CHAPTER 14

NET CONTENT DETERMINATION

1. SCOPE

This document outlines the regulations, policy and procedures governing the net content determination of domestic and imported fish and fish products.

2. AUTHORITIES

Fish Inspection Act. R.S.C., 1985, c.F-12; Sections 3(c).

Fish Inspection Regulations (FIR), C.R.C., 1978, c.802; Interpretation, Section 2.

Fish Inspection Regulations (FIR), C.R.C., 1978, c.802; Part II, Labelling

Section 25 (FIR):

(1) In the case of canned fish, every can of fish or the wrapper or label thereon shall be correctly and legibly marked in English or French, in addition to any other language, to indicate:

(b) in the case of fish other than shellfish and crustaceans, the net weight of the contents;

(c) in the case of shellfish and crustaceans, the drained weight of the contents;

Section 26 (FIR):

(1) In the case of fish, other than canned fish, every container or the label thereon shall be correctly and legibly marked in English or French, in addition to any other language, to indicate:

(b) the net weight of the fish unless,

(i) in the case of oyster and clam meats that are not frozen, the container or label is marked with a statement of net contents in terms of fluid measure or by count,

(ii) in the case of oysters that are marketed in the shell, the container or label is marked with a statement of the contents in terms of bushels or pecks or by count, or

(iii) in any case not referred to in subparagraph (i) or (ii), the container or label states that the contents are to be weighed at time of retail sale.

Section 27 (FIR):

No person shall package any fish or mark or label any container of fish in a manner that is false, misleading or deceptive.

Consumer Packaging and Labelling Act (CPLA)

Section 7 (CPLA):

(3) Where a declaration of net quantity shows the purported net quantity of the prepackaged product to which it is applied, that declaration shall be deemed not to be a false or misleading representation if the net quantity of the prepackaged product is, subject to the prescribed tolerance, not less than the declared net quantity of the prepackaged product and the declaration otherwise meets the requirements of this Act and regulations.

Consumer Packaging and Labelling Regulations (CPLR), chapter 417. These regulations apply only to prepackaged consumer products.

Section 3 (CPLR):

(1) Prepackaged products that are produced or manufactured for commercial or industrial enterprises or institutions for use by such enterprises or institutions without being sold by them as prepackaged products to other consumers are exempt from all the provisions of the Act.

(2) Prepackaged products that are produced or manufactured only for export or for sale to a duty-free store, are exempt from all the provisions of the Act.

Section 21 (CPLR):

Subject to sections 22, 23 and 36 the declaration of net quantity of a prepackaged product shall show the quantity

of the product

(a) by volume, when the product is a liquid or gas or is viscous, or

(b) by weight, when the product is solid

unless it is the established trade practice to show the net quantity of the product in some other manner, in which case the declaration shall be in accordance with the established trade practice.

Section 22 (CPLR):

(2) The declaration of net quantity of a prepackaged product listed in the table to this subsection shall show the net quantity of the product by weight of the edible contents in the container exclusive of the free liquid or glaze content.

Item	Product
1	Canned shellfish
2	Canned crustaceans
3	Meat* packaged in brine or vinegar solutions
4	Frozen glazed fish

* Includes fish and fish products.

Section 38 (CPLR):

(1) For the purposes of Schedule I, "catch-weight product" means a prepackaged product that because of its nature cannot normally be portioned to a predetermined quantity and is, as a result, usually sold in varying quantities.

(2) The prescribed tolerance for the purposes of subsection 7(3) of the Act is that set out in column II of an item of the appropriate Part of Schedule I for the declared net quantity set out in column I of that item.

Weights and Measures Act (WMA) and Weights and Measures Regulations (WMR)
Note: These Regulations apply to commodities that are packed for industrial, commercial and institutional markets.

Section 49 (WMR):

(1) Subject to subsection (2), the prescribed limits of error for the purposes of sections 9 and 33 of the Act are those set out in column II of an item of the appropriate Part of Schedule II for the stated quantity set out in column I of that item.

Section 52 (WMR):

(1) The inspection of any quantity of prepackaged commodities, hereinafter referred to as a lot, each unit of which purports to contain the same quantity of commodity, that an inspector undertakes to determine whether the lot meets the requirements of the Act and these Regulations respecting the statement of quantity, shall be made by selecting and inspecting a sample from the lot.

(4) The lot from which a sample was taken and inspected by an inspector does not meet the requirements of the Act and these Regulations respecting the statement of quantity where the inspector determines that:

(a) the weighted average quantity of the units in the sample, as determined by the formula set out in Part II of Schedule III, is less than the stated quantity;

(b) the number of units in the sample that contain less than the stated quantity by more than the prescribed limit of error set out in Schedule II for that quantity is equal to or greater than the number set out in column II of part IV of Schedule III for the sample size set out in column I thereof; or

(c) two or more units in the sample contain less than the stated quantity by more than twice the prescribed limit of error set out in Schedule II for that quantity.

