pellets (FERT PLTS) ............................................................................ 18-12
      Fireburnt (FBNT) ................................................................................................. 18-13
      Foreign material (FM) ............................................................................................ 18-13
      Frost damage (FR) ............................................................................................... 18-13
      Heated (HTD) ....................................................................................................... 18-13
      Insect parts (I PARTS) .......................................................................................... 18-14
      Odour (ODOR) ..................................................................................................... 18-14
      Other Damage (ODMG) ...................................................................................... 18-15
      Peeled, split and broken (PLDSPLTBKN) .......................................................... 18-15
      Rime (RIME) ....................................................................................................... 18-15
      Sclerotinia sclerotiorum (SCL) ............................................................................ 18-15
      Split ....................................................................................................................... 18-15
      Sprouted (SPTD) ................................................................................................. 18-16
      Stained (STND) .................................................................................................... 18-16
      Stones (STNS) ...................................................................................................... 18-16
      Treated seed and other chemical substances ..................................................... 18-18
      Variety .................................................................................................................. 18-18
      Wrinkled .............................................................................................................. 18-18
Primary and export grade determinants tables ...................................................... 18-19
  Lentils, Canada, other than Red (CAN)................................................................. 18-19
  Lentils, Canada Red (CAN)................................................................................... 18-20

Export shipments....................................................................................................... 18-21
  Commercially clean (CC)...................................................................................... 18-21
  Not commercially clean (NCC)............................................................................ 18-21
  Processed shipments .......................................................................................... 18-21
  Grading.................................................................................................................. 18-21
Classes, types and varieties

Classes
Lentils are designated into two classes, Red Lentils and Lentils other than red. The method of determining the class of a lentil is by seed coat colour. Red lentils may be confirmed by the cotyledon colour.

Varieties
Lentil varieties may have a wide range of seed coat colours from green, red, speckled green, black and tan. The cotyledon color may be red, yellow or green.
Determination of dockage

Definitions

Dockage is not assessed on lentil samples that meet the commercially clean specifications set out in the Lentil 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 clear 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 procedures 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 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 is assessed in three stages.

1. Follow Determination of cleaning procedures using the No.14 round-hole hand sieve.

2. Follow Normal cleaning procedures, using the Carter dockage tester.

3. Follow procedures for Cleaning for grade improvement. This cleaning can be done at any time after the cleaning assessment has been completed.

Determination of 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 from the uncleaned sample, a representative portion of approximately 250 g.

2. Sieve the representative portion over the No.14 round-hole hand sieve.

   When using hand sieves, move the sieve from left to right 20 times, using a sifting motion. One time is one complete motion from the centre to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm, or about eight inches.

3. Determine the portion remaining on top of the No.14 round-hole sieve.

   Note: When results may be affected by excessive dockage material, reduce the material through sieving or handpicking without removing whole lentils.
Dockage not reported

▲ **Important:** Dockage is not reported for samples grading
- Lentils, Sample Canada Account Fireburnt
- Lentils, Sample Salvage
- Lentils, Sample Condemned

Normal cleaning procedures

1. Set up the Carter dockage tester as follows:
   
   Note: Select the riddle that will achieve the maximum removal of large dockage material with the minimum removal or lodging of lentils.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Small</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed control</td>
<td>#5</td>
<td>#6</td>
</tr>
<tr>
<td>Air control</td>
<td>#7</td>
<td>#7</td>
</tr>
<tr>
<td>Riddle</td>
<td>No.1 or No.25</td>
<td>No.25 or No.6</td>
</tr>
<tr>
<td>Top sieve</td>
<td>No. 9 round-hole</td>
<td>No. 12 round-hole</td>
</tr>
<tr>
<td>Centre sieve</td>
<td>blank tray</td>
<td>blank tray</td>
</tr>
<tr>
<td>Bottom sieve</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Sieve cleaner control</td>
<td>Off</td>
<td>Off</td>
</tr>
</tbody>
</table>

2. 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.

3. Turn on the Carter dockage tester.
4. Pour the sample into the hopper.
5. Turn off the dockage tester after sample passes through.
6. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
7. Remove the aspiration pan.
8. Determine dockage using the list under Composition of dockage.
Composition of dockage

- Material other than whole lentils that remain on top of the riddle—whole sound lentils are returned to the sample
- Material which passes through the selected round-hole sieve
- Material removed by aspiration
- Material removed by special cleaning for grade improvement procedures if the grade can be improved

Commercially clean (CC)

Primary samples are considered commercially clean when they contain 0.2% or less by weight of dockage material. No dockage is reported.

