



Official Grain Grading Guide

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11. Flaxseed

Classes and varieties	11-2
Flaxseed	11-2
Determination of dockage	11-3
Definitions	11-3
Dockage not reported	11-3
Normal cleaning procedures	11-3
Composition of dockage	11-4
Primary samples, commercially clean	11-5
Primary samples, not commercially clean	11-5
Sample grades	11-5
Rejected account stones	11-5
Cleaning for grade improvement	11-5
Optional analysis	11-6
Grading	11-7
Important definitions	11-7
Net weight of sample	11-7
Hazardous substances in samples	11-7
Representative portion for grading	11-7
Grading factors	11-8
Broken (BKN)	11-8
Contaminated grain	11-8
Damage (DMG)	11-8
Earth pellets (EP)	11-9
Ergot (ERG)	11-9
Excreta (EXCR)	11-9
Fertilizer pellets (FERT PLTS)	11-9
Fireburnt (FBNT)	11-10
Heated (HTD)	11-10
Inseparable seeds (INSEP SDS)	11-10
Odour (ODOR)	11-11
Other classes of flaxseed (OCL)	11-11
Sclerotinia sclerotiorum (SCL)	11-11
Soft earth pellets (SEP)	11-11
Stones (STNS)	11-12
Treated seed and other chemical substances	11-14
Primary grade determinants tables	11-15
Flaxseed, Canada Western/Canada Eastern (CW/CE)	11-15
Commercially clean	11-16
Not commercially clean (NCC)	11-16
Determination of dockage	11-16
Composition of dockage	11-17
Grading	11-17
Export grade determinants tables	11-18
Flaxseed, Canada Western/Canada Eastern (CW/CE)	11-18

Classes and varieties

Flaxseed

Brown flaxseed applies to varieties with brown seed coats.

Yellow flaxseed applies to varieties with yellow seed coats.

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 the following cleaning procedures 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 is assessed in two stages.

1. Follow *Normal cleaning procedures*, using the Carter dockage tester.
2. Follow procedures for *Cleaning for grade improvement*. This cleaning can be done at any time after the cleaning assessment has been completed.

Dockage not reported

- ▲ **Important:** Dockage is not reported for samples graded
 - *Flaxseed, Sample CW/CE Account Fireburnt*
 - *Flaxseed, Sample Salvage*
 - *Flaxseed, 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	#4
Air control	#3
Riddle	No. 000
Top sieve	Blank tray
Centre sieve	None
Bottom sieve	None
Sieve cleaner control	Off

2. You need the No. 4.5 round-hole sieve, and one wire sieve, depending on the size of the flaxseed or solin and the nature of the material to be removed.

Round-hole sieves	Wire sieves
No. 4.5	No. 4x14 No. 3x16

3. 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.
4. For hand sieving use approximately 250 g per sieving
 1. Sieve each portion over the appropriate wire sieve until maximum cleanout has been achieved.
 2. Handpick seed clusters and return the seeds to the cleaned sample.
 3. Sieve each portion over the No. 4.5 RH sieve until maximum cleanout has been achieved.
5. Combine the separated 250-g portions.
6. Turn on the Carter dockage tester.
7. Pour the entire working sample into the hopper.
8. After the sample has passed through the machine, turn off the machine.
9. Lightly snap the retainer rod of the aspiration pan to loosen material gathered on the air screen.
10. Using a Boerner-type divider, divide not less than 20 g from the cleaned working sample.
11. From the 20-g portion, determine the percentage by weight of inseparable material.
12. Determine dockage, using the list under *Composition of dockage*.

Composition of dockage

Dockage includes

- Material remaining on top of the wire sieve, except flaxseed clusters and whole flaxseed that are put back into the sample
- Material that passes through the No. 4.5 round-hole sieve
- Material removed by aspiration
- Material that passes over the No. 000 riddle
- Soft earth pellets handpicked from the cleaned sample
- Inseparable material up to established grade tolerances handpicked from the clean sample
- Material removed by *Cleaning for grade improvement*

Primary samples, commercially clean

Primary samples are commercially clean when the net dockage does not exceed 2.5% of the sample weight. Commercially clean primary samples can have up to 0.5% for broken and reasonably sound flaxseed deducted from the gross weight of the dockage.

