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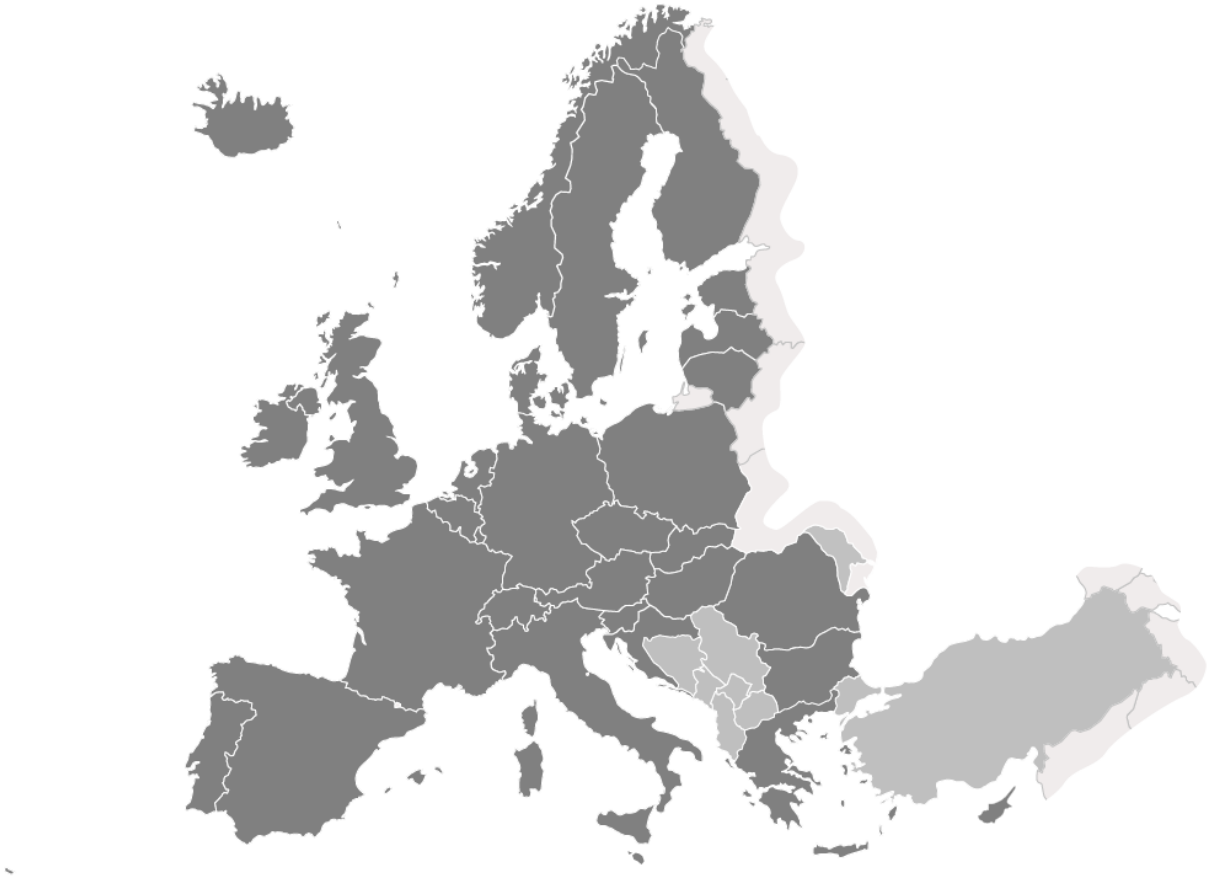
WELMEC

European Cooperation in Legal Metrology

Drained Weight

Guide on the Verification of Drained Weight, Drained Washed Weight and Deglazed Weight



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WELMEC

European cooperation in legal metrology

WELMEC is a co-operation between the legal metrology authorities of the Member States of the European Union and EFTA.

This document is one of a number of Guides published by WELMEC to provide guidance to packers, importers and the Competent Departments responsible for ensuring the prepackages meet the specified requirements.