Cleaning for grade improvement

If the grade of a sample can be improved by additional cleaning to remove foreign material, perform the cleaning and add the additional material to dockage. Cleaning for grade improvement can be done at any time after the cleaning assessment has been completed.

1. After the cleaning assessment has been completed, sieve the sample by hand using the appropriate hand sieve.
   ▲ Important: When you use a hand sieve, move the sieve from left to right 30 times, using a sifting motion. One time is one complete motion from the centre, to one side, to the other side, and back to the centre. The total distance from left to right is 20 cm.

2. Weigh the additional dockage and add it to the original dockage.

<table>
<thead>
<tr>
<th>Size of lentil</th>
<th>Equipment</th>
<th>Effect on composition of dockage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>No. 9x9 wire hand sieve</td>
<td>Material removed by the sieve is added to dockage. Not more than 5% of whole sound lentils may be removed for each single grade improvement.</td>
</tr>
<tr>
<td></td>
<td>No. 10 round-hole hand sieve</td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>No. 9x9 wire hand sieve</td>
<td>Material removed by the sieve is added to dockage. Not more than 5% of whole sound lentils may be removed for each single grade improvement.</td>
</tr>
</tbody>
</table>
Determination of size (sizing)

On written request, processed lentils only, if size is determined to be large or small, then size becomes part of the grade name. If a sample does not meet the definition for large or small, it is graded without reference to size.

▲ 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:

<table>
<thead>
<tr>
<th>Feed control</th>
<th>#6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air control</td>
<td>Off</td>
</tr>
<tr>
<td>Riddle</td>
<td>None</td>
</tr>
<tr>
<td>Top sieve</td>
<td>No. 15 round-hole</td>
</tr>
<tr>
<td>Centre sieve</td>
<td>No. 12 round-hole</td>
</tr>
<tr>
<td>Bottom sieve</td>
<td>Blank tray</td>
</tr>
<tr>
<td>Sieve cleaner control</td>
<td>Off</td>
</tr>
</tbody>
</table>

2. Using a Boerner-type divider, divide the cleaned sample to obtain a representative portion of 250 g.

3. Turn on the Carter dockage tester.

4. Pour the sample into the hopper.

5. After the sample has passed through the machine, turn off the dockage tester.

6. Weigh separately. The percentage by weight determines the size of the lentils in the sample.

<table>
<thead>
<tr>
<th>If . . .</th>
<th>Then the size is . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>97% or more of the sample remains on top of a No. 15 round-hole sieve</td>
<td>Large, for example, Lentils, No. 1 CAN Large</td>
</tr>
<tr>
<td>80% or more passes through the No. 12 round-hole sieve</td>
<td>Small, for example, Lentils, No. 1 CAN Small</td>
</tr>
<tr>
<td>otherwise</td>
<td>no size indicated Lentils, No. 1 CAN</td>
</tr>
</tbody>
</table>
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 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 lentils.
   - 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% Lentils, 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 cleaned sample, or 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 the Regulations as “any pesticide, herbicide, desiccant or inoculant.”

Representative portions for grading

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

Values in the following table represent a range of recommended portions of samples for grading. Refer to definition of “Representative portion” in the glossary for a complete description of the terms “Minimum”, “Optimum” and “Export”.

<table>
<thead>
<tr>
<th>Grading factor</th>
<th>Minimum</th>
<th>Optimum</th>
<th>Export</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascochyta</td>
<td>25</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Contrasting colours</td>
<td>50</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td>Copper</td>
<td>50</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Damage</td>
<td>25</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Ergot</td>
<td>working sample</td>
<td>working sample</td>
<td>working sample</td>
</tr>
<tr>
<td>Excreta</td>
<td>working sample</td>
<td>working sample</td>
<td>working sample</td>
</tr>
<tr>
<td>Fireburnt</td>
<td>500</td>
<td>working sample</td>
<td>working sample</td>
</tr>
<tr>
<td>Foreign material</td>
<td>50</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td>Heated</td>
<td>50</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Insect parts</td>
<td>working sample</td>
<td>working sample</td>
<td>working sample</td>
</tr>
<tr>
<td>Odour</td>
<td>working sample</td>
<td>working sample</td>
<td>working sample</td>
</tr>
<tr>
<td>Peeled, split and broken</td>
<td>25</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Sclerotinia sclerotiorum</td>
<td>250</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Stained</td>
<td>25</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Stones</td>
<td>250</td>
<td>working sample</td>
<td>working sample</td>
</tr>
<tr>
<td>Total bleached including copper</td>
<td>25</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Wrinkled</td>
<td>25</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Grading factors

Ascochyta

Ascochyta is a fungal disease that attacks the lentil plant and seed. Any degree of white fungal growth on the seed is considered damaged. See Damage.