Food And Drugs Act. R.S.C., 1985, c.42 (FDA) Sections 5(1) and 30(b).

Section 5 (FDA):

(1) No person shall label, package, treat, process, sell or advertise any food in a manner that is false, misleading or deceptive or is likely to create an erroneous impression regarding its character, value, quantity, composition, merit or safety.

(2) An article of food that is not labeled or packaged as required by, or is labeled or packaged contrary to, the regulations shall be deemed to be labeled or packaged contrary to subsection (1).

3. DEFINITIONS

Bulk Pack: means a container consisting of non-prepackaged fish or fish product (i.e., individual whole fish, glazed fish fillets, glazed shrimp) or prepackaged catch-weight product which do not have a declared net content on the label and are to be weighed at the time of sale.

Catch-Weight Product: means a prepackaged product that, because of its nature, cannot normally be proportioned to a predetermined quantity and is, as a result, usually sold in varying quantities.

Container: means any type of receptacle, package, wrapper or confining band used in packing or marketing fish. (FIA)

Destructive Inspection: means an inspection in which the container or product is destroyed, modified or rendered unusable. An example of this would be products requiring a "Drained Weight" declaration.

Drained Weight: means the weight of the edible contents of the container exclusive of free water, brine, pickling solution or glaze.

Dry Pack: a term applied to lobster or crustacean meat that has been vacuum packed, with no water or brine added to the final product. For the purpose of satisfying the Fish Inspection Regulations, it is recognised that there is no added liquid to be drained from the meat when lobster or crustacean meat is vacuum packed in this manner.

Individually measured product: means a commodity that is measured by any method other than by a packing device. (WMR)

Limits of error: The maximum net content deficiency (tolerance) permitted for an individual package (unit). (WMR)

Net Weight: with respect to unfrozen or frozen lobster meat, means the weight of the edible contents of a container after the liquid has been drained from the

container by a method approved by the Minister and, with respect to any other fish, means the total weight of the edible contents of a container.

Non-destructive inspection: means an inspection in which the container is not destroyed. An example of this would be products requiring a "Net Weight" declaration with the exception of unfrozen or frozen lobster meat.

Packing Device: means a device that, as part of a mechanical packing system, measures a predetermined quantity of commodity without recording the measurement of each quantity of commodity measured by the device or without being operated by a person who observes or records the measurement of each quantity of commodity measured by the device.

Pre-packaged product: any product that is packaged in a container, in such a manner that it is ordinarily sold to, used or purchased by a consumer or commercial enterprise without being repackaged. (CPLA)

Screening inspection: means an inspection to screen lots of imported or domestically produced fish and fish products from importers and processors who have had a good record of compliance with regard to net content and to avoid the necessity for the destructive examination of a large number of sample units.

T_1: a calculation that is equal to the declared weight minus the tolerance, as determined from Appendix A or B.

T_2: a calculation that is equal to the declared weight minus two times the tolerance, as determined from Appendix A or B.

Weighted average: Corresponds to the sum of the average content of a sample and a statistical adjustment value. This adjustment takes into consideration the sample size and standard deviation in order to ensure a confidence level of 99.5% (WMR) (see Appendix C).

4. POLICY

4.1 All fish and fish products intended for export or import must meet the requirements of the Fish Inspection Act and Regulations.

The authority to inspect and sample a lot of product for net content determination is derived from the Fish Inspection Act (FIA) and Regulations (FIR). The FIA and FIR provide the authority to choose the sampling plan to be used when a product lot is inspected for net content determination, and to define the plan in a policy statement.

4.2 When sampling a lot of product for net content determination, the sampling plan found in Annex A of the Sampling Policy and Procedures Chapter, Fish Products Standards and Methods Manual is to be followed. This sampling plan is used to obtain a sample from a lot undergoing destructive or non-destructive analysis and the sample obtained when using this plan is the official sample.

4.3 The only time when it would be mandatory for Inspectors to use the sampling plans associated with the Consumer Packaging and Labelling Regulations and the Weights and Measures Regulations, is when the Inspector is, in fact, enforcing those Regulations and acting under their authority.

4.4 Designating the sampling plan to be used by Inspectors acting under the Fish Inspection Act and Fish Inspection Regulations does not preclude the adoption of policy or information, as found in the Weights and Measures Act and Regulations, or the Consumer Packaging and Labelling Acts and Regulations, as procedural guidelines.

4.5 CFIA will not inspect the following fish or fish products for net content verification;

a) products from an importer or processor servicing a subsidiary or affiliated buyer in Canada, provided the subsidiary or affiliate is the end user;

b) products which are intended for further processing in an establishment registered with the CFIA.