The Guides are purely advisory and do not themselves impose any restrictions or additional technical requirements beyond those contained in relevant EU Directives.

Alternative approaches may be acceptable, but the guidance provided in this document represents the considered view of WELMEC as to the best practice to be followed.

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Foreword

In the absence of any harmonised Community procedure, this guide provides guidance regarding the determination of drained net weights in order to comply with the requirements of European Food Information Regulation (hereafter referred to as The Regulation[1]). The guidance is based on the same tolerances and weight requirements as those specified for ℮-marked prepackages in Directive 76/211/EEC[2] (hereafter The Directive). Complying with this guidance will fully cover metrological requirements for drained weight. This guidance is partly harmonised with the requirements and test methods stated in OIML R 87 (2016)[3].

This guidance sets out requirements, sampling plans and test procedures for the verification of drained weights, drained washed weights and drained deglazed weight (hereafter referred to as 'drained weight') which can be used by those involved in their monitoring and regulation. Additional guidance is provided for manufacturers who are obliged to control their filled weights in a manner, which ensures the achievement of drained weight targets.

Based on extensive trials and numerous exchange with the fruits and vegetables industry, some specific parameters are indicated in this guide for the determination of net weight of frozen broccoli florets[4] [5].

Scope

This guide covers all products in prepackages where there is a requirement to indicate the drained weight of solid foodstuffs, presented in a liquid medium within the meaning of European Food Information Regulation. This guide is also in compliance with OIML R 87 (2016), where application of the definition of packing material considers the liquid of a drained weight product as packing material and the solids as product.

For products where it is unclear whether the liquid of a drained weight product is "meant to be left over after use", the list of liquid media in European Food Information Regulation[1] provides clarity.

For practical reasons, drained washed weight is included in this guide although it is not mandatory to declare the "drained washed weight[6]". It applies to cases where the sauce for example is intended for consumption.

[1] Article 23 and article 5 of Annex IX of Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the Provision of Food Information to Consumers.
[2] Council Directive of 20 January 1976 on the approximation of the laws of the Member States relating to the making-up by weight or by volume of certain prepackaged products (76/211/EEC).
[3] OIML R 87 (2016): Quantity of products in prepackages.
[4] A detailed report of the trials can be found on the PROFEL webpage (https://profel-europe.eu/news/metrology-glaze-measurement-method-for-frozen-broccoli-technical-report/).
[5] New parameters for the determination of net weight of frozen broccoli florets must not necessarily be applied before 30.06.2021.
[6] Note that "drained washed weight" is a declaration of one or more ingredients and outside the scope of legal metrology.

Contents

1 Definitions

The following definitions are based on those in The Directive, The Regulation and in OIML R 87 (2016). These latter terms are not used in European Legislation but are a coherent explanation of how the terms should be interpreted in the light of the current OIML R 79 (2015)[7] and OIML R 87 (2016).

Annex IX, article 5 of the Regulation provides the following information about the net quantity declaration:

Where a solid food is presented in a liquid medium, the drained net weight of the food shall also be indicated. Where the food has been glazed, the declared net weight of the food shall be exclusive of the glaze.

For the purposes of this point, 'liquid medium' shall mean the following products, possibly in mixtures and also where frozen or quick-frozen, provided that the liquid is merely an adjunct to the essential elements of that preparation and is thus not a decisive factor for the purchase: water, aqueous solutions of salts, brine, aqueous solutions of food acids, vinegar, aqueous solutions of sugars, aqueous solutions of other sweetening substances, fruit or vegetable juices in the case of fruit or vegetables.

From The Regulation the requirements for solid foods in a "liquid medium" that is not frozen two declarations are required, they are:

i. the net weight (the total weight of solid foods and liquid), and
ii. the drained net weight (of the solid food).

The requirements for food which has been glazed (has a frozen "liquid medium") is that "… the declared net weight of the food shall be exclusive of the glaze". In effect this means that the "drained net weight" will be the same as the "net quantity". Only one declaration is required in which the glaze is not included.