**Representative portion for analysis**
Minimum—25 g  
Optimum—100 g  
Export—100 g

Bleached

Bleached seeds have a whitened seed coat that is distinctly faded from the natural red colour of sound lentils. The discoloration must affect the entire seed coat. Lentils having a lighter pink shade that are contrasting with the overall sample are considered sound.

The red lentil colour guide may be used to assist in the determination of bleached seeds.

**Representative portion for analysis**
Minimum—25 g  
Optimum—100 g  
Export—100 g

Broken

See Peeled, split and broken.

Colour (CLR)

**Lentils, other than Red**
Colour is evaluated after the removal of stained and damaged lentils, using approved lentil colour guides.

<table>
<thead>
<tr>
<th>Description used in grade determinants table</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good natural colour</td>
<td>Lentils that are sound, well matured and have a good natural colour.</td>
</tr>
<tr>
<td>Reasonably good natural colour</td>
<td>Lentils that are moderately immature, with light amounts of adhered soil or lightly discoloured from storage or other natural causes.</td>
</tr>
<tr>
<td>Fair colour</td>
<td>Lentils that are immature but not green, moderate amounts of adhered soil, or otherwise moderately discoloured from natural causes.</td>
</tr>
<tr>
<td>Poor colour</td>
<td>Lentils that do not meet the definition of fair colour, but are without severely adhered soil or are severely discoloured (dark brown).</td>
</tr>
</tbody>
</table>

The term sunburned or oxidation is used to describe the normal discolouration of the seed coat which occurs during storage. The colour may vary from light tan to brown or very dark brown, depending on the duration and conditions of storage.
Lentils, Red
Colour is evaluated after the removal of damaged lentils (excluding wrinkled). Bleached and copper seeds are evaluated to determine the overall colour. Tolerances for bleached and copper are reflected in the Primary Grade Determinant Table.

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 Lentils, Sample Condemned.

Contrasting colours
Contrasting colours refers to cotyledon colour and significantly different seed coat colour.
- Cotyledons: red cotyledons contrast with yellow cotyledons
- Seed coats: dark-green speckled lentils contrast with green lentils

**Representative portion for analysis**
Minimum—50 g  Optimum—100 g  Export—250 g

Copper
Copper seeds have a rust color covering both sides of seed and the entire seed coat. The rust colour is in distinct contrast with the natural red colour of sound lentils.

The red lentil colour guide may be used to assist in the determination of copper seeds.

**Representative portion for analysis**
Minimum—50 g  Optimum—100 g  Export—100 g

Damage (DMG)
Damaged lentils may be peeled, split, broken, sprouted, distinctly green, frost damaged, distinctly deteriorated or discoloured by weather or disease, insect damaged, heat damaged or otherwise damaged in a way which materially affects quality.

▲ **Important:** Kernels that are deformed are considered sound unless there is another reason for the damage beyond the deformity.

**Note:** For green cotyledon varieties, do not assess distinctly green cotyledons as damage. For example; Queen Green variety

**Representative portion for analysis**
Minimum—25 g  Optimum—100 g  Export—100 g
Procedure
1. Handpick suspect damaged lentils.
2. Lentils showing some indication of possible internal damage are to be cut for confirmation of damage.

**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 *Foreign material*.

**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**

<table>
<thead>
<tr>
<th>Minimum—working sample</th>
<th>Optimum—working sample</th>
<th>Export—working sample</th>
</tr>
</thead>
</table>

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

**Representative portion for analysis**

<table>
<thead>
<tr>
<th>Minimum—working sample</th>
<th>Optimum—working sample</th>
<th>Export—working sample</th>
</tr>
</thead>
</table>

**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.

**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.

**Representative portion for analysis**

<table>
<thead>
<tr>
<th>Minimum—working sample</th>
<th>Optimum—working sample</th>
<th>Export—working sample</th>
</tr>
</thead>
</table>

**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 *Lentils, Held IP Suspect Contaminated Grain*. 
Fireburnt (FBNT)
Fireburnt seeds are seeds charred or scorched by fire. A cross-section of a fireburnt seed resembles charcoal with numerous air holes. The air holes result in a low weight seed which crumbles easily under pressure.