4.6 An Inspector may, at the request of the purchaser, owner or agent, sample and inspect lots of imported or domestically produced fish and fish products as described in a) and b) above to ensure products comply with regard to net content. In such cases, an appropriate fee will be charged to the person requesting the inspection in accordance with the cost recovery sections of the Fish Inspection Regulations.

4.7 Catch-weight products may be prepackaged product packaged in a master carton and therefore the net content of the master carton will be verified (e.g., sides of smoked salmon prepackaged in a master carton, where the weight for the individual prepackaged side of smoked salmon is determined at retail point of sale).

4.8 Screening Inspection

4.8.1 For the purpose of interpreting "false, misleading or deceptive" with respect to the net content of fish and containers subject to the Fish Inspection Regulations, a screening inspection may be conducted for bulk-packed products provided the following criterion has been satisfied:

a) in the case of domestic product, no lot from the same processor has been rejected for net content during the previous four inspections carried out by the processor according to their QMP; or

b) in the case of imported product, the processor is not recorded for the product type in question on the Import Alert List because of net content.

4.8.2 A screening inspection is permitted for bulk packed product only. The number of samples will consist of three units.

4.8.3 A screening inspection will not be permitted when:

a) the product has been rejected as a result of net content determination;

b) the product is listed on the Import Alert List (IAL) as a result of net content determination;

c) the inspector, based on record checks, plant practise, confidence in the operation and compliance history, has reason to believe that a screening inspection should not be permitted.

5. LOT COMPLIANCE

5.1 Screening Inspection

If a lot fails a screening inspection, the owner or agent will be advised and the lot will be subject to an initial inspection using the sample size, tolerances and acceptance

criteria as specified in this Chapter.

If the lot fails an initial inspection, the owner or agent may be offered a suspended inspection or reinspection in which case they must follow the policy and procedures for these inspections set out in this Manual.

All lots for which a suspended inspection or a reinspection has been approved will be sampled and inspected in accordance with the sample sizes, tolerances and acceptance criteria as specified in this Chapter.

5.1.1 The tolerances and acceptance criteria for a screening inspection are the same as for the initial inspection with the exception that if the average net content of all the sample units examined fails to meet the declared net content, then the weighted lot average will not be calculated for evaluation of compliance.

5.2 Initial Inspection

5.2.1 Prepackaged Products

a) A lot of other than catch-weight products examined for net content will fail the inspection when:

i) the number of units in a sample that have a net content less than the declared net content by more than the tolerance set out in Appendix A, Schedule I, Part III or IV, Column II, is greater than the acceptance number in brackets (c) found in the attribute sampling plan in the Fish Products Standards and Methods Sampling chapter; or

ii) two or more units in the sample contain less than the declared net content by more than twice the tolerance set out in Appendix A, Schedule I, Part III or IV, Column II; or

iii) the weighted average quantity of all sample units examined, as determined by the formula set out in Appendix C, Schedule II and III, Part II, is less than the declared net content.

b) A lot of catch-weight products examined for net content will fail the inspection when:

i) the number of units in a sample, that have a net content less than the declared net content by more

than the tolerance in Appendix A, Schedule I, Parts I and II, Column II, is greater than the acceptance number in brackets (c) found in the attribute sampling plan in the Fish Products Standards and Methods Sampling chapter; or

ii) two or more units in the sample contain less than the declared net content by more than twice the tolerance set out in Appendix A, Schedule I, Parts I or II, Column II.

iii) the weighted average quantity of all sample units examined, as determined by the formula set out in Appendix C, Schedule II and III, Part II, is less than the declared net content.

5.2.2 Products for Industrial, Commercial and Institutional Markets.

a) A lot of other than individually measured products will fail the inspection when:

i) the number of units in a sample, that have a net content less than the declared net content by more than the tolerance set out in Appendix B, Schedule II, Parts V or VI, Column II, is greater than the acceptance number in brackets (c) found in the attribute sampling plan in the Fish Products Standards and Methods Sampling chapter; or

ii) two or more units in the sample contain less than the declared net content by more than twice the tolerance set out in Appendix B, Schedule II, Parts V or VI, Column II; or

iii) the weighted average quantity of all sample units examined, as determined by the formula set out in Appendix C, Schedule II and III, Part II, is less than the declared net content.

b) A lot of individually measured products will fail the inspection when:

i) the number of units in a sample, that have a net content less than the declared net content by more than the tolerance set out in Appendix B, Schedule II, Parts V or VI, Column II, is greater than the acceptance number in brackets (c) found in the attribute sampling plan in the Fish Products

Standards and Methods Sampling chapter; or

ii) two or more units in the sample contain less than the declared net content by more than twice the tolerance set out in Appendix B, Schedule II, Parts V or VI, Column II; or

iii) the weighted average quantity of all sample units examined, as determined by the formula set out in Appendix C, Schedule II and III, Part II, is less than the declared net content.