Note 1: For glazed foods the net weight (which is exclusive of the glaze) equals to the drained net weight.

Note 2: Q&As document adopted in January 2013 clarifies the various options for indicating the above that can be used on the labels of glazed foods: https://ec.europa.eu/food/sites/food/files/safety/docs/labelling_legislation_qanda_application_reg1169-2011_en.pdf (see Q 2.12.2).

Note 3: There is no definition of "glaze", but it is generally taken as referring to a coating of frozen liquid.

IMPACT: The ℮ mark applies to the nominal quantity, which is regarded as the net quantity from The Regulation that applies to solid foods in a liquid medium and the liquid medium. However, the net weight for the glazed foods will just be the weight of the food (not including the glaze).
A discontinuity arises since the ℮ mark applies on the solid food in the case of glazed foods, whilst the ℮ mark applies on the total weight of the solid food and the liquid medium in the case of foods which are contained in a liquid medium.

[7] OIML R 79 (2015): Labeling requirements for prepackages.

Note 4: The terms "net contents" in CODEX STAN 1-1985 "Labelling of Prepackaged Foods' and 'net quantity" of EU food labelling legislation refer to the product and a liquid medium, if present.

Note 5: The net quantity declaration is required for all foods. The additional drained net weight declaration is required only for foods which are contained in a liquid medium as specified in the Regulation. Thus, for foods which are contained in a different liquid medium, only the declaration of the net weight is required, whilst the declaration of the drained net weight is voluntary.

1.1 Nominal weight

Quantity of product in a prepackage, including the liquid medium/glaze (see section 1.4), declared on the label.

Note 1: Annex IX, article 5 of The Regulation mentions the declared net weight. The declared net weight is taken as the nominal weight.

1.2 Nominal drained weight, nominal drained washed weight and nominal drained deglazed weight (An)

Quantity of product in a prepackage less the liquid medium/glaze (see section 1.4).

Note 1: Annex IX, article 5 of The Regulation mentions the drained net weight. The drained net weight is taken as the nominal drained weight.

1.3 Actual drained weight, actual drained washed weight and actual drained deglazed weight

Quantity of product in a prepackage after equilibrium of solution is established (where applicable, but not for deglazed weight) and the liquid medium has been drained according to the test methods in section 3.

Note 1: Glazed seafood: Pre-frozen seafood which is covered with a film of water so that the frozen film protects the product quality. The actual weight of the seafood shall be exclusive of the glaze (see section 1.4).

Note 2: In this guide, the term "weight" is used instead of "mass" because "drained weight" is an internationally recognised term. Because of the uncertainty of the test procedure, there is no material difference in the value of "weight" and "mass".

1.4 Liquid medium (pouring liquid)

Liquid medium (pouring liquid) is defined as the following products, possibly in mixtures and also where frozen or quick frozen, provided that the liquid is merely an adjunct to the essential elements of that preparation and is thus not a decisive factor for the purchase: water, aqueous solutions of salts, brine, aqueous solutions of food acids, vinegar, aqueous solutions of sugars, aqueous solutions of other sweetening substances, fruit or vegetable juices in the case of fruit or vegetables.

Note 1: The definition of liquid medium (pouring liquid) is in accordance with The Regulation.

Note 2: The definition of the pouring liquid is equivalent to CODEX General Standard for the labelling of Prepackaged Foods (CODEX STAN 1-1985), section 4.3.3.

Note 3: Where the application of the definition of packing material of OIML R 87 (2016) leads to confusion, the liquids mentioned in The Regulation and CODEX STAN 1-1985 may give further specifications.

For the purposes of voluntary declarations of drained weight, the following media may be used individually or in combination with those listed above: aqueous suspensions of starches, milk and milk derivatives, fruit or vegetable purees, and other solid and semi solid mediums such as duck fat or edible oils.

1.5 Batch

The batch comprises all the prepackages of the same nominal quantity, the same type and the same production run, packed in the same place, which are to be inspected.