Representative portion for analysis
Minimum—working Optimum—working Export—working
sample sample sample

Procedure
Samples of lentil containing any fireburnt seeds are graded Lentil, Sample Canada Account Fireburnt.

Foreign material (FM)
Foreign material includes anything that is not a lentil or part of a lentil.

Representative portion for analysis
Minimum—50 g Optimum—100 g Export—250 g

Frost damage (FR)
Frost damage is normally indicated by a combination of wrinkling and close adherence of the seed coat to the cotyledon. The seed coat may be translucent in appearance, and the cotyledons are brittle in texture. Frost damage is included in the tolerance for Other Damage.

Representative portion for analysis
Minimum—25 g Optimum—50 g Export—100 g

Procedures
1. Handpick all frost-damaged lentils.
2. Cut suspect frost-damaged lentils. Frost-damaged seeds are brittle when cut.

Heated (HTD)
Heated lentils are usually dark tan to black in appearance.

<table>
<thead>
<tr>
<th>If sample contains . . .</th>
<th>Then the grading factor is . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lentils with tan-coloured cotyledons and a distinct heated odour</td>
<td>Heated</td>
</tr>
<tr>
<td>Lentils with tan-coloured cotyledons and no odour</td>
<td>Damage</td>
</tr>
</tbody>
</table>

Representative portion for analysis
Minimum—50 g Optimum—100 g Export—100 g
**Procedures**
1. Handpick suspect heated lentils.
2. Cut suspect seeds to expose the cotyledons. Heated lentils have tan-coloured cotyledons.
3. Heated seeds of other grains are included in the tolerance for Heated.

---

**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 analysis
Minimum—working sample  Optimum—working sample  Export—working sample

---

**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

<table>
<thead>
<tr>
<th>If odour is the grade determinant and there is . . .</th>
<th>Then the grade is . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>An excessive objectionable odour not associated with the quality of the grain, but not heated or fireburnt</td>
<td>Lentils, Sample Canada Account Odour</td>
</tr>
<tr>
<td>An excessive heated odour</td>
<td>Lentils, Sample Canada Account Heated</td>
</tr>
<tr>
<td>An excessive fireburnt odour</td>
<td>Lentils, Sample Canada Account Fireburnt</td>
</tr>
</tbody>
</table>
Other Damage (ODMG)

Other damage is any damage other than heated, or peeled, split and broken.

**Representative portion for analysis**
Minimum—25 g  Optimum—100 g  Export—100 g

Peeled, split and broken (PLDSPLTBKN)

Peeled, split and broken includes lentils which are otherwise sound but which are less than three-quarters of whole seeds or where less than one-half of the seed coat is intact.

Lentils with cracked or clipped seed coats are considered sound when the cotyledons are firmly held together.

**Representative portion for analysis**
Minimum—25 g  Optimum—100 g  Export—100 g

Rime (RIME)

Rime is the adhered lining of the seed pod. It is included in the general tolerance for Damage.

<table>
<thead>
<tr>
<th>If the rime . . .</th>
<th>Then the grading is . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely and densely covers the lentils</td>
<td>Damaged</td>
</tr>
<tr>
<td>Is sparse enough to expose the soundness of the lentil</td>
<td>Sound—the rime is considered in the general appearance of the sample</td>
</tr>
</tbody>
</table>

**Representative portion for analysis**
Minimum—25 g  Optimum—50 g  Export—100 g

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 course 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—500 g  Export—500 g

Split

See *Peeled, split and broken*. 
Sprouted (SPTD)

Lentils are considered sprouted when the seed coat splits and the primary root emerges from between the cotyledons or the primary root has been broken off but there is clear evidence of sprouting. Sprouted is considered in the tolerance for Other Damage.

Representative portion for analysis
Minimum—25 g  Optimum—50 g  Export—100 g

Stained (STND)

Stained lentils includes (only applies to lentils, other than red)
- Mottled seeds—seeds with a significant number of distinct spots on the seed coat
- Water spot—seeds with distinct brown discolorations on the seed coat
- Ascochyta—seeds with dark-coloured lesions on the seed coat. Seeds with white fungal growth are also considered as damaged. See Ascochyta.
- Blue-black—seeds of green lentils with significant blue-black discoloration of the seed coat. Seeds of varieties of lentils with dark-green speckled or coloured seed coats are considered as Contrasting colours.