5.2.3 If the lot fails an official inspection, the owner or agent may be offered a suspended inspection or reinspection in which case they must follow the policy and procedures for these inspections set out in this Manual. All lots for which a suspended inspection or a reinspection has been approved will be sampled and inspected in accordance with the sampling plan specified in Annex A of the Sampling chapter of the Fish Products Standards and Methods Manual, and the tolerance and acceptance criteria as specified in the attribute sampling plan in the Fish Products Standards and Methods Sampling chapter.

5.3 Initial Inspections, Suspended Inspections and Reinspection

If the average net content of all sample units examined fails to meet the declared net content then the weighted lot average must be calculated and this value is used for evaluation of compliance.

5.4 A lot of product that has been rejected for net content may be re-labeled by the processor or importer. The determination of the new net content for the label will be the responsibility of the processor or importer.

The CFIA will verify the net content as re-labeled by performing a net content determination calculation.

- The new net content becomes the declared net weight for the product.
- Based on this declared net weight, a tolerance is obtained from Appendix A or B.
- The T_1 and T_2 values are calculated for the declared weight.
- These calculations and the original sample unit weights are used to determine compliance according to the policy.

6. PROCEDURE: TOTAL CONTENTS

6.1 Application

This procedure is applicable to products where the entire package contents are considered to be edible.

Note: See Section 9 for the evaluation of products which specifically require a "washed drained weight" analysis for export certification purposes.

6.2 Sample Preparation

No preliminary product preparation is necessary.

6.3 Weight Determination

6.3.1 Non-Destructive Inspection

a) Determine and record actual individual tare weights, average tare weight and tare range in accordance with the following:

i) collect a minimum of ten containers;

ii) clean and dry the containers;

iii) determine the weight of each of the containers;

iv) calculate the average tare ($\bar{t}$):

$$\bar{t} = \frac{\Sigma t}{n}$$

where Σt= total weight of containers
n= number of containers

v) determine the tare range (R), i.e., the difference between the heaviest and the lightest container.

$R = t_H - t_L$ where R = tare range
t_H = weight of heaviest container
t_L = weight of lightest container

b) Determine and record the T1 ± ½R and the T2 ± ½R values.

c) Determine the gross weight of each unopened sample unit.

d) Determine and record the net content of each sample unit using the following calculation:

net content = gross weight of unopened sample unit - average tare

e) Identify any container that may be within the areas of the T1 ± ½R value and the T2 ± ½R value. Any container which lies within these areas is to be reweighed using the actual tare (destructive inspection) of the container unit.

6.3.2 Destructive Inspection

a) Determine and record the gross weight of each unopened sample unit.

b) Determine and record the individual tare weight of each sample unit.

c) Determine and record the net content of each sample unit using the following calculation:

net content = gross weight of sample unit - tare weight of the sample unit

d) Determine and record the number of defective containers both with greater than one tolerance or limit of error (>T1) and greater than two tolerances or limits of error (>T2). Note: Every unit found to be greater than T2 is automatically beyond T1.

7. PROCEDURE: DRAINED CONTENTS

7.1 Products Packed in Water, Brine or Vinegar (many canned and semi-preserved products fall into this category)

7.1.1 Sample Preparation

Allow the sample units to come to a temperature of 20-25 °C. No additional preliminary product preparation is necessary.

7.1.2 Weight Determination

a) After opening the container, transfer product to a sieve*, distributing evenly over the surface of the mesh. Incline the sieve* at an angle of 20 to 30 degrees from horizontal; or for canned product, incline the can at an angle of 20 to 30 degrees from

horizontal.

b) Without shifting the product, drain for a period of 2 minutes.

c) Transfer the drained product to a tare pan and weigh, or weigh can and contents and tare the weight of the can. The resultant figure is the net content for that sample unit.

7.2 Glazed Frozen Products (including glazed shellfish and crustacean products)

This is a drained weight because the glaze is being removed from the product. The product remains frozen.

7.2.1 Sample Preparation

a) Remove package from storage, open and place product under gentle spray of cold water.

b) Agitate carefully, spraying the product until all glaze which can be seen or felt is removed.

7.2.2 Weight Determination

a) After deglazing, transfer product to a sieve*.
b) Incline the sieve* at an angle of 20 to 30 degrees from horizontal and drain for a period of 2 minutes. This will remove the spray water from the product. The product remains frozen during this step.

c) Transfer the drained product to a tare pan and weigh. The resultant figure is the net content for that sample unit.

7.3 Frozen Crustacean Products Immersed in Water or Brine (e.g., popsicle pack lobster)

7.3.1 Sample Preparation

Thaw the sample unit by submerging in cool running or circulating water until a core meat temperature of between 10 °C - 15 °C (50 °F - 59 °F) is reached. This may be accomplished by using a sink with running tap water or a circulating water bath. Under some thawing conditions it may be necessary to allow the product to sit at room temperature until a minimum core temperature of 10 °C (50 °F) is reached.