1.6 Tolerable Negative Error (TNE)

The amount by which prepackages may fall below the nominal drained weight, nominal drained washed weight or nominal drained deglazed weight.

Note 1: The sampling plan in section 2.3 and tolerances used in Table 1 of section 2.2.3 have been taken from The Directive for making-up by weight of certain prepacked products.

2 Requirements and sampling plan

Requirements and sampling plan are based on the requirements in The Directive.

2.1 Requirements for batch size

The batch size shall be limited to the amounts laid down below.

When prepackages are checked at the end of the packing line, the number in each batch shall be equal to the maximum hourly output of the packing line, without restriction as to batch size.

In other cases the batch size shall be limited to 10 000.

2.2 Requirements for drained weight

2.2.1 The actual drained weight of the prepackages in a batch shall not be less, on average, than the nominal drained weight (subject to section 2.3.1 of the test procedure).

2.2.2 Individual prepackages having a negative error of the actual drained weight greater than the tolerable negative error laid down in Table 1, will be defined as defectives (subject to section 2.3.2.1 and 2.3.2.2 of the test procedure).

2.2.3 Individual prepackages having a negative error of the drained weight, greater than twice the tolerable negative error laid down in Table 1, will be defined as non-conform and may not be marketed (subject to section 2.3.2.3 of the test procedure).

Table 1: Tolerable negative error of the drained weight

Nominal drained weight A_n (g)	**Tolerable Negative Error (TNE)**	
	As % of A_n	**g**
5 to 50	9	-
50 to 100	-	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	-

Note 1: The tolerances in Table 1 reflect those recommended in OIML R 87 (2016).

Note 2: Article 12.3 of the WELMEC guide 6.10 (Information on Controls on Prepacked Product) indicates the metrological requirements by countries regarding the drained weight.

2.3 Test procedure (destructive test)

Sample size n = 20 prepackages, drawn at random from the batch, shall be checked.

2.3.1 Average test

A batch of prepackages shall be considered acceptable for the purpose of this check if the sample average of the actual drained weight values ($\bar{x}$ = the sum of the actual drained weights of this sample or prepackages divided by 20) is greater than or equal to:

$$A_n - \frac{s \cdot t}{\sqrt{n}} = A_n - 0.64 \cdot s$$

In this formula:

A_n is the nominal drained weight, nominal drained washed weight or nominal drained deglazed weight of the prepackage,

s is the estimated standard deviation of the actual contents of the batch*, and,

t is 2.86 (0,995 confidence level of a Student distribution with 19 degrees of freedom).

* the estimated standard deviation s is calculated using the following expression:

$$\sqrt{\frac{(x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + (x_3 - \bar{x})^2 + ... (x_{20} - \bar{x})^2}{19}}$$

The criteria for acceptance or rejection of the average, $\bar{x}$, of a batch of prepackages are shown in Table 2[8]:

Table 2: Acceptance and rejection criteria

Number in batch	Number in sample	Criteria	
		Acceptance	Rejection
100 or more	20	$\bar{x} \geq A_n - 0.640s$	$\bar{x} < A_n - 0.640s$

[8] Based on Directive 76/211/EEC, Annex II, 2.3.3.2.

2.3.2 Checking the minimum acceptable quantity

Testing for the number of defectives or non-conform units in the batch shall be carried out in accordance with the single sampling plan shown in Table 3[9]:

Table 3: Single sampling plan

Number in batch	Number in sample	Number of defective units	
		Acceptance criterion	Rejection criterion
100 or more	20	1	2

2.3.2.1 If the number of defective units found in the sample is equal to 0 (zero) or 1, then the batch shall be considered to be acceptable (see also 2.2.2).

2.3.2.2 If the number of defective units found in the sample is 2 or more then the batch shall be rejected (see also 2.2.2).

