Australian Government
Department of Industry, Science, Energy and Resources

National Measurement Institute

Sampling and Test Procedures for Prepackaged Products

MMMM 2020

www.measurement.gov.au

NMI V 20
First edition — June 2010

Sampling and Test Procedures for Prepackaged Articles
First edition — December 2011

Sampling and Test Procedures for Prepackaged Products
First edition — February 2015
First edition, first revision — February 2017
First edition, second revision — March 2018
First edition, third revision — MM 2020

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Amendments

No.	Date	Page/s	Location	Details of change
1	1 February 2015	All	All	Deleted references to certification, updated information, clarified meaning, adopted a single column format and made minor editorial changes.
2	1 February 2015	All	All	Incorporated existing test procedure and information from the *Sampling and Test Procedures for Prepackaged Frozen Fish*.
3	1 February 2015	v	Explanation of Terms	Included a section to define terms used in the document.
4	1 February 2015	vi	Abbreviations	Incorporated the abbreviations from the existing *Sampling and Test Procedures for Prepackaged Frozen Fish*.
5	1 February 2015	1	Clause 1	Included four test methods (*substitution* method, *displacement* method, *mass per unit* method and an additional *volumetric* method) that have been used by Trade Measurement Inspectors. These test procedures are used to assess prepackaged products such as ice cream and garden landscape materials.
6	1 February 2015	1 to 3	Clause 2	Clarified the required equipment for each test method specified in the document.
7	1 February 2015	4	Clause 3.2	Reworded the requirements for instrument characteristics, from a question to a statement.
8	1 February 2015	8	Clause 6.1.2	Clarified the test procedure for testing the control (weighing) instrument in relation to the various test methods detailed for prepackaged products.
9	1 February 2015	10	Clause 6.2.3	Clarified the requirements for consistent and inconsistent tares.

No.	Date	Page/s	Location	Details of change
10	1 February 2015	11	Clause 7.2	Clarified circumstances for using the volumetric method for testing liquids.
11	1 February 2015	12	Clause 7.3	Clarified the use of reference standard of volume measure calibrated “to contain” and “to deliver”.
12	1 February 2015	13 to 14	Clause 7.4	Inserted a new substitution test procedure for viscous or non-homogenous prepackaged products that are marked with reference to volume.
13	1 February 2015	14 to 16	Clause 7.5	Inserted a new test procedure to determine the volume of ice cream.
14	1 February 2015	16 to 17	Clause 7.6	Inserted a new test procedure to determine the number of products in a prepackage using the weight of the product.
15	1 February 2015	17 to 18	Clause 7.7	Inserted a new test procedure to determine the net contents of prepackaged landscaping material.
16	1 February 2015	19	Clause 7.8	Incorporated the existing test procedure on *Sampling and Test Procedures for Prepackaged Frozen Fish* to assess compliance with the marking requirements and shortfall offences of prepackaged frozen fish.
17	1 February 2015	24	Test Report	Added section to record details of equipment and reference standards.
18	1 February 2015	25	Test Report	Added a test report to record details of tests conducted on the control instrument.
19	1 February 2015	29	Test Report	Incorporated the existing test report to record the results of the *frozen fish* method.
20	1 February 2017	17 to 19 and 30	Clause 7.7 to 7.9 Test Report	Amendments incorporated: • Incorporated a new testing procedure to determine number of products in a prepackage by counting. • Added a test report to record results of counting method. • Renumbered clauses 7.7 to 7.8 to incorporate the test procedure for counting method as clause 7.7.
21	1 February 2017	7	Clause 5.1	Amended the sampling procedure for non AQS sampling to align with National Trade Measurement Regulation.
22	16 March 2018	v	Explanation of Terms	Included definitions of “Fish” and “Plate Freezing”.
23	16 March 2018	19	Clause 7.9	Editorial amendments made to as a result of new definitions provided under Item 22 above.
24	DD/MM/2018	Vii	Abbreviations	Amendment to the terms relating to garden landscaping material to include all flowable solids.
25	DD/MM/2020	1	Clause 1	Renamed the volumetric method to accommodate other products that do not fall under garden landscaping, such as bean bag beads and added the linear and area method.

No.	Date	Page/s	Location	Details of change
26	DD/MM/2020	1	Clause 2	Amendment to incorporate the equipment required for linear and area measurement and updating the equipment for volumetric measure to reflect a change in the applicable standards.
27	DD/MM/2020	8	Clause 6.1.2	Amendment to allow flexibility in recording results.
28	DD/MM/2020	9	Clause 6.2.3	Amendment to Tare Validation for internal consistency in the document.
29	DD/MM/2020	11	Clause 7.3	Amendment to the test procedure to provide clarity to the testing procedure.
30	DD/MM/2020	18 to 19 and 21 to 32	Clause 7.10.1 & 7.10.2 Test Report	Amendment to incorporate: • New test method to determine the actual length of a product with quantity statement in terms of linear measurement. • New test method to determine the actual area of a product with quantity statement in terms of area. • Added test reports to record results for Linear Method and Area Method.

Preface

The National Measurement Institute's Chief Metrologist has determined that *Sampling and Test Procedures for Prepackaged Products* contains, for the purposes of section 19Q of the *National Measurement Act 1960* (Cth) include the:

- AQS sampling procedures;
- AQS test procedures;
- national group test procedures;
- national sampling procedures; and
- national single article test procedures.

Contents

Explanation of Terms

For further explanations of terms see General Information for Test Procedures.

AQS Product
A prepackaged product that has a predetermined constant nominal quantity and is marked with the 'e' mark.

e mark
A mark, indicated by the letter 'e' used by packers to indicate the prepackaged product is packed using AQS.

Fish
All or part of, or any number of, or any combination of, any cold-blooded aquatic vertebrate or invertebrate, including shellfish but not an amphibian or a reptile. It does not include manufactured or value added fish products produced by processes including crumbing, marinating, reconstituting, mincing, curing, seasoning, shredding and forming.

Inspection lot
A collection of prepackaged products that are:

- either produced or imported at the same time so that they are exposed to what is presumed to be uniform conditions;
- available for inspection at the same time and location; and
- of the same measurement i.e. same kind, length, area, mass, volume, number etc.

from which a sample is drawn and then inspected to ascertain that the prepackages conform to the requirements set out in the Regulations.

Where the above is not possible (i.e. to determine the single production time), the inspection lot is that which is selected by the inspector for the purposes of assessing shortfall in a prepackage.

Plate Freezing
The process whereby fish only is placed between two hollow metal plates and is frozen by a refrigerant flowing through the hollow plates to produce uniform packaged block products.

Prepackaged Product
A single item:

- that consists of a product and packing material into which it was put before being offered for sale; and
- that is prepared for presentation to a consumer:
  (a) as a single item, whether the packing material encloses the product completely or partially; and
  (b) in a way in which the quantity of the product cannot be altered without opening or perceptibly modifying the packing material; and
- in relation to which the quantity of the product has been determined before being offered for sale.

Random Sampling
The process of selecting prepackages randomly in conditions in which each prepackage has the same probability of being included in the sample.

Range
The difference between the smallest and largest values.

Tare
The weight of the empty packaging or reference standard.