7.3.2 Weight Determination

a) After the product has thawed, as determined by a loss of rigidity, transfer the product to a sieve*, distributing it evenly over the surface of the mesh, or for canned product invert over a beaker.

b) Without shifting the product, incline the sieve* or can at an angle of 20 to 30 degrees from horizontal and drain for a period of 2 minutes.

c) Transfer the drained product to a tare pan and weigh; or weigh the package (can) and the contents and then tare the weight of the packaging (can). The resultant figure is the net content for that sample unit.

7.4 Frozen Crustacean Products or Molluscan Shellfish Meats to which Water or Brine has been Added to the Final Product (e.g., frozen canned lobster meat)

7.4.1 Sample Preparation

a) Open container of frozen product.

b) Place contents of individual package in a wire mesh basket and immerse in a container of fresh water at 26 ± 3 °C (80 ± 5 °F) such that the top of the basket extends above the water level. The wire-mesh basket must be large enough to hold the contents of one package and with openings small enough to retain all pieces of the product.

c) Introduce water of the same temperature, 26 ± 3 °C (80 ± 5 °F), at the bottom of the container at a flow rate of 4-11 litres per minute.

7.4.2 Weight Determination

a) As soon as the product thaws, as determined by loss of rigidity, transfer all material to a sieve*, distributing evenly.

b) Without shifting the material, incline the sieve* to 30 degrees from horizontal in order to facilitate drainage.

c) After two minutes, transfer product to a tare pan and weigh. The resultant figure is the net content for that sample unit.

*** See Appendix E: Sieve Size Designations**

8. PROCEDURE: FLUID MEASURE

8.1 Application

Applicable to all products where the contents are expressed as volume.

8.2 Sample Preparation

Allow the sample unit to come to a temperature of between 20 and 25 °C.

Prepare clean and dry wide-neck cylinders equal to the number of containers to be examined. The cylinders must be accurate to 1 mL.

8.3 Fluid Measure Determination

8.3.1 Open the container and allow to drain into a separate cylinder for 2 minutes. For viscous products which do not drain completely, use an appropriately sized plastic spatula to thoroughly transfer the contents of each container to the appropriate cylinder.

8.3.2 Determine and record the volume of the product in each cylinder. The resultant figure shall be considered the net content for that sample unit.

8.4 Fluid Measure Determination - Thick Soup and Chowder

8.4.1 Sample Preparation

Allow the sample unit to come to a temperature of 20 °C.

Ensure that the pycnometer used during this procedure is properly calibrated and certified.

8.4.2 Fluid Measure Determination

a) Open container and empty contents into a clean and dry container. Using a blender, blend the product contents until homogenized into a smooth and uniform mixture.

Remove the air bubbles which may have formed during this process by slowly mixing the contents with a spatula.

b) Tare the weight of the pycnometer on a balance, and then fill it to capacity with the product, put the lid in place and wipe off the excess product. The pycnometer (tare) with its contents is then weighed (M).

c) Calculate the density of the product by using the formula D=M/V where V is the calibrated capacity of the pycnometer, and M is the weight of the contents in the pycnometer.

d) Repeat the entire procedure two more times and calculate the mean density.

e) Determine the volume (V) of the remaining samples by weighing each sample and using the formula V=M/D where M is the weight of each sample and D is the calculated mean density.

9. PROCEDURE: WASHED DRAINED WEIGHT

9.1 Application

Applicable only to products which are presented for certification for export to countries that specifically require the net content determination to be conducted as a "washed drained weight".

9.2 Sample Preparation

a) Allow the sample unit to come to a temperature of 20 - 25 °C.

b) Open the container, tilt, and using hot tap water (approx. 40 °C), wash the sauce from the product. Transfer the contents to a sieve*, distributing the product evenly over the surface of the mesh.

9.3 Weight Determination

a) Wash the contents of the sieve* with hot water until the product is free of adhering sauce. Where necessary remove optional ingredients (spices, vegetables, fruits) with pincers.

b) Without shifting the product, incline the sieve* at an angle of 20 to 30 degrees from horizontal and drain for a period of 2 minutes.

c) Transfer the drained product to a tare pan and weigh. The resultant figure is the net content for the sample unit.

*** See Appendix E: Sieve Size Designations**

10. FORMS/DOCUMENTS

Appendix A - Tolerances under the Consumer Packaging and Labelling Regulations

Schedule I

Part I: Tolerances of Net Quantities Declared in Metric Units of Mass for Catch-Weight Products.

Part II: Tolerances of Net Quantities Declared in Canadian Units of Mass or Weight for Catch-Weight Products.