Note 1: If the batch fails to satisfy the requirements of the sampling plan then the batch will require rectification. Where appropriate, batches may be blended together or sorted, in order for the requirements of the guide to be met. If this is not appropriate, then the batch must be disposed through a controlled secondary outlet and labelled with the revised nominal drained weight, clearly indicating that the figure declared does not conform to the guide.

2.3.2.3 Non-conform units (see 2.2.3) may not bear the ℮ mark. Packers should be aware that competent Departments (and customers) may reject batches after finding one or more prepackages with a quantity less than TU2-limit and/or question the filling and measuring procedures of the packer.

[9] Based on Directive 76/211/EEC, Annex II, 2.2.2.

3 Procedures for determination of drained weight

3.1 General

3.1.1 Scope and field of application

This procedure is used when checking drained weight, drained washed weight or drained deglazed weight of prepacked foodstuffs in the range 5 g to 10 kg. The procedure is based on OIML R 87 (2016).

Based on extensive trials and numerous exchange with the fruits and vegetables industry, some specific parameters are indicated in this procedure for the determination of net weight of frozen broccoli florets (see as well footnote 5 and 6).

3.1.2 Location of sampling and testing

Sampling and testing of a batch shall preferably be performed at the packer's premises. If this is not possible then, for imported products, sampling may be performed at the location of import.

Sampling and testing of a batch may be performed elsewhere in the distribution chain, e.g. wholesale or retail premises.

3.1.3 Conditions for testing

Sampling can be performed at any time.

However, the test shall be performed when, according to the manufacturer, the product is ready to be consumed, and it is available for sale or supply.

If the product is offered for sale or being delivered for sale, it may be inspected and must comply.

If the test is to be performed under specific conditions (such as a 'wet area' or 'controlled ambient temperature') the product should be moved to a suitable location, if necessary.

For product that is not frozen or glazed: Samples that are drawn shall be kept within the temperature range specified by the packer or between 20 °C to 24 °C for a period of 12 hours before the determination of drained weight or drained washed weight is undertaken. For mozzarella, for example, this temperature is 0 °C to 6 °C[10].

For frozen or glazed products: Samples shall be kept frozen in a temperature of 18 °C ± 2 °C prior testing to prevent clumping of the product.

Glazed products are products that have a protective layer of ice formed at the surface of a frozen or ultra-frozen product, which is applied by spraying it with, or

[10] Based on the Italian technical specification UNI/TS 11587 (June 2015). Determination of the drained weight of mozzarella cheese in light brine.

dipping it into, clean seawater, potable water or potable water with additives, as appropriate. Although frozen, such glazing shall be removed before determining the actual weight of the product.

3.2 Apparatus

3.2.1 Sieve

3.2.1.1 *Drained weight or drained washed weight*

Flat sieve[11] with a square mesh of 2,5 mm (nominal wire thickness 1.0 mm).

Note 1: For tomatoes see alternative square meshes in Table 4.

The diameter of this sieve should be 200 mm in the case of containers with a capacity of 850 ml or less, and 300 mm in the case of containers with a capacity greater than 850 ml.

Note 2: If the nominal weight of the prepackage is 2,5 kg or more the contents should, after pre-weighing or pre-taring the sieves, be divided evenly among two or more sieves of the same dimensions.

3.2.1.2 *Drained deglazed weight*

Flat sieve[13] with a square mesh of 2.5 mm (nominal wire thickness 1,0 mm).

Note 1: A square aperture 2,8 mm (ISO Recommendation R 565) or alternatively 2,38 mm (US No. 8 Standard screen) is appropriate.

Glazed seafood
Use a 200 mm diameter sieve for prepackages with drained deglazed quantities up to 900 g, and use a 300 mm diameter sieve for prepackages greater than 900 g.

Note 2: The size may need to vary in order to adapt to the size of the item to deglaze, for example using a 20 x 30 cm sieve for 500 g samples of fish fillets.

Exclusively for frozen shrimps and crabmeat
Use a 200 mm diameter sieve for prepackages with drained quantities up to 450 g and use a 300 mm diameter sieve for prepackages greater than 450 g.