Abbreviations

π	3.142
A	horizontal cross sectional area of the base of the vessel in the *volumetric* method for flowable solids
AQS	average quantity system
c	statistical factor to account for variation in the sample
d	scale interval
h	maximum internal height of the cylindrical vessel in the *volumetric* method for flowable solids
ISO	International Organisation for Standardisation
MPD	maximum permissible difference between readings
MPE	maximum permissible error
n	number of packages in the sample
N	number of prepackaged products selected
Q	weighted average quantity
Q_n	nominal quantity on the prepackaged article
r	radius of the cylindrical vessel in the *volumetric* method for flowable solids
s	standard deviation of the prepackaged sample
T	tolerable deficiency
T_1	an error that occurs when the actual contents < (Q_n – T)
T_2	an error that occurs when the actual contents < (Q_n – 2T)
u	smallest of the three heights of the unfilled capacity of the vessel in the *volumetric* method for flowable solids
$\bar{x}$	sample mean
x_i	measured net contents of the '*i*th' prepackaged product

1. Scope

This document describes the procedures used by Trade Measurement Inspectors for the inspection of prepackages to ensure their compliance with the marking requirements and to ensure the actual contents of a prepackaged product are within the tolerable deficiencies specified in the *National Trade Measurement Regulations 2009* (Cth).

Ten test methods are described to measure the contents of prepackaged products:

- *gravimetric mass* method (clause 7.1)
- *volumetric* method (clause 7.2)
- *gravimetric volume* method (clause 7.3)
- *substitution* method (clause 7.4)
- *displacement* method (clause 7.5)
- *mass per unit* method (clause 7.6)
- counting method (clause 7.7)
- *volumetric* method for flowable solids (clause 7.8)
- *frozen fish* method (clause 7.9)
- *linear & area* method (clause 7.10).

Although it is not mandatory for industry to use these test methods to determine the net contents of packaged articles, industry may find it beneficial to use similar methods to those which will be used for compliance assessments by Inspectors.

2. Equipment

Record details of the reference standard used on the test report.

All equipment detailed below is in reference to the relevant test method.

1. Appropriate reference standards of measurement:
   - (a) control instrument testing:
     - (i) reference weight (to test the control instrument up to 110% of the combined mass of product and where applicable any equipment used in the relevant test method. See clause 6.1.1 for further detail).
   - (b) *volumetric* method:
     - (i) volume measure (to determine the volume of product to an accuracy equal to or better than 0.1% of Q_n).
   - (c) *gravimetric volume* method:
     - (i) volume measure (to determine the density of the sample to an accuracy equal to or better than 0.05% of the total volume measured).
   - (d) *displacement* method:
     - (i) digital thermometer (to measure the temperature of the water bath).
   - (e) *volumetric* method (flowable solids):
     - (i) length measure with a 1 mm scale interval (to measure the empty capacity or a vessel/container and fill height) with a combined measured variation and uncertainty within the maximum permissible variation for an Inspectors Class 1 standard.
   - (f) *Linear & area* method:
     - (i) suitable rigid and/or flexible measure of length with a combined measured variation and uncertainty within the maximum permissible variation for an Inspectors Class 1 standard. Providing the measurements take place in the temperature range of ±10ºC from the nominal calibrated reference temperature of the reference standard of length no temperature correction is required. Tension is not required to be applied to a flexible reference standard of length, provided the standard is flat.

(ii) pocket comparator (loupe & reticle) with a combined measured variation and uncertainty within the maximum permissible variation for an Inspectors Class 1 standard.

2. Current Regulation 13 certificates for all reference standards of measurement and Regulation 13 or NATA certificate for thermometers.
   All reference standards of measurement shall comply with the uncertainties and variations permitted in the *National Measurement Regulations 1999* (Cth). The combined uncertainties and variations shall be no greater than one-third of the applicable MPE of the measures or control instrument being tested.
3. Suitable weighing instrument (hereinafter referred to as a control instrument for determining the mass of a prepackage (for *gravimetric mass, mass per unit* and *frozen fish* methods) and the mass of a measured volume (for *gravimetric volume*, *substitution* and *displacement* methods)). See clause 6.1.1 for suitability requirements for the control instrument.
4. *Substitution* method:
   (a) depth gauge or calliper with depth facility
   (b) rigid spanning bar greater than the width of the container under test
   (c) suitable substitution liquid e.g. potable water
   (d) funnel/pouring kit.
5. *Displacement* method:
   (a) water bath (to contain the ice cream pack)
   (b) control instrument
   (c) potable water
   (d) freezer
   (e) dry ice
   (f) newspaper
   (g) sharp knife
   (h) personal protective equipment for handling frozen products
   (i) bowl or receptacle to contain the equivalent amount of water as the prepackage being tested
   (j) fully enclosed thin wire mesh basket in which the ice cream can be secured and submerged in the displacement bath (Any similar device can be used, provided the ice cream is able to be securely submerged).
6. *Volumetric* method (for flowable solids):
   (a) suitable measuring vessel/container which:
      - is cylindrical with the planes of the top and bottom surfaces parallel to each other;
      - has a flat base plate fitted to one end, which is large enough to enable the cylinder to remain stable when filled to its capacity;
      - is made of rigid transparent plastic material and constructed in a manner that will not deform or leak when filled with water;
      - has an internal diameter not exceeding 195 mm and does not vary by more than 0.5% of the smallest measurement when the maximum internal diameter is measured in the horizontal plane at five separate vertical points (including top, middle and bottom); and
      - has an internal height that does not vary by more than 0.2% of the smallest measurement, when measured from the inside of the base to the rim and taken at three points across the diameter using a spanning bar.
   (b) callipers (to measure an internal diameter)
   (c) wide necked funnel (to fit inside the measuring vessel)
   (d) tarpaulin or floor covering material
   (e) dustpan and brush
   (f) rigid spanning bar
   (g) P2 dust masks
   (h) protective gloves.
7. *Frozen fish* method (for determining the mass of frozen fish products):
   (a) circular wirecloth sieve, which:
      - has a mesh aperture of 2.36 mm;

- has a diameter of 200 mm (if the prepackage is ≤ 500 g), 300 mm (if the prepackage is > 500 g), or an appropriate diameter to fully contain the fish; and
- complies with either AS 1152:2003—1993 *Specification for Test Sieves* or ISO 3310-1—2016: *Test Sieves – Technical Requirements and Testing* for mesh aperture and diameter requirements.

(b) thermometer
(c) water bath
(d) plastic (water-tight) bag.

8. *Linear* method:
   (a) flat horizontal test surface (i.e. bench or similar). Consideration should be given to the length and width of the surface so that it accommodates the product under test
   (b) toilet roll holder or similar device for products on a roll (used to retain the roll at the start of the bench to enable the product to be unrolled in the same fashion it is used)
   (c) clamps (used to hold the length standard and product in place. Also may be required to prevent sideways movement of a roll)
   (d) guide for edge of bench (may be required to prevent the product from slipping off the bench when tested).
9. *Area* method:
   (a) transparent template subdivided into squares of uniform dimensions (e.g. graph, coordinate or engineering paper). The area of individual squares shall not exceed 0.2% of Q_n.
10. Materials to clean and dry prepackaged products.
11. Test reports (see Appendix A).

3. Visual Inspection

Before examining and testing products it is important an assessment of the product being measured is undertaken to determine the necessary safety precautions. This may include handling of a hazardous product or managing the testing environment to reduce any identified risks.

Examine the prepackage and where applicable request relevant information (Material Safety Data Sheet, production/importation documentation) from the trader as needed and record the data on the test report.

Visually inspect the prepackaged product and determine if:

- all the required data; and
- the applicable characteristics of the prepackaged product are correctly marked.

Where required, record details on the test report (Appendix A).

3.1 Required Data

1. Inspection details:
   (a) test report reference number
   (b) date of inspection
   (c) name of inspector
   (d) name of trader
   (e) address of trader.
2. Product details:
   (a) product description
   (b) batch number or use-by/best before date
   (c) nominal quantity
   (d) packer identification
   (e) AQS ‘e’ marking (if applicable)
   (f) unit price of product
   (g) selling price of product – may also be marked on the shelf or on an invoice.