Primary samples, not commercially clean

In not commercially clean primary samples there is no allowance for broken and reasonably sound flaxseed.

Sample grades

In sample grades, inseparable admixture is not added to dockage. Where the inseparable material exceeds 2.0% of the sample by weight, the admixture becomes a reason for the sample grade and is recorded in remarks.

Rejected account stones

In samples that grade *Rejected (basic grade) Account Stones*, dockage includes inseparable material handpicked from the clean sample up to the tolerance.

Cleaning for grade improvement

If the grade of a delivery can be improved by additional cleaning, 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, examine the material to be removed and select your equipment according to the material you want to remove. See the table *Cleaning for grade improvement—Flaxseed* for the list of equipment.
2. Sieve the material by hand or pass it through the Carter dockage tester, depending on the material.
 - ▲ **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, or about eight inches.
3. Weigh the additional dockage and add it to the original dockage.

Cleaning for grade improvement—Flaxseed

Material to be removed	Equipment	Effect on composition of dockage
Inseparable material	No. 5 round-hole hand sieve	The material passing through the sieve is included in the dockage. Not more than 5.0% of sound flaxseed may be removed for each single grade improvement achieved.
Lightweight material	Carter dockage tester, with Feed control at #4 and air control at #4.5 Note: The material originally removed by aspiration is to be reconstituted back into the sample prior to cleaning for improvement.	The material removed, including damaged seed, is included in the dockage. Not more than 5.0% of sound flaxseed may be removed from the cleaned sample for each single grade improvement achieved.

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 flaxseed.
 - 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% Flaxseed, No. 1 CW
4.0% Barley No. 1 CW
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, 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 portion 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”.

Representative portion of flaxseed for grading, grams

Grading factor	Minimum	Optimum	Export
Broken	25	100	100
Damage (visual)	10	50	50
Damage (crush)	5 strips	10 strips	10 strips
Ergot	working sample	working sample	working sample
Excreta	working sample	working sample	working sample
Fireburnt	working sample	working sample	working sample
Heated	10	50	50
Inseparable seeds	20	50	50
Odour	working sample	working sample	working sample
Other classes	20	50	50
Sclerotinia sclerotiorum	100	500	500
Soft earth pellets	working sample	working sample	working sample
Stones	100	working sample	working sample

Grading factors

Broken (BKN)

Broken seeds are pieces of flaxseed that are less than three-quarters the size of a whole seed.

▲ Important:

- Flaxseed have separate tolerances for *Broken*.
- Broken seeds of flaxseed are also included in *Total damage*.

Representative portion for analysis

Minimum—25 g	Optimum—100 g	Export—100 g
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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 *Flaxseed, Sample Condemned*.

Damage (DMG)

Damage includes

- Seeds that are heated, broken, frosted, green, sprouted, shriveled or otherwise damaged
- Seeds with fractured seed coats

▲ **Important:** Seeds are not considered damaged if they

- Have any side portions of the boll membrane attached but are otherwise sound
- Appear scabbed or blistered but are otherwise sound

Representative portion for analysis

Minimum—10 g	Optimum—50 g	Export—50 g
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Number of crushes for analysis

Minimum—5	Optimum—10	Export—10
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Procedures

1. Divide the sample to the appropriate representative portion.
2. Handpick the representative portion for visually damaged seeds.
3. Determine the percentage concentration by weight.

4. Prepare and crush the appropriate number of strips from the clean sample. If any heated seeds are detected or if the sample has a heated odour, refer to the procedure for assessment of heated.
5. Determine the percentage of non-visual damage.
6. Add the two percentages of damage together to determine the total 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 *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—working sample	Optimum—working sample	Export—working sample
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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
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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 *Flaxseed, 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)

Samples that show any evidence of being charred or scorched by fire are considered fireburnt. Evidence includes odour, pieces of charred wood, and so on. Fireburnt seeds pop when crushed.

Representative portion for analysis

Minimum—working
sample

Optimum—working
sample

Export—working
sample

Procedures

Samples considered fireburnt are graded *Flaxseed, Sample CW/CE, Account Fireburnt*.

Heated (HTD)

Heated refers to seeds with discoloured cotyledons ranging in colour from orange to dark brown depending on the severity of heat damage. The seed coats of heated seeds are usually shiny brown or black. Severely heated seeds usually have a heated odour.