Part III: Tolerances for Net Quantities Declared in Metric Units of Mass or Volume for Prepackaged Products other than Catch-Weight Products.

Part IV: Tolerances for Net Quantities Declared in Canadian Units of Mass or Weight for Prepackaged Products other than Catch-Weight Products.

Appendix B - Limits of Error under Weights and Measures Regulations

Schedule II

Part I: Limits of Error for Quantities Measured in Metric Units of Mass for Individually Measured Commodities.

Part II: Limits of Error for Quantities Measured in Canadian Units of Mass for Individually Measured Commodities.

Part V: Limits of Error for Quantities Measured in Metric Units of Mass or Volume for Commodities other than Individually Measured Commodities.

Part VI: Limits of Error for Quantities Measured in Canadian Units of Mass or Weight for Commodities other than Individually Measured Commodities.

Appendix C - Formula for Determining the Weighted Average Quantity of the Units in a Sample

Appendix D - Method of Rounding-Off Calculated Figures

Appendix E - Sieve Size Designations

Appendix F - Product Examination Worksheet - Net Content

Appendix G - Worksheets

1) Tolerance and T1/T2 Defective Determination; and

2) Calculation of Weighted Lot Average

(These are Excel 97 worksheets that are downloadable from the Internet at http://www.cfia-acia.agr.ca/english/animal/fish_and_seafood/product/index.html)

New 02/06/00

APPENDIX A

Tolerances for the declared net content under Consumer Packaging and Labelling Regulations - Section 38(2)

SCHEDULE I
PART I

Tolerances of Net Quantities Declared in Metric Units of Mass For Catch-Weight Products

Item	Column I Declared Net Quantity	Column II Tolerance %	grams
	grams		
1.	more than 0 to not more than 60	10	--
2.	more than 60 to not more than 600	--	6
3.	more than 600 to not more than 1 000	1	--
	kilograms		
4.	more than 1 to not more than 1.5	--	10
5.	more than 1.5 to not more than 3	0.66	--
6.	more than 3 to not more than 4	--	20
7.	more than 4 to not more than 10	0.5	--
8.	more than 10 to not more than 15	--	50
9.	more than 15 to not more than 250	0.33	--
10.	more than 250 to not more than 500	--	750
11.	more than 500	0.15	--

New 02/06/00

SCHEDULE I
PART II

Tolerances of Net Quantities Declared in Canadian Units of Mass or Weight for Catch-Weight Products

Item	Column I Declared Net Quantity	Column II Tolerance %	 ounces
	ounces		
1.	more than 0 to not more than 2	10	--
2.	more than 2 to not more than 20	--	0.2
	pounds		
3.	more than 1.25 to not more than 2.2	1	--
4.	more than 2.2 to not more than 3.3	--	0.35
5.	more than 3.3 to not more than 6.6	0.66	--
6.	more than 6.6 to not more than 8.8	--	0.71
7.	more than 8.8 to not more than 22	0.5	--
8.	more than 22 to not more than 33	--	1.76
9.	more than 33 to not more than 550	0.33	--
10.	more than 550 to not more than 1 100	--	26.4
11.	more than 1 100	0.15	--

SCHEDULE I
PART III

Tolerances for Net Quantities Declared in Metric Units of Mass or Volume for Prepackaged Products other than Catch-Weight Products

Item	Column I Declared Net Quantity	Column II Tolerance %	 grams or millilitres
	grams or millilitres		
1.	more than 0 to not more than 50	9	--
2.	more than 50 to not more than 100	--	4.5
3.	more than 100 to not more than 200	4.5	--
4.	more than 200 to not more than 300	--	9
5.	more than 300 to not more than 500	3	--
6.	more than 500 to not more than 1 kilogram or litre	--	15
	kilograms or litres		
7.	more than 1 to not more than 10	1.5	--
8.	more than 10 to not more than 15	--	150
9.	more than 15	1	--

New 02/06/00

SCHEDULE I
PART IV

Tolerances for Net Quantities Declared in Canadian Units of Mass or Weight for Prepackaged Products other than Catch-Weight Products

Item	Column I Declared Net Quantity	Column II Tolerance %	 ounces
	ounces		
1.	more than 0 to not more than 1.75	9	--
2.	more than 1.75 to not more than 3.5	--	0.16
3.	more than 3.5 to not more than 7	4.5	--
4.	more than 7 to not more than 10.6	--	0.32
5.	more than 10.6 to not more than 17.6	3	--
	pounds		
6.	more than 1.1 to not more than 2.2	--	0.53
7.	more than 2.2 to not more than 22	1.5	--
8.	more than 22 to not more than 33	--	5.28
9.	more than 33	1	--

New 02/06/00

APPENDIX B

Limits of error for the declared net content under Weights and Measures Regulations - Section 49(1)