3. Test details:
   (a) location of test (e.g. packer, importer, retailer or wholesaler)
   (b) place of sampling (AQS only)
   (c) production run size
   (d) maximum hourly production or importation quantity (AQS only).
4. Measurement details:
   (a) inspection lot size
   (b) sample size
   (c) measurement method.

3.2 Characteristics of the Prepackaged Product

Where applicable the prepackaged product shall comply with the following clauses:

1. The prepackaged product shall be marked with the name and address of the person who packed the product or on whose behalf it was packed.
2. The name and address on the prepackaged product shall be readily visible, legible and enabling the person who packed the product or on whose behalf the product was packed to be identified and located.
3. The nominal quantity shall be marked on the prepackaged product.
4. The measurement statement shall be clear, concise, readily seen and easy to read.
   The measurement statement shall be on the principal display panel.

   Note: This is not applicable for standard wine bottles and packaging for automotive parts.
5. The measurement marking shall contain a measurement statement in an appropriate unit of measurement and exclude fractions.
6. The prepackaged product shall be marked with a price per kilogram and total price.
7. The *'e'* mark shall be at least 3 mm high, close in position to the stated quantity and in the same field of vision.
8. The characters specifying the measurement statement characters shall comply with the relevant size.

4. AQS Sampling and Deficiencies

The following sampling and deficiencies are limited to prepackaged products that are packed in accordance with AQS.

Note: When an AQS mark is marked anywhere on a package, regardless of who or when the AQS mark was made, the AQS sampling and test procedures shall be applied to determine if the group of prepackaged products are compliant.

4.1 Threshold and Tolerable Deficiency

The tolerable deficiency appropriate for the nominal quantity of the prepackaged product is given in Table 1.

Thresholds for inspection lots are given in Table 2, where:

- n is the number of prepackaged products in the sample;
- c is a statistical factor to account for variation in the sample; and
- T is the tolerable deficiency.

Table 1. Tolerable deficiency for prepackaged products

Q_n of product in term of	Q_n	T* as a % of Q_n	T* in g or mL
Mass (g) or volume (mL)	0 to 50***	9	—
	50 to100	—	4.5
	100 to 200	4.5	—
	200 to 300	—	9
	300 to 500	3	—
	500 to 1 000	—	15
	1 000 to 10 000	1.5	—
	10 000 to 15 000	—	150
	15 000 to 50 000	1	—
Length (m)	$Q_n \leq 5$ m	0	—
	$Q_n > 5$ m	2	—
Area (m^2)	all Q_n	3	—
Counted (items)	$Q_n \leq 50$ items	0	—
	$Q_n > 50$ items	1**	—

* T values are to be rounded up to the next 1/10 of a g or mL for $Q_n \leq 1\,000$ g or mL and to the next whole g or mL for $Q_n > 1\,000$ g or mL.

** Compute the value of T by multiplying the nominal quantity by 1% and rounding the result up to the next whole number.

*** Where Q_n equals a Q_n limit in column 2 of Table 1, the T value corresponding to the appropriate percentage value shall be used (e.g. when $Q_n = 50$, T = 9%).

Table 2. AQS thresholds

Item	Inspection lot size (inclusive)	n	c	No. of packages allowed to exceed T
1	100 to 500	50	0.379	3
2	501 to 3 200	80	0.295	5
3	> 3 200	125	0.234	7

4.2 Screening Procedure

To avoid unnecessary testing of prepackaged products a screening test can be used to reduce the time required to carry out testing and potentially reduce the amount of destructive testing that may be required.

For screening purposes it is only necessary to determine the actual quantity in a sample size of 20 prepackaged products.

4.2.1 Screening Inspection Lot Assessment

A screening inspection sample is considered to be acceptable if:

- the mean of the sample is equal to or greater than Q_n;
- no more than one package in the sample is found to have a T_1 error; and
- no packages are found to have a T_2 error.

Where the screening sample is found to be unacceptable, the testing shall be carried out with the sample size as defined in Table 2.

Note: The original 20 prepackaged products from the screening sample shall only be used in a full test if they have been chosen by random sampling from the whole inspection lot.

4.3 Sampling Procedure

Ideally AQS sampling is performed at the place of packing, storage/distribution facility or place of importation.

When prepackaged products are inspected at a retailer, a screening inspection is recommended (see clause 4.2). If the prepackaged products in the screening test are found to be unacceptable, further testing is required at a location where an adequate inspection lot can be found (e.g. at the manufacturer/importer).

Selected prepackaged products are required to be:

- of the same kind; and
- marked with the same measurement marking.

1. Determine the maximum hourly output of the production line or the total number of packages imported at the same time. If this output is:
   (a) equal to or greater than 10 000 packages, the inspection lot size shall be 10 000
   (b) equal to or greater than 100 and is less than 10 000 packages, the inspection lot size is equal to the maximum hourly output of the production line or total number of packages imported at the same time
   (c) less than 100, the inspection lot size is equal 100
   (d) unknown, then the inspection lot size shall be 10 000 or if 10 000 packages are not available all the available packages.
2. Prepackaged products shall be selected by random sampling from the inspection lot.

4.4 Inspection Lot Failure

An inspection lot is considered to have a shortfall if:

- the weighted average quantity of the prepackage products in the sample (see clause 4.5) is less than Q_n;
- the sample has more T_1 errors than permitted in Table 2; or
- the sample has one or more T_2 errors.

Weighted Average Quantity

The weighted average quantity (Q) in a sample is determined using the following formula:

$$Q = \bar{x} + (s \times c)$$

where:

$\bar{x}$ is the sample mean
s is the sample standard deviation
c is the sample correction factor in Table 2.

The sample mean ($\bar{x}$) is calculated using the following formula:

$$\bar{x} = \frac{\sum x_i}{n}$$

where:

x_i is the measured net contents of the '*i*th' package in the sample
n is the number of packages in the sample.

The sample standard deviation (s) is calculated using the following formula:

$$s = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}(x_i - \bar{x})^2}$$

where:

N is the number of prepackaged products selected
x_i is the 'measured net contents of the '*i*th' package in the sample.

5. Non-AQS Sampling and Deficiency

5.1 Sampling Procedure

The sample size of prepackaged products that are not packed in accordance to AQS is dependent on the number of prepackaged products available:

- if 12 or more are available, then the minimum sample size shall be 12;
- the sample size may be more than 12 at the discretion of the inspector;
- if more than 6 and less than 12 packages are available, then the sample size shall be all the packages available; and
- if less than six are available and the original production run was less than six, each package is tested as a single article.

Note: If there are less than seven packages available for examination (of the same kind and marked with the same measurement marking), and the number of packages in the production run is determined to be more than 6 by the inspector, a non-compliance in relation to shortfall cannot be established.

Selected prepackaged products are required to be:

- of the same kind; and
- marked with the same measurement marking.

Note: Where possible this should include packages from the same batch. Alternatively, record the separate batch numbers for each package.

5.2 Group Test Failure

For the sample sizes determined by clause 5.1, non-AQS shortfall occurs when:

- the average quantity of the sample is less than Q_n; or
- any one package is deficient by more than 5% of Q_n.

5.3 Single Article Test Failure

For single articles, which include random weight products, a failure occurs when the measured quantity is less than Q_n.

6. Standard Procedures

6.1 Control Instrument

A control instrument is used to determine the weight of the prepackaged product as well as the mass of a liquid when determining the density of the product in the *gravimetric volume* method (see clause 7.3).

6.1.1 Suitability

A suitable control instrument for weighing the packages shall:

- be a non-automatic weighing instrument;
- have a scale interval that is equal to or less than:
  - 0.2% of Q_n for determining the mass of the package and contents; or
  - 0.1% of the gross mass of the density sample when determining the density; or
  - 0.05% of the net mass of the package when determining the mass per unit.
- be capable of having standard weights deposited on the load receptor; and
- have a maximum capacity at least 10% greater than the gross weight of the prepackage product or density sample.