Representative portion for analysis

Minimum—10

Optimum—50

Export—50

Procedure

1. The cleaned sample is divided to a representative portion of between 10 and 50 grams, depending on the concentration of heated in the sample.
 2. Those seeds having shiny brown to black seed coats are separated by hand as potential heated seeds.
 3. The potentially heated seeds are cut or are placed on a strip of masking tape and crushed with a seed roller to expose the cotyledons.
 4. Seeds having discoloured cotyledons ranging in colour from orange to dark brown are counted to determine the percentage of heated seeds.
 5. When crushing samples, the number of heated seeds is converted to a weight percentage by weighing an equal number of sound seeds and dividing the weight of the sound seeds by the weight of the representative portion.
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Inseparable seeds (INSEP SDS)

Inseparable seeds are domestic seeds such as mustard seed, canola, whole shrunken or broken kernels of other grains and weed seeds such as wild oats and lady's thumb that remain in the sample after cleaning.

Representative portion for analysis

Minimum—20 g

Optimum—50 g

Export—50 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 . . .
A distinct objectionable odour not associated with the quality of the grain, but not heated or fireburnt	<i>Flaxseed, Sample CW/CE Account Odour</i>
A distinct heated odour	<i>Flaxseed, Sample CW/CE Account Heated</i>
A distinct fireburnt odour	<i>Flaxseed, Sample CW/CE Account Fireburnt</i>

Other classes of flaxseed (OCL)

- In brown flaxseed, other classes of flaxseed refers to classes with yellow seed coats.
- In yellow flaxseed, other classes of flaxseed refers to classes with brown seed coats.

Representative portion for analysis

Minimum—20 g

Optimum—50 g

Export—50 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 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—100 g

Optimum—500 g

Export—500 g

Soft earth pellets (SEP)

Soft earth pellets are

- Earth pellets that crumble into fine dust under light pressure, using a finger only—if they do not crumble, they are considered *Stones*
- Any non-toxic material of similar consistency

Representative portion for analysis

Minimum—working
sample

Optimum—working
sample

Export—working
sample

Procedures

1. Handpick soft earth pellets from a representative portion of the cleaned sample.
2. Soft earth pellets are removed as dockage. See *Composition of dockage*.

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—500 g

Optimum—1000 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 *Flaxseed, 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 *Flaxseed, Sample Canada Eastern Account Stones*.
 - In western and eastern Canada grain containing more than 2.5% stones is graded *Flaxseed, Sample Salvage*.

Examples: Western Canada

Primary grade determinant table
Flaxseed, CW/CE

Grade name	Stones %
No. 1 CW	0.05
No. 2 CW	0.05
No. 3 CW	0.05

Basic grade:..... *Flaxseed, No. 1 CW*

If the above sample contained	Grade in Western Canada
0.08% stones	<i>Flaxseed, Rejected No. 1 CW Account Stones</i>
3.0% stones	<i>Flaxseed, Sample Salvage</i>

Example : Eastern Canada

Primary grade determinant table
Flaxseed CW/CE

Grade Name	Stones %
No. 1 CE	0.05
No. 2 CE	0.05
No. 3 CE	0.05

Basic grade:..... *Flaxseed, No. 1 CE*

If the above sample contained	Grade in Eastern Canada
0.08% stones	<i>Flaxseed, Sample CE Account Stones</i>
3.0% stones	<i>Flaxseed, 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 *Flaxseed, 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.

Primary grade determinants tables

Flaxseed, Canada Western/Canada Eastern (CW/CE)

Grade name	Standard of quality			Standard of cleanliness Commercially pure seed %
	Minimum test weight kg/hl (g/0.5L)	Variety	Degree of soundness	
No. 1 CW/CE	65 (305)	Any variety of the class Flaxseed, Canada Western / Canada Eastern designated as such by Order of the Commission	Mature and sweet	Not more than 1.0% of other seeds that are not readily separable from flaxseed, to be assessed as dockage
No. 2 CW/CE	62 (290)	Any variety of the class Flaxseed, Canada Western / Canada Eastern designated as such by Order of the Commission	Reasonably well matured and sweet	Not more than 1.5% of other seeds that are not readily separable from flaxseed, to be assessed as dockage
No. 3 CW/CE	No minimum	Any variety of flaxseed	Excluded from higher grades on account of light weight or damaged seeds, may have the natural odour associated with low-quality seed, not distinctly sour, musty, rancid or any odour that would indicate serious deterioration	Not more than 2% of other seeds that are not readily separable from flaxseed, to be assessed as dockage
Grade, if No. 3 specs not met				<i>Flaxseed, Sample CW/CE Account Admixture</i>