Representative portion for analysis
Minimum—25 g  Optimum—100 g  Export—50 g

Procedure
Refer to digitally produced colour prints of stained lentils as a grading guide

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—working sample  Export—working sample

Procedures
1. Handpick stones from a representative portion of the cleaned sample.
2. Determine stone concentration in the net sample.
3. In western Canada samples of grain containing stones in excess of “basic grade” tolerances, up to 2.5% are graded Lentils, 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.
4. 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 Lentils, Sample Canada Account Stones.
5. In western and eastern Canada grain containing more than 2.5% stones is graded Lentils, Sample Salvage.
Examples: Western Canada

Excerpt from grade determinant tables for
Lentils, Canada Red

<table>
<thead>
<tr>
<th>Grade name</th>
<th>Stones %</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1 Canada Red</td>
<td>0.10</td>
</tr>
<tr>
<td>No. 2 Canada Red</td>
<td>0.2</td>
</tr>
<tr>
<td>Extra No. 3 Canada Red</td>
<td>0.2</td>
</tr>
<tr>
<td>No. 3 Canada Red</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Basic grade:......................... Lentils, No. 1 Canada Red

<table>
<thead>
<tr>
<th>If the above sample contained</th>
<th>Grade in western Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2% stones</td>
<td>Lentils, Rejected No. 1 Canada Red Account Stones</td>
</tr>
<tr>
<td>1.0% stones</td>
<td>Lentils, Rejected No. 1 Canada Red Account Stones</td>
</tr>
<tr>
<td>3.0% stones</td>
<td>Lentils, Sample Salvage</td>
</tr>
</tbody>
</table>

Examples: Eastern Canada

Excerpt from grade determinant tables for
Lentils, Canada Red

<table>
<thead>
<tr>
<th>Grade name</th>
<th>Stones %</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1 Canada Red</td>
<td>0.10</td>
</tr>
<tr>
<td>No. 2 Canada Red</td>
<td>0.2</td>
</tr>
<tr>
<td>Extra No. 3 Canada Red</td>
<td>0.2</td>
</tr>
<tr>
<td>No. 3 Canada Red</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Basic grade:......................... Lentils, No. 1 Canada Red

<table>
<thead>
<tr>
<th>If the above sample contained</th>
<th>Grade in eastern Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2% stones</td>
<td>Lentils, No. 2 Canada Red</td>
</tr>
<tr>
<td>1.0% stones</td>
<td>Lentils, Sample Canada Red Account Stones</td>
</tr>
<tr>
<td>3.0% stones</td>
<td>Lentils, Sample Salvage</td>
</tr>
</tbody>
</table>
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 Optimum—working Export—working
sample sample 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 Lentils, Held IP Suspect Contaminated Grain.

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

Variety
On written request, the lentil variety forms part of the grade name, for example, No. 1 Canada, Laird.

▲ Important: State “Varietal purity not guaranteed” in the remarks section of grading certificates.

Wrinkled
Wrinkled seeds are characterized by a seed surface that has sharp ridges and pronounced depressions that could also be described as seed coat folds and indents. Wrinkles may be evident only on one side of the lentil. Lentils that only have dimpled seed coat or folds restricted only to the outside ring of the seed are considered sound.

The red lentil wrinkled guide may be used to assist in the determination of wrinkled seeds.
## Primary and export grade determinants tables

### Lentils, Canada, other than Red (CAN)

<table>
<thead>
<tr>
<th>Grade name</th>
<th>Standard of quality</th>
<th>Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Degree of soundness</td>
<td>Heated %</td>
</tr>
<tr>
<td></td>
<td>Contrasting colours</td>
<td>Peeled, split and broken %</td>
</tr>
<tr>
<td>No. 1 Canada</td>
<td>Uniform size, good natural colour</td>
<td>0.2</td>
</tr>
<tr>
<td>No. 2 Canada</td>
<td>Uniform size, reasonably good natural colour</td>
<td>0.5</td>
</tr>
<tr>
<td>Extra No. 3 Canada</td>
<td>Uniform size, fair colour</td>
<td>2</td>
</tr>
<tr>
<td>No. 3 Canada</td>
<td>Poor colour</td>
<td>3</td>
</tr>
<tr>
<td>Grade, if No. 3 specs not met</td>
<td>Lentils, Sample Canada Account Contrasting Colours</td>
<td>Lentils, Sample Canada Account Damaged</td>
</tr>
</tbody>
</table>