6.1.2 Testing the Control Instrument

The control instrument shall be tested immediately before and after any product testing.

It is not necessary to test the instrument to its maximum capacity. It is sufficient to test the instrument up to the relevant maximum as detailed below:

(a) 110% of the largest gross weight of the package
(b) 110% of the largest gross weight of the density sample
(c) 110% of the largest gross weight of the package plus the mass of the water needed to fill each package to its brim for the *substitution* method (for products not having a smooth and level surface procedure)
(d) 110% of the combined mass of test liquid equivalent to Q_n plus the tare weight of the receiving vessel for the *displacement* method
(e) up to 110% of the combined weight of Q_n and sieve for the *frozen fish* method.

1. If the control instrument has zero tracking, disable the zero tracking function.
2. Test the control instrument in accordance with *NITP 6.1 to 6.4 National Instrument Test Procedures for Non-automatic Weighing instruments* for the following tests:
   (a) weighing performance
   (b) eccentricity at 1/3 max
   (c) repeatability at 2/3 max.

   Note that 'max' during this test means:

   (i) 110% of the largest gross weight of the package
   (ii) 110% of the largest gross weight of the density sample
   (iii) 110% of Q_n plus the mass of any equipment included in the weighing process (e.g. sieve during *frozen fish* method)
   (iv) 110% of the largest gross weight of the package plus the mass of the water needed to fill each package to its brim (for the *substitution* method for products not having a smooth and level surface procedure)
   (v) 110% of the combined mass of test liquid equivalent to Q_n plus the tare weight of the receiving vessel (for the *displacement* method).
3. Record the equipment used and the results.
4. The instrument shall not have an error (MPE or MPD) exceeding the following values:
   (a) weighing performance, MPE = 0.5 *d*
   (b) eccentricity at 1/3 max, MPE = 0.5 *d*
   (c) repeatability at 2/3 max, MPD = 1 *d.*

6.1.3 Performance Testing

A weighing performance test shall be repeated regularly, at least every hour during measurements to ensure the on-going accuracy of the instrument.

The instrument shall not have an error exceeding the MPE or MPD specified in clause 6.1.2.

If the instrument has an error exceeding the MPE or MPD, the instrument shall be calibrated.

Where the accuracy of the control instrument has been observed to deviate, calibration and retesting shall occur more regularly and if the problem continues, an alternate instrument shall be used.

The prepackaged articles weighed after the last known correct performance test for the instrument shall be disregarded from the test results and reweighed.

6.2 Tare Weight

When determining the tare weight of a prepackage, it is desirable to utilise non-destructive tests where practical and open the least number of prepackages required to satisfy the test procedures. For this reason, it is recommended the unused tare method be used whenever possible.

When calculating the tare weight, check all packing material in the sample to ensure the packaging is the same and does not vary in size or composition between packages being inspected.

Five tare weights shall be obtained.

Note: The tare weight may be determined before or after determining the gross mass of the prepackage. This timing will impact on whether a gross weight will be required to be determined in clause 6.2.2.

6.2.1 Unused Tare

An unused tare is determined at the place of packing where the unused packaging material is available for testing.

1. Test the control instrument (see clause 6.1.2).
2. Select the packing material used to make one prepackage from the available stocks.
3. Zero the control instrument.
4. Place the packing material on the control instrument and record the unused tare.
5. Repeat steps 2 to 4 four more times.

6.2.2 Used Tare

A used tare is performed when access to unused packing material is unavailable. For this method the gross weight of the package must first be established in accordance with 7.1.

1. Test the control instrument (see clause 6.1.2).
2. Select a prepackage from the available stocks.
3. If applicable zero the control instrument and record the gross mass of the prepackage.
4. Remove the contents from the packing material.
5. Clean and dry all packing material.
6. Zero the control instrument.
7. Place the packing material on the control instrument and record the used tare.
8. Repeat steps 2 to 7 four more times.

6.2.3 Tare Validation

The number of tares required for testing depends on the consistency of the tares.

- if the range of tare values is equal to or less than 0.2% $Q_{n,}$ take the smallest value as the tare. These tares are referred to as consistent tares; or
- if the range of tare values is greater than 0.2% Q_n, individual tare values must be obtained using the used tare method described in 6.2.2. These tares are referred to as inconsistent tares.

Note: When products are sold by volume use the density figure determined in clause 7.3 step 16 to calculate the weight of Q_n and use this figure during *tare* validation.

7. Test Procedures

This section describes the test procedures for determining the actual net quantity of a prepackaged product.

Ensure each prepackage being tested is identified by a unique identification number, prior to conducting any of the tests detailed below.

7.1 Gravimetric Mass Method

This method is used to determine the actual contents of a prepackaged product with a quantity statement in units of mass. The specific method to be used (7.1.1 or 7.1.2) depends on:

- consistent tare i.e. the range of tare values is equal to or less than 0.2% Q_n; or
- inconsistent tare i.e. the range of tare values is greater than 0.2% Q_n.

7.1.1 Consistent Tare

This method is used for packages with a consistent tare (see clause 6.2.3).

1. Test the control instrument (see clause 6.1.2).
2. If the control instrument is not indicating zero, zero the instrument.
3. Place the unopened prepackage on the instrument and record the gross weight on the test report.
4. Remove the prepackage from the instrument.
5. Repeat steps 2 to 4, for all the prepackages in the sample.
6. Re-test the control instrument (see clause 6.1.2).
7. If the prepackage tare has not already been determined, determine the prepackage tare (see clause 6.2).
8. Calculate and record the net weight of each prepackage by subtracting the prepackage tare (step 7) from the package gross weight (step 3).
9. Determine if the results exceed the shortfall requirements described in the applicable clause:
   (a) clause 4.2.1 for AQS screening
   (b) clause 4.4 for full AQS testing
   (c) clause 5.2 for non-AQS testing
   (d) clause 5.3 for single article testing.
10. Record the results on the test report.

7.1.2 Inconsistent Tare

This method is used for prepackages with an inconsistent tare (see clause 6.2.3).

1. Test the control instrument (see clause 6.1.2).
2. If the control instrument is not indicating zero, zero the instrument.
3. Place the prepackage on the instrument and record the gross weight on the test report.
4. Remove the prepackage from the instrument.
5. Remove the contents from the prepackage. Clean and dry the packing material.
6. Zero the control instrument.
7. Weigh the packing material and record the tare weight on the test report.
8. Remove the packing material from the instrument.
9. Calculate and record the net weight of the prepackage by subtracting the tare (step 7) from the gross weight (step 3).
10. Repeat steps 2 to 9 for all prepackages in the sample. Record the results on the test report.
11. Re-test the control instrument (see clause 6.1.2).
12. Determine if the results exceed the shortfall requirements described in the applicable clause:
    (a) clause 4.2.1 for AQS screening
    (b) clause 4.4 for full AQS testing
    (c) clause 5.2 for non-AQS testing
    (d) clause 5.3 for single article testing.

7.2 Volumetric Method

This method is used to determine the actual contents of a prepackaged product with a quantity statement in units of volume.

Note 1: This method has limitations in extracting product that adheres to the internal surfaces of the package. This should be considered when choosing this measurement method.

Note 2: This method may only be suitable for transparent liquids as the bottom of the meniscus is used as the datum point. The *gravimetric volume* method can be used for opaque liquids.