Grade name	Brown seeded flax	Yellow seeded flax	Damage				Foreign material included in dockage					
	Yellow seeded flax %	Brown seeded flax %	Broken %	Heated %		Total %	Ergot %	Excreta %	Sclerotinia %	Stones %	Inseparable seeds %	Total %
				CW	CE							
No. 1 CW/CE	2	2	<u>12.5</u>	0.05	0.2	<u>12.5</u>	0.05	0.02	0.10	0.05	1.0	1.0
No. 2 CW/CE	3	2	25	0.2	0.5	25	0.05	0.02	0.20	0.05	1.5	1.5
No. 3 CW/CE	4	2	35	10	10	No limit	0.05	0.02	<u>0.25</u>	0.05	2	2
Grade, if No. 3 specs not met	50% or less— <i>Flaxseed, Sample CW Account Admixture</i>	50% or less— <i>Flaxseed, Sample CW/CE Account Broken</i> Over 50%— <i>Sample Broken Grain</i>	<i>Flaxseed, Sample CW/CE Account Heated</i>				<i>Flaxseed, Sample CW/CE Account Ergot</i>	<i>Flaxseed, Sample CW/CE Account Excreta</i>	<i>Flaxseed, Sample CW/CE Account Admixture</i>	2.5% or less— <i>Flaxseed, Rejected (grade) Account Stones or Flaxseed, Sample CE Account Stones</i> Over 2.5%— <i>Flaxseed, Sample Salvage</i>	<i>Flaxseed, Sample CW/CE Account Admixture</i>	<i>Flaxseed, Sample CW/CE Account Admixture</i>

Export shipments

Export shipments can be commercially clean or not commercially clean.

Commercially clean

Shipments are defined as commercially clean when the net dockage does not exceed 2.5% of the sample weight.

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

A deduction for broken and reasonably sound flaxseed handpicked from the material and removed as dockage is allowed

- On shipments not for direct export, of up to 0.50%
- On shipments for direct export, of up to 0.75%

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

Instead of the allowances for broken seed in commercially clean shipments, a direct deduction of up to 0.2% is applied to establish net dockage for direct shipments only.

Determination of dockage

Follow procedures for normal cleaning, with the Carter dockage tester set up as follows.

	"CCLN"	"NCC"
Feed control	#3	#4
Air control	#2	#3
Riddle	None	None
Top sieve	Blank tray	Blank tray
Centre sieve	None	None
Bottom sieve	None	None
Sieve cleaner	Off	Off

You will also need the following hand sieves.

Round-hole sieves	Wire sieves
No. 4.5	No. 4x14
	No. 3x16

Composition of dockage

In export grade flaxseed, dockage consists of

- Material that remains on top of the wire sieve
- Material that passes through the No. 4.5 round-hole hand sieve, less the applicable allowance of broken and reasonably sound flaxseed
- Material removed by aspiration
- Inseparable material up to established grade tolerances, handpicked from the cleaned sample

Grading

Flaxseed on export is graded in accordance with export specifications.

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

Export grade determinants tables

Flaxseed, Canada Western/Canada Eastern (CW/CE)

Grade name	Total removable material %	Foreign material included in dockage				Brown seeded flax	Yellow seeded flax	Damage		
		Ergot %	Sclerotinia %	Stones %	Total including inseparable seeds %	Yellow seeded flaxseed %	Brown seeded flaxseed %	Broken %	Heated %	Total %
No. 1 CW/CE	2.5	0.05	0.10	0.05	1.0	2	2	<u>12.5</u>	0.05	<u>12.5</u>
No. 2 CW/CE	2.5	0.05	0.20	0.05	1.5	3	2	25	0.2	25
No. 3 CW/CE	2.5	0.05	<u>0.25</u>	0.05	2	4	2	35	10	No limit within broken and heated tolerances