SCHEDULE II
PART I

Limits of Error for Quantities Measured in Metric Units of Mass for Individually Measured Commodities

Item	Column I Stated Quantity	Column II Limits of error %	 grams
	grams		
1.	more than 0 to not more than 60	10	--
2.	more than 60 to not more than 600	--	6
3.	more than 600 to not more than 1 000	1	--
	kilograms		
4.	more than 1 to not more than 1.5	--	10
5.	more than 1.5 to not more than 3	0.66	--
6.	more than 3 to not more than 4	--	20
7.	more than 4 to not more than 10	0.5	--
8.	more than 10 to not more than 15	--	50
9.	more than 15 to not more than 250	0.33	--
10.	more than 250 to not more than 500	--	750
11.	more than 500	0.15	--

SCHEDULE II
PART II

Limits of Error for Quantities Measured in Canadian Units or Mass for Individually Measured Commodities

Item	Column I Stated Quantity	Column II Limits of error %	 ounces
	ounces		
1.	more than 0 to not more than 2	10	--
2.	more than 2 to not more than 20	--	0.2
	pounds		
3.	more than 1.25 to not more than 2.2	1	--
4.	more than 2.2 to not more than 3.3	--	0.35
5.	more than 3.3 to not more than 6.6	0.66	--
6.	more than 6.6 to not more than 8.8	--	0.71
7.	more than 8.8 to not more than 22	0.5	--
8.	more than 22 to not more than 33	--	1.76
9.	more than 33 to not more than 550	0.33	--
10.	more than 550 to not more than 1 000	--	26.4
11.	more than 1 000	0.15	--

New 02/06/00

SCHEDULE II
PART V

Limits of Error for Quantities Measured in Metric Units of Mass or Volume for Commodities other than Individually Measured Commodities

Item	Column I Stated Quantity	Column II Limits of error %	 grams or millilitres
	grams or millilitres		
1.	more than 0 to not more than 50	9	--
2.	more than 50 to not more than 100	--	4.5
3.	more than 100 to not more than 200	4.5	--
4.	more than 200 to not more than 300	--	9
5.	more than 300 to not more than 500	3	--
6.	more than 500 to not more than 1 000	--	15
7.	more than 1 000 to not more than 10 000	1.5	--
8.	more than 10 000 to not more than 15 000	--	150
9.	more than 15 000	1	--

New 02/06/00

SCHEDULE II
PART VI

Limits of Error for Quantities Measured in Canadian Units of Mass or Weight for Commodities other than Individually Measured Commodities

Item	Column I Stated Quantity	Column II Limits of Error %	 ounces
	ounces		
1.	more than 0 to not more than 1.75	9	--
2.	more than 1.75 to not more than 3.5	--	0.16
3.	more than 3.5 to not more than 7	4.5	--
4.	more than 7 to not more than 10.6	--	0.32
5.	more than 10.6 to not more than 17.6	3	--
	pounds		
6.	more than 1.1 to not more than 2.2	--	0.53
7.	more than 2.2 to not more than 22	1.5	--
8.	more than 22 to not more than 33	--	5.28
9.	more than 33	1	--

APPENDIX C

FORMULA FOR DETERMINING THE WEIGHTED AVERAGE QUANTITY OF THE UNITS IN A SAMPLE

SCHEDULE II & III
PART II

For the purpose of Section 38 (4) (a) under the Consumer Packaging and Labelling Regulations and Section 52(4)(a) under the Weights and Measures Regulations, the formula for adjusting the sample mean to determine the weighted average quantity of the units in the sample is as follows:

$$\overline{X}_a = \quad + s(t \div \sqrt{n})*$$

In the formula above:

$\overline{X}_a$ is the weighted average quantity of the units in the sample

is the sample mean calculated as follows:

$$= \Sigma x \div n$$

Σx is the sum of the net quantities of all units in the sample

t is the value determined in accordance with Part III for the selected sample size

n is the number of units in the sample

s is the standard deviation of the sample, calculated as follows:

$$s = \quad \sqrt{\Sigma \frac{(\quad - x)^2}{(n-1)}}$$

$\Sigma(\quad - x)^2$ is the sum of the squared differences between the sample mean and the net quantity of each unit in the sample

These formulas provide a statistical method that prevents any bias introduced by the selection of the sample from adversely affecting the inspection result. The mean (average) of the

sample is adjusted by a factor that is related to the demonstrated packaging accuracy (standard deviation). Relating the sample mean to the calculated lot average in this way provides a confidence level of 99.9% that good lots will not be failed in error.

* The value of $(t \div \sqrt{n})$ may, instead of being calculated in accordance with this Part, be determined using the applicable value set out in column III of the table to Part III.