1. Condition the reference standard volume measure for use in accordance with its Regulation 13 certificate.
2. Select a prepackage from the sample.
3. Pour the contents of the package into the reference standard volume measure while:
   (a) holding the measure at approximately 45° from the vertical
   (b) reducing the agitation of the liquid where possible
   (c) reducing the product contact above the volume mark.
4. Return the reference standard volume measure to an upright position when continuous flow has stopped and allow a minimum of 1 minute drain time.
5. Determine the volume by reading from the bottom of the meniscus.
6. Record the volume on the test report.
7. Repeat steps 1 to 6 for each prepackage. Record the results on the test report.
8. Determine if the results exceed the shortfall requirements described in the applicable clause:
   (a) clause 4.2.1 for AQS screening
   (b) clause 4.4 for full AQS testing
   (c) clause 5.2 for non-AQS testing
   (d) clause 5.3 for single article testing.

7.3 Gravimetric Volume Method

This method is used to determine the actual contents of a prepackaged product with a quantity statement in units of volume, when the density can be accurately determined.

1. Select a suitable reference standard volume measure.
2. Record the value of the reference measure on the test report.
3. Test the control instrument (see clause 6.1.2).
4. Condition the reference measure in accordance with the Certificate of Approval.

   Note: When using a density bottle, ensure that it is dry prior to use. If the density bottle is used for multiple samples, the bottle can be rinsed after first sample with product from second sample and initial tare can be used.

5. If the control instrument is not indicating zero, zero the instrument.
6. Weigh the reference measure and record the tare weight.
7. Remove the reference measure from the control instrument.
8. Select a prepackage from the inspection lot. Ensure its contents are thoroughly mixed. Determine the net weight of the prepackage (see clause 7.1).

   Note: A different prepackage is required for the second sample.

9. Fill the reference measure with the product.
10. If the control instrument is not indicating zero, zero the instrument.
11. Weigh the reference measure and record the gross weight.
12. Remove the reference measure from the control instrument.
13. Calculate and record the net weight of the product by deducting the tare weight (step 6) from the gross weight (step 11).

14. Determine the density of the product by dividing the net weight of the liquid (step 13) by the value of the reference measure (step 2).

    Note: For carbonated beverages ensure steps 9 to 14 are completed with two samples from the same package using two reference standard volume measures. These steps shall be completed succinctly after opening the package.

15. Repeat steps 8 to 14 once more.
16. If the difference in the two density samples (step 14) is equal to or less than 0.1% of the smaller density, use the smaller density to determine the volume of the prepackage.
    If the range of density values is greater than 0.1% of the smaller density, the *gravimetric volume* method is not suitable and an alternative method must be used.
17. Test the control instrument in accordance with clause 6.1.2.
18. Determine the net weight of the remaining prepackages in the inspection lot and record the results on the test report (see clause 7.1).
19. Calculate the net volume by dividing the net weight of each of the prepackages by the density (step 16) and record the results on the test report.
20. Determine if the results exceed the shortfall requirements described in the applicable clause:
    (a) clause 4.2.1 for AQS screening
    (b) clause 4.4 for full AQS testing
    (c) clause 5.2 for non-AQS testing
    (d) clause 5.3 for single article testing.

7.4 Substitution Method

This method is used to determine the volume of viscous or non-homogenous prepackaged products marked with reference to volume and packed in a rigid container (i.e. maintains its shape).

7.4.1 Method for products with a smooth and level surface

This method is used when the product is not homogenous (i.e. inconsistent density), but is self-levelling when poured (e.g. fruit juice with pulp, flavoured oils, yoghurt and etc.).

1. Allow the prepackages to stand to settle the product.
2. Test the control instrument (see clause 6.1.2).
3. Place the prepackage on a stable level surface and mark the position of the package relative to the surface.
4. Remove the lid and ensure that any product that has adhered to the lid is removed and placed in the packaging.
5. Place a spanning bar across the centre of the brim of the package and mark its location on the package.
6. Using a depth gauge or calliper, measure and record the distance from the spanning bar to the liquid level at three points along the spanning bar (e.g. left edge, centre and right edge). If necessary, support the base of the package to eliminate any “sag” in the package base.
7. Remove all product from the package and thoroughly clean and dry the empty package.
8. Zero the control instrument.
9. Weigh the empty package on the instrument and record the tare weight on the test report.
10. Return the package to the stable level surface in the same position as determined in step 3.
11. Place the spanning bar across the brim of the package in the same location as described in step 5.
12. Fill the package with water to the same fill height ascertained and recorded in step 6.
13. Zero the control instrument.
14. Weigh the package and record the gross weight on the test report.
15. Subtract the tare weight (step 9) from the gross weight (step 14) to determine the net weight of the water. Using the density of water (1 g/mL), determine the volume of product. (Note: Volume = Mass ÷ Density).
16. Repeat steps 3 to 15 for each prepackage. Record the results on the test report.
17. Re-test the control instrument (see clause 6.1.2).

18. Determine if the results exceed the shortfall requirements described in the applicable clause:
    (a) clause 4.2.1 for AQS screening
    (b) clause 4.4 for full AQS testing
    (c) clause 5.2 for non-AQS testing
    (d) clause 5.3 for single article testing.

7.4.2 Method for products that do not have a smooth and level surface

This method is used when the product is not self-levelling when poured (e.g. mayonnaise). It is not suitable for porous products (e.g. sand or gravel) as it requires a test liquid to be added to the empty headspace above the product.

1. Allow the prepackages to stand to settle the product.
2. Test the control instrument (see clause 6.1.2).
3. If required, determine the density of the test liquid (clause 7.3, steps 2 to 14). If the test liquid is potable water, the density is deemed 1 g/mL.
4. Remove the lid and ensure any product that has adhered to the lid is removed and placed in the package.
5. Zero the control instrument. Weigh the prepackage and record the result on the test report.

   Note: If necessary, support the base of the package with a firm surface/disc to eliminate any sag.

6. Deliver the test liquid onto the top of the product until it is level with the brim of the package. Take care not to overfill. Record the weight on the test report.

   Note: If the container overfills, the test is void.

7. Determine the weight of the test liquid by subtracting the weight determined in step 5 from the weight determined in step 6.
8. Remove all product from the package and thoroughly clean and dry the empty package.
9. Zero the control instrument and weigh the packing material (empty package) and any supporting surface/disc on the instrument. Record the tare weight on the test report.
10. Fill the package to the brim with the test liquid. Record the gross weight of the prepackage and test liquid.
11. Determine the net weight of the test liquid by subtracting the tare weight (step 9) from the gross weight (step 10).
12. Determine the weight of the test liquid, which substituted for the product being tested by subtracting the weight determined in step 7 from the weight determined in step 11.
13. Determine the volume of product being tested by dividing the weight determined in step 12 by the density of the test liquid determined in step 3. Record the results on the test report.
14. Repeat steps 4 to 13 for each prepackage. Record the results on the test report.
15. Determine if the results exceed the shortfall requirements described in the applicable clause:
    (a) clause 4.2.1 for AQS screening
    (b) clause 4.4 for full AQS testing
    (c) clause 5.2 for non-AQS testing
    (d) clause 5.3 for single article testing.

7.5 Displacement Method

This method is used to determine the volume of ice cream.

The test shall be conducted on a stable level surface.

1. Pack each individual prepackage in dry ice, wrap with newspaper and leave in a freezer for at least 24 hours to ensure the products are at a temperature less than -35 ºC.
2. Test the control instrument (see clause 6.1.2).
3. Place the wire mesh basket in the water bath (see Figure 1).
4. Position the receiving vessel to capture the water displaced from the overflow spout.
5. Fill the water bath with water until it overflows and drains through the spout.

6. When the water stops flowing i.e. the water stops draining from the overflow spout, record the temperature of the test liquid on the test report.

   Note: For frozen products ensure the water is between 1 to 3 ºC.