### Foreign material

<table>
<thead>
<tr>
<th>Grade name</th>
<th>Ergot %</th>
<th>Excreta %</th>
<th>Insect parts %</th>
<th>Sclerotinia %</th>
<th>Stones %</th>
<th>Other foreign material %</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1 Canada</td>
<td>0.05</td>
<td>0.01</td>
<td>0.02</td>
<td>0.05</td>
<td>0.10</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>No. 2 Canada</td>
<td>0.05</td>
<td>0.01</td>
<td>0.02</td>
<td>0.05</td>
<td>0.2</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Extra No. 3 Canada</td>
<td>0.05</td>
<td>0.01</td>
<td>0.02</td>
<td>0.05</td>
<td>0.2</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>No. 3 Canada</td>
<td>0.05</td>
<td>0.01</td>
<td>0.02</td>
<td>0.05</td>
<td>0.2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Grade, if No. 3 specs not met</td>
<td>Lentils, Sample Canada Account Ergot</td>
<td>Lentils, Sample Canada Account Excreta</td>
<td>Lentils, Sample Canada Account Admixture</td>
<td>Lentils, Sample Canada Account Admixture</td>
<td>2.5% or less—Lentils, Rejected (grade) Account Stones, or Lentils, Sample Canada Account Stones Over 2.5%—Lentils, Sample Salvage</td>
<td>Lentils, Sample Canada Account Admixture</td>
<td>Lentils, Sample Canada Account Admixture</td>
</tr>
</tbody>
</table>

Note: Upon written request, the variety name will be added to the grade name and the statement “Varietal purity not guaranteed” shown in the remarks section of any certificate issued.
## Lentils, Canada Red (CAN)

<table>
<thead>
<tr>
<th>Grade name</th>
<th>Standard of quality</th>
<th>Damage</th>
<th>Foreign material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Degree of soundness</td>
<td>Colour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Copper %</td>
<td>Total bleached including copper %</td>
<td>Heated %</td>
</tr>
<tr>
<td>No. 1 Canada</td>
<td>Uniform size, good natural colour</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>No. 2 Canada</td>
<td>Uniform size, reasonably good natural colour</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Extra No. 3 Canada</td>
<td>Uniform size, fair colour</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>No. 3 Canada</td>
<td>Poor colour</td>
<td>No limit</td>
<td>No limit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lentils, Sample Canada Red Account Heated</td>
<td>Lentils, Sample Canada Red Account Damaged</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade name</th>
<th>Ergot %</th>
<th>Excreta %</th>
<th>Insect parts %</th>
<th>Sclerotinia %</th>
<th>Stones %</th>
<th>Other foreign material %</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1 Canada</td>
<td>0.05</td>
<td>0.01</td>
<td>0.02</td>
<td>0.05</td>
<td>0.10</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>No. 2 Canada</td>
<td>0.05</td>
<td>0.01</td>
<td>0.02</td>
<td>0.05</td>
<td>0.2</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Extra No. 3 Canada</td>
<td>0.05</td>
<td>0.01</td>
<td>0.02</td>
<td>0.05</td>
<td>0.2</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>No. 3 Canada</td>
<td>0.05</td>
<td>0.01</td>
<td>0.02</td>
<td>0.05</td>
<td>0.2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Lentils, Sample Canada Red Account Ergot</td>
<td>Lentils, Sample Canada Red Account Excreta</td>
<td>Lentils, Sample Canada Red Account Admixture</td>
<td>Lentils, Sample Canada Red Account Admixture</td>
<td>Lentils, Sample Canada Red Account Admixture</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Upon written request, the variety name will be added to the grade name and the statement “Varietal purity not guaranteed” shown in the remarks section of any certificate issued.
Export shipments

Shipments can be commercially clean or not commercially clean.

Commercially clean (CC)

Shipments are considered commercially clean when they contain 0.2% or less by weight of dockage material. No dockage is reported.

Not commercially clean (NCC)

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

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

- 0.1% for samples representing shipments loaded from a single terminal elevator
- 0.01% for composite samples representing shipments loaded from more than one terminal elevator
- Less a direct deduction of up to 0.2% to take into account the buildup of attritional material for direct shipments only.

Processed shipments

For samples representing processed shipments from other than terminal elevators, dockage is reported to the nearest 0.1% and consists of the following:

- Material that remains on top of the riddle, other than whole lentils which are handpicked and returned to the cleaned sample
- Material that passes through the selected sieve
- Material removed by aspiration
- Small broken lentils and portions of lentils whose weight exceeds 0.2% of the sample weight and which are removable through the No. 10 round-hole sieve and by aspiration

Grading

Where there are no export specifications, the primary specifications are used.