PART III

TABLE FOR VALUES OF t AND (t ÷ √n)

Column I Sample size	Column II t*	Column III (t ÷ √n)*
2	63.657	45.01
3	9.925	5.73
4	5.841	2.92
5	4.604	2.06
6	4.032	1.65
7	3.707	1.40
8	3.499	1.24
9	3.355	1.12
10	3.250	1.03
11	3.169	0.955
12	3.106	0.897
13	3.055	0.847
14	3.012	0.805
15	2.977	0.769
16	2.947	0.737
17	2.921	0.708
18	2.898	0.683
19	2.878	0.660
20	2.861	0.640
21	2.845	0.621
22	2.831	0.604
23	2.819	0.588
24	2.807	0.573
25	2.797	0.559
26	2.787	0.547
27	2.779	0.535
28	2.771	0.524
29	2.763	0.513
30	2.756	0.503
31	2.750	0.494
32	2.746	0.485
64	2.657	0.332
96	2.643	0.269
125	2.615	0.234

Linear Interpolation of Values

Where a sample size is selected that is not listed in column I of this table and lies between 32 and 125, the value of t will be determined by linear interpolation as follows:

$$t = a - \frac{(c-e)}{(c-d)} (a-b)$$

where:

a is the value of t for closest sample size below the selected sample size

b is the value of t for the closest sample size above the selected sample size

c is the result of 120 divided by the closest sample size below the selected sample size

d is the result of 120 divided by the closest sample size above the selected sample size

e is the result of 120 divided by the selected sample size

* Where all units in a lot are selected to constitute a sample, zero shall be used as the value of t and (t ÷ √n).

Because the "t" values are used to calculate the weighted lot average from the sample mean, it is not required in those cases where every package in the lot is tested, and therefore, as the note above shows, it is equal to zero for those cases.

APPENDIX D

METHOD OF ROUNDING OFF CALCULATED FIGURES

Since calculations usually imply the rounding of results, it is important to know how and when figures can be rounded. The policy is always to round off in favor of the packer.

Average Tare:

Round-off to the next lower graduation of the scale.

Examples: Calculated average tare: 52.567 g
Scale graduations: 1 g
Average tare to be used: 52 g

Calculated average tare: 52.567 g
Scale graduations: 0.1 g
Average tare to be used: 52.5 g

Sample Mean:

If for practical reasons the sample mean has to be rounded, round-up the fourth or fifth significant digit as indicated below.

Examples:

Sample mean value not rounded off	Number of significant digits that must be kept
< 1 kg	4
1 kg and more	5

Calculated Sample Mean	Rounded-Off Sample Mean
498.4564 g	498.5 g
2363.3045 g	2363.4 g
9.67432 kg	9.6744 kg
29.86542 kg	29.866 kg
857.4256 mL	857.5 mL

APPENDIX E

SIEVE SIZE DESIGNATIONS

The sieve numbers associated with the sieves used to determine the drained weight of product have been designated by the American Society for Testing and Materials (ASTM). These numbers, No. 8, 10, 20, 50, etc., relate to the standardised nominal aperture size of the wire mesh used to make the sieve (size of openings in the mesh). The aperture size is a measure of the distance between parallel wires of the mesh.

The table below contains the sieve numbers and the corresponding aperture size for the mesh used to make the sieve.

Sieve No.	Aperture Opening (mm)
No. 4	4.75
No. 5	4
No. 6	3.35
No. 7	2.8
No. 8	2.36
No. 10	2
No. 12	1.7
No. 14	1.4
No. 16	1.18
No. 18	1
No. 20	0.85
No. 30	0.6
No. 50	0.3
No. 80	0.18
No. 200	0.075

In order to build flexibility into the policy document, the sieve number to be used when determining the drained weight is not designated; the intention is that the appropriately sized sieve

will be used as dictated by the particulate size of the product.

There is guidance in the Codex Alimentarius and in publications of the American Organization of Analytical Chemists (AOAC) regarding the sieve size that may be chosen for a particular product type.

References

Canadian General Standards Board (CGSB)

- CGSB 8.1.88: Sieves, Testing, Woven Wire, Inch Series
- CGSB 8.2 M88: Sieves, Testing, Woven Wire, Metric, Canadian Metric Sieve Series

American Society For Testing And Materials (ASTM)

- E11-95 Standards Specification For Wire Cloth And Sieves For Testing Purposes

International Organisation For Standardization (ISO)

- ISO 565:1990 Test sieves - Metal wire cloth, perforated metal plate and electroformed sheet - Nominal sizes of openings
- ISO 2395:1990 Test sieves and test sieving - Vocabulary

New 02/06/00

APPENDIX F

APPENDIX G

DETERMINING THE WEIGHTED AVERAGE QUANTITY OF THE UNITS IN A SAMPLE

TOLERANCE AND T1/T2 DEFECTIVE DETERMINATION

New 02/06/00

CALCULATION OF WEIGHTED LOT AVERAGE