7. Empty and dry the receiving vessel.
8. Zero the control instrument.
9. Weigh the empty receiving vessel and record the tare weight on the test report.
10. Place the receiving vessel under the overflow spout to capture the excess water.
11. Carefully remove the mesh basket, taking care not to disturb or move the bath.
12. Select a prepackage to be tested and remove the surrounding newspaper. Cut a hole in the bottom of the package to allow the water to flow into any air spaces that may be present. Remove the packaging lid.
13. Insert the thermometer between the package wall and product. When the temperature reading stabilises, record the temperature on the test report, ensuring it is less than -35 ºC.
14. Place the product and packaging onto the mesh basket and carefully submerge until it is completely below the water level in the bath.
15. Zero the control instrument.
16. Once the displaced water stops flowing from the overflow spout, weigh the receiving vessel on the instrument and record the gross weight on the test report.

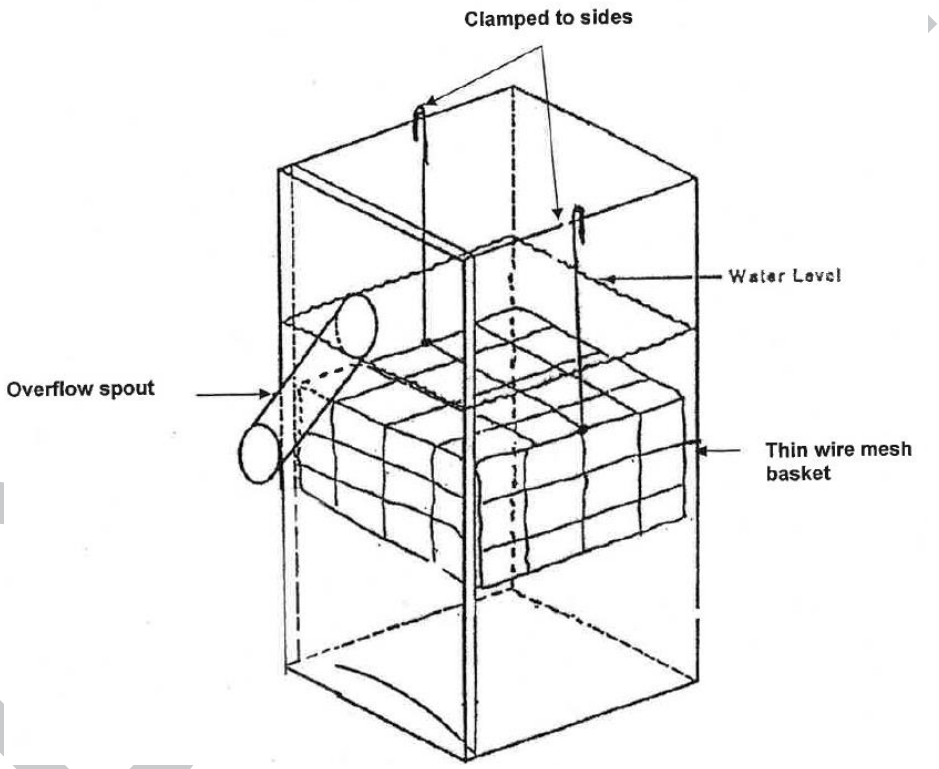

Figure 1. Example of a water bath for the displacement method

17. Determine the net weight of water displaced from the bath by subtracting the tare weight of the receiving vessel (step 9) from the gross weight of the vessel (step 16).
18. Determine the volume of the product and packaging by dividing the net weight (step 17) by the density of water.

    Note: The density of potable water is deemed to be 1 g/mL.

19. Remove the product and packaging from the water bath. Remove all product from the packaging and dry the packaging material.
20. Prepare the water bath by repeating steps 3 to 6. If necessary top up with fresh water.

    Note: For frozen products ensure the water is clean and between 1 to 3 ºC.

21. Repeat steps 8 to 11.
22. Place the packaging (from step 19) in the mesh basket and carefully submerge, until it is completely below the water level in the bath.
23. Zero the control instrument. Once the displaced water stops flowing from the overflow spout, weigh the receiving vessel on the instrument and record the gross weight on the test report.
24. Determine the net weight of water displaced from the bath by subtracting the tare weight of the receiving vessel (step 21) from the gross weight of the vessel (step 23).
25. Determine the volume of the packaging by dividing the net weight (step 24) by the density of water.
26. Determine the volume of the product by subtracting the volume of the packaging (step 25) from the volume of the product and packaging (step 18).
27. Remove the packaging from the water bath.
28. Repeat steps 3 and 27 for each prepackage.
29. Re-test the control instrument (see clause 6.1.2).
30. Record all results on the test report.
31. Determine if the results exceed the shortfall requirements described in the applicable clause:
    (a) clause 4.2.1 for AQS screening
    (b) clause 4.4 for full AQS testing
    (c) clause 5.2 for non-AQS testing
    (d) clause 5.3 for single article testing.

7.6 Mass per Unit Method

This method is used to determine the number of products in a prepackage which are of similar mass using the weight of the product.

If the product quantity is 50 or less, it is recommended that the prepackaged contents are individually counted.

1. Test the control instrument (see clause 6.1.2).
2. Zero the control instrument.
3. Place an unopened prepackage on the instrument and record the gross weight on the test report.
4. Remove the prepackage from the instrument.
5. Repeat steps 2 to 4, for all the prepackages in the inspection lot.
6. If the package tare has not already been determined, determine the package tare (see clause 6.2).

   Note: The contents from each prepackage must be separated, identified with the package ID and retained.

7. Calculate and record the net weight of each prepackage by subtracting the tare (step 6) from the gross weight (step 3).
8. Determine the product sample size (see Table 3).

Table 3. Product sample size in relation to marked count

Marked Count (n)	Sample Size
100 ≥ n	100%
500 ≥ n > 100	100 units
n > 500	20%

9. Randomly select the required product sample from the contents of a single prepackage retained in step 6.
10. Zero the control instrument.
11. Weigh the product sample and record the weight on the test report.
12. Determine the mass per unit by dividing the weight (step 11) by the number of units in the sample. Record the mass per unit.
13. Repeat steps 8 to 12 with a product sample from two further prepackages.

14. If the difference in any of the mass per units (step 12) is equal to or less than 0.5% of the lowest mass per unit, use the lowest mass per unit to determine the package contents.
15. If the range of mass per unit values is greater than 0.5%, then the mass per unit value method is not suitable and an alternative method must be used.
16. Calculate the number of articles in each of the remaining prepackages by dividing the net weight of each prepackage (step 7) by the mass per unit (step 12). Record all results on the test report.
17. Determine if the results exceed the shortfall requirements described in the applicable clause:
    (a) clause 4.2.1 for AQS screening
    (b) clause 4.4 for full AQS testing
    (c) clause 5.2 for non-AQS testing
    (d) clause 5.3 for single article testing.

7.7 Counting Method

This method is used to determine the number of products in a prepackage by individually counting products in the packages.

1. Select a prepackage from the inspection lot.
2. Count the number of products in the prepackage.
3. Record the result on the test report.
4. Repeat steps 1 to 3 for all the prepackages in the sample.
5. Determine if the results exceed the shortfall requirements described in the applicable clause:
    (a) clause 4.2.1 for AQS screening
    (b) clause 4.4 for full AQS testing
    (c) clause 5.2 for non-AQS testing
    (d) clause 5.3 for single article testing.

7.8 Volumetric Method for Flowable solids

This method is used to determine the actual contents of prepackaged flowable solids with a quantity statement in units of volume (e.g. potting mix, mulch, peat).

Ensure the test procedure is conducted on a level surface.

For ease of calculation record all dimensions using metres (m) as the units of measurement.

1. Measure the maximum internal height of the cylindrical measuring vessel, using a spanning bar to measure the inside of the base to the rim at three points across the diameter. Mark the position of the spanning bar on the rim of the measuring vessel and record the maximum internal height (h) on the test report.
2. Calculate the maximum internal diameter of the vessel (d) by measuring at five separate vertical points, including top, middle and bottom, on the horizontal plane. Record the result on the test report.
3. Calculate the horizontal cross sectional area of the base (A) of the vessel using the formula:

$$A = \pi r^2$$

where

π is 3.142

r is the radius of the vessel.

To determine the radius of the vessel from the maximum internal diameter divide the maximum internal diameter by two (i.e. $r = \frac{d}{2}$).

4. Lay the tarpaulin/floor cover under the measuring vessel to catch any escaping product.
5. Select a prepackage from the inspection lot and loosen the contents of the prepackage before opening and taking any measurements.
6. Place the wide-necked funnel on the measuring vessel.
7. Pour the contents of the prepackage into the measuring vessel, ensuring the contents fall as close to the funnel edge as possible. Use the dustpan and brush to collect any escaped product.

Note 1: Maintain a steady rate of flow of the contents into the vessel to minimise compression of the product.

Note 2: Another person assisting during the pouring process would ensure the product is free flowing and reduce the presence of clumps in the contents.

8. With the measuring vessel in an upright position, gently level the surface of the product using your hand or a straight edge that is smaller than the internal dimensions of the vessel.

   Note: Ensure the product is not compressed.

9. Place a spanning bar across the brim of the measuring vessel at the same position referred to in step 1.
10. Measure the height of the unfilled capacity of the vessel using an Inspector's Class 1 length measure. Repeat this step to obtain measurements at three points across the diameter. Record the smallest of the three heights of the unfilled capacity (u) on the test report.
11. Calculate the volume of the product (V) using the formula:

$$V = (h - u) \times A$$

where

h is the maximum internal height of the vessel (as determined in step 1)
u is the smallest of the three heights of the unfilled capacity
A is the cross sectional area of the base of the vessel.

12. Where the contents of the prepackage exceed the volume of the measuring vessel (i.e. is not wholly contained in the vessel), repeat steps 5 to 11 until the net contents of the prepackage has been measured. Determine the total net volume of the prepackage by summing all of the results obtained at step 11 (i.e. V 'lot 1' + V 'lot 2' + V 'lot 3' etc.).
13. Record all results on the test report.
14. Determine if the results exceed the shortfall requirements described in the applicable clause:
    (a) clause 4.2.1 for AQS screening
    (b) clause 4.4 for full AQS testing
    (c) clause 5.2 for non-AQS testing
    (d) clause 5.3 for single article testing.

7.9 Frozen Fish Method

This method is also known as the partial thaw method. It is used to determine the mass of fish products which have been:

- covered in an ice water glaze; or
- contained within an ice water block.

Note: This method does not apply to fish products:

- frozen in a marinade; or
- formed by plate freezing with no ice water glaze.

1. Test the control instrument (see clause 6.1.2).
2. Assess if the product can be wholly contained within the sieve. Where the product can be divided into lots without any damage, divide the fish into lots that can be wholly contained in the sieve and complete steps 3 to 12. Ensure the lots which are awaiting test are stored at a temperature less than 0 °C.
3. Precondition the sieve by immersing it in the water bath for 2 min. Then, drain the sieve by inclining it at an angle of 20° ± 2° from the horizontal for at least 2 min but not more than 2 min 15 sec.
4. Zero the control instrument.
5. Weigh the empty sieve and record the measurement.
6. Measure the temperature of the water bath and record the result on the test report. During the test ensure the temperature of the water bath is maintained at 25 °C ± 5 °C.

7. Place the fish in the sieve. Immerse the sieve plus the product into the water bath containing a volume of clean potable water, which is at least 8 times the weight of the fish (Q_n).

   Note: For fish contained within an ice water block, first place the fish in a watertight plastic bag, minimise the air in the bag and seal prior to placing in the sieve.

8. When the product can be easily separated, remove the fish and sieve from the water bath.

   Note 1: For fish products with an ice water glaze this is as soon as the glaze has been removed i.e. the fish surface changes from slippery to rough. This can be facilitated by gentle agitation.

   Note 2: If the fish is in a bag empty the fish into the sieve.

9. Incline the sieve at an angle of 20° ± 2° from the horizontal and drain for at least 2 min but not more than 2 min 15 sec.
10. Zero the control instrument.
11. Weigh the combined mass of the sieve and the fish. Record the result on the test report.
12. Calculate the mass of the fish by subtracting the mass of the sieve (step 5) from the filled sieve (step 11).
13. Where the fish is not wholly contained in the sieve, repeat steps 3 to 12 for the remaining lots that are awaiting test (refer to step 2) and determine the total mass by summing the individual lot masses.
14. Re-test the control instrument (see clause 6.1.2).
15. Record all results on the test report.
16. Determine if the results exceed the shortfall requirements described in the applicable clause:
    (a) clause 4.2.1 for AQS screening
    (b) clause 4.4 for full AQS testing
    (c) clause 5.2 for non-AQS testing
    (d) clause 5.3 for single article testing.

7.10 Linear and Area Methods

7.10.1 Linear Single Measurement Method

This method is used to determine the actual length of product with a measurement marking represented in terms of linear measurement in one single measurement (i.e. the length of the products does not exceed the length of the measuring surface or the reference standard measure of length).

The test shall be conducted on a flat and stable surface (the measuring surface).

1. Place the reference standard measure of length on the measuring surface.
2. Select a product from the sample.
3. Place the product on the measuring surface and align it so that the edge to be measured is next to and parallel to the standard measure of length.
4. If necessary apply sufficient tension to the product to remove any visible creases or ridges. This tension should not exceed that which would normally be applied during product use.
5. Align the zero mark of the reference standard measure of length with the starting end of the product.

   Note: The starting and finishing ends of the product are the outermost edges or points of the product that would result in the largest linear measurement of the product under test.

6. Determine the measurement on the reference standard measure of length that corresponds to the finishing end of the product, ensuring that the measurement is made parallel to the relevant edge of the product.
7. Record the linear measurement on the test report.
8. Repeat steps 2 to 7 for each product.
9. Determine if the results exceed the shortfall requirements described in the applicable clause:
    (a) clause 4.2.1 for AQS screening
    (b) clause 4.4 for full AQS testing
    (c) clause 5.2 for non-AQS testing
    (d) clause 5.3 for single article testing.

7.10.2 Linear Multiple Measurement Method

This method is used to determine the actual length of a product with a measurement marking represented in terms of linear measurement using multiple measurements (i.e. the length of the products exceeds the length of the measuring surface or the reference standard measure of length).

The test shall be conducted on a flat and stable surface (the measuring surface).

1. Place the reference standard measure of length on the measuring surface.
2. Select a product from the sample.
3. Place the product on the measuring surface and align it so that the edge to be measured is next to and parallel to the standard measure of length.
4. If necessary apply sufficient tension to the product to remove any visible creases or ridges. This tension should not exceed that which would normally be applied during product use.
5. Align the zero mark of the reference standard measure of length with the starting end of the product or for subsequent measurements the end measurement reference marked during the previous measurement.

   Note: The starting and finishing ends of the product are the outermost edges or points of the product that would result in the largest linear measurement of the product under test.

6. Mark a reference measurement mark on the product at a point where the product is on the measuring surface and within the measuring range of the reference standard measure of length. The reference mark should be clear and square to the edge of the product. It should not be too thick so that any subsequent zero alignment using the mark will be reliable.

   Note: For the last multiple measurement where the product does not extend beyond the measuring surface and the measuring range of the reference standard measure of length, the mark shall be the outermost edge or point of the product that would result in the largest linear measurement of the product under test.

7. Determine the measurement on the reference standard measure of length that corresponds to the reference measurement mark determined in step 7 ensuring that the measurement is made parallel to the relevant edge of the product. Record the result on the test report.
8. Repeat steps 3 to 7 until the entire length of the product has been measured.
9. Determine the total length of the product by summing the measurements determined in step 8.
10. Repeat steps 2 to 9 for each product.
11. Determine if the results exceed the shortfall requirements described in the applicable clause:
    (a) clause 4.2.1 for AQS screening
    (b) clause 4.4 for full AQS testing
    (c) clause 5.2 for non-AQS testing
    (d) clause 5.3 for single article testing.

7.10.3 Area Method – Irregular shapes

This method is used to determine the actual area of products marked with a measurement marking represented in terms of area measurement.

1. Place the transparent graph paper template on a flat and stable surface.
2. Using suitable reference standard measures of length validate the accuracy of the squares on the graph paper template as follows:
   (a) measure the length of each outer side of the template and average the lengths of the opposite sides
   (b) multiply the two average lengths to determine the area of the template
   (c) count the number of squares contained within the template
   (d) divide the template area (determined in b) by the number of squares (determined in c) to determine the nominal area of each square.
3. Randomly select 5 groups of squares within the template that nominally represent 5% of the total number of squares in the template and repeat step 2.

4. The nominal area of individual squares within the template will be the largest square area determined in step 2(d) provided all the nominal areas determined in step 2(d) do not vary by more than 0.2% of the that nominal area.
5. Place the product to be measured on a flat and stable surface.
6. Place the template over the product and ensure that the product is free from any visible creases or ridges.
7. Determine the area of the product by counting the number of squares that cover the product. Combine any squares that are partially covered (for example if one square is ¾ covered and the next square is ¼ covered add the two together to equal one square).
8. Determine the area of the product by multiplying the total number of squares counted in step 7 by the nominal area determined in step 4.
9. Record the results on the test report.
10. Repeat steps 5 to 9 for the remaining products.
11. Determine if the results exceed the shortfall requirements described in the applicable clause:
    (a) clause 4.2.1 for AQS screening
    (b) clause 4.4 for full AQS testing
    (c) clause 5.2 for non-AQS testing
    (d) clause 5.3 for single article testing.

7.10.4 Area Method – Regular shapes

This method is used to determine the actual area of regular shaped products marked with a measurement marking represented in terms of area measurement.

1. Use the test procedure in 7.10.1 or 7.10.2 to measure the linear dimensions of the product.
2. Use conventional geometric formulae to calculate the area.
3. Record the results on the test report.
4. Repeat steps 1 to 3 for the remaining product.
5. Determine if the results exceed the shortfall requirements described in the applicable clause:
    (a) clause 4.2.1 for AQS screening
    (b) clause 4.4 for full AQS testing
    (c) clause 5.2 for non-AQS testing
    (d) clause 5.3 for single article testing.

Appendix A: Test Report

Appendix A contains a test report, on which to record the results.

Although the format of the test report may vary according to the individual needs and requirements of Trade Measurement Inspectors, the following test report contains the minimum amount of information that must be recorded.

Where additional tests are required, attach pages that record the results of these tests.

Number each page of the test report in the style shown at the top of each of the following pages.

Test Report 1 for Prepackaged Products

Details of the Equipment and Reference Standards of Measurement (clause 2)

Test report reference number	
Control instrument	
Make	
Model	
Serial number	
Graduation value (g)	
NMI approval number	
Verification date (if applicable)	
Test mass	
Mass set serial number	
Regulation 13 certificate number	
Certificate expiry date	
Length measure	
Make	
Serial number	
Length	
Regulation 13 certificate number	
Certificate expiry date	
Sieve	
Make	
Serial number	
Diameter (mm)	
Mesh aperture size (mm)	
Thermometer	
Make	
Model	
Serial number	
Regulation 13 certificate number	
Certificate expiry date	

Test Report 2 for Control Instrument

Repeatability (NITP 6.1 to 6.4, clause 5.1)	Load		
	First reading		
	Second reading		
	Third reading		
	Difference		
	☐ Pass ☐ Fail		
Eccentricity (NITP 6.1 to 6.4, clause 5.2)	Number of supports		
	Load used		
	Position 1		
	Position 2		
	Position 3		
	Position 4		
	Position 5		
	Position 6		
	☐ Pass ☐ Fail		
Weighing performance (NITP 6.1 to 6.4, clause 5.4.1) Note: When conducting a performance test, only weighing performance is required.	Loads applied (minimum 5)	Up	Down
	☐ Pass ☐ Fail		
Overall result	☐ **Pass** ☐ **Fail**		

Test Report 3 for Gravimetric Mass Method

Test report reference number		Worksheet	
Date of inspection			
Product description			
Batch number			
Stated quantity			
Required sample size			
Tare value			

Individual Package Measurements

Package ID	Gross (g)	Tare (g)	Net (g)	Result
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
etc.				

Tare Samples

Tare ID	Tare (g)
1	
2	
3	
4	
5	

Test Report 4 for Volumetric Method

Test report reference number		Worksheet	
Date of inspection			
Product description			
Batch number			
Stated quantity			
Required sample size			
Individual package measurements			
Package ID	**Volume (mL)**	**Result**	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
etc.			

Test Report 5 for Gravimetric Volume Method

Test report reference number		Worksheet
Date of inspection		
Product description		
Batch number		
Stated quantity		
Required sample size		
Tare Value		

Product Density Determination

Volume Measure Details			**Sample 1**	**Sample 2**
Capacity (mL)		Gross (g)		
		Tare (g)		
		Net (g)		
		Measure Volume		
		Density		

Individual Package Measurements

Package ID	**Gross (g)**	**Tare (g)**	**Net (g)**	**Volume (mL)**	**Results**
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
etc.					

Tare Samples

Tare ID	**Tare (g)**
1	
2	
3	
4	
5	

Test Report 6 for Frozen Fish Method

Test Report reference number						Worksheet	
Date of inspection							
Product description							
Batch number							
Stated quantity							
Required sample size							
Package or lot ID	**Sieve tare (g)**	**Water temp (°C)**	**Product drain time (sec)**	**Sieve and product mass (g)**	**Net product mass (g)**	**Result excess/ deficiency (g)**	**% deficiency**
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Test Report 7 for Counting Method

Test Report reference number		Worksheet
Date of inspection		
Product description		
Batch number		
Stated quantity		
Required sample size		

Individual package measurements

Package ID	Count (number)	Result
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
etc.		

Test Report 8 for Linear Method – Single Measurement

Test report reference number		Worksheet	
Date of inspection			
Product description			
Batch number			
Stated quantity			
Required sample size			

Individual package measurements

Package ID	Length (m)	Result
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
etc.		

Test Report 9 for Linear Method – Multiple Measurements

Test report reference number		Worksheet	
Date of inspection			
Product description			
Batch number			
Stated quantity			
Required sample size			
Individual package measurements			

Package ID	Length measurements (m)	Total Length (m)	Result
1			
2			
3			
etc.			

Test Report 10 for Area Method – Irregular Shapes

Test report reference number		Worksheet	
Date of inspection			
Product description			
Batch number			
Stated quantity			
Required sample size			
Size of Graph Paper squares			
Pocket Comparator Used (s/n):			
Number of squares verified:			
Individual package measurements			

Package ID	Squares covered	Area (m^2)	Result
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
etc.			

Test Report 11 for Area Method – Regular Shapes

Test report reference number		Worksheet	
Date of inspection			
Product description			
Batch number			
Stated quantity			
Required sample size			

Individual package measurements

Package ID	Linear measurements (m)	Area (m^2)	Result
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
etc.			