Note 3: If the drained weight is 2,5 kg or more the solids should, after pre-weighing or pre-taring the sieves, be divided evenly among two or more sieves of the same dimensions.

Exclusively for frozen broccoli
Use a standard 200 mm diameter sieve with a small square mesh size of 1 mm opening (ISO 3310-1 type 200/50) for prepackages with drained broccoli quantities up to 300 g.

[11] ISO 3310-1:2016. Test sieves. Technical requirements and testing. Part 1: Test sieves of metal wire cloth.

Use a second sieve with a mesh size of 2,8 mm or another helpful device to ensure that broccoli florets are retained within the immersed sieve and pushed fully down under the water.

Note 4: For prepackages greater than 300 g use separate portions up to 300 g and repeat the process for deglazing, draining and weighing until the whole amount of contents is reached.

3.2.2 Measurement uncertainty

The expanded uncertainty (k = 2) associated with the results of measurements determining drained weight should not exceed 0.2 TNE.

Example of sources of uncertainty:
- maximum permitted error (if instrument is verified)
- rounding of indication
- rounding on zero indication (taring of sieve)
- repeatability
- eccentric load
- water and/or product on sieve (not tared)
- water and/or product on sieve (when weighing more than one portion on one sieve).

3.3 Preparation of the sample

3.3.1 Tare weight

Choose a sieve with the characteristics detailed in section 3.2.1.

Weigh or establish a tare for the clean sieve (weight Pe_1).

Note 1: A subsequent weighing of the same sieve should ensure that it is clean and free of product debris. The sieve does not have to be dry as long as it is weighed accurately before being used.

Exclusively for frozen broccoli
Weigh the sieve (empty) after immersion in the water bath and 2 min draining at a 17° - 20° angle. Repeat the operation 10 times, and calculate the average “wet weight” of the sieve (weight Pe_1).

3.3.2 Washing, draining (refer to Table 4 for the appropriate method for each product) and deglazing

The sample shall have attained the appropriate temperature in accordance with the sampling criteria set out in section 3.1.3.

3.3.2.1 *Removal of container contents – drained weight*

Open the prepackage and pour the product and liquid medium across the sieve. Distribute the product and liquid medium over the surface of the sieve but do not shake the material on the sieve. Carefully invert by hand all the solid product, or parts thereof, which have hollows or cavities if they fall on the sieve with the hollows or cavities facing up. Drain the hollows or cavities in soft products (e.g. apricot caps) by tilting the sieve.

If the washing step for drained washed weight is not required proceed to 3.3.2.4.

3.3.2.2 *Removal of container contents – drained washed weight*

There are two methods for the determination of drained washed weight depending on the product. Both methods can be used for tomato sauce products.

If the medium is oil (higher viscosity), the second method described in CODEX STAN 94-1981 for canned sardines and sardine-type products, section 7.4, should be used.

1st method:

Open the package or container and pour the contents carefully across the mesh of the sieve(s), distributing them over the surface of the sieve, avoiding product damage. For the more viscous materials it may be necessary to remove the contents with a spoon and spread them carefully across the mesh of the sieve(s) but this must be accomplished without product damage.

Remove any residual solid material form the container by rinsing with water at 20 °C ± 4 °C and add these rinsings to the sieve.

Wash the contents of the sieve(s) in a gentle stream of water at 20 °C ± 4 °C with minimal disturbance to the product until the sauce or other liquid substance have been removed. Larger items, e.g. sardines or fish fillets, should be turned over, avoiding product damage, to facilitate this process. Then proceed to 3.3.2.4.

2nd method:

In CODEX standard for canned tuna and bonito (CODEX STAN 70-1981) and CODEX standard for canned finfish (CODEX STAN 119-1981), and for canned sardines and sardine-type products (CODEX STAN 94-1981), the procedure for determination of washed drained weight (for packs with sauces) is different:

i) maintain the container at a temperature between 20 °C and 30 °C for a minimum of 12 hours prior to examination,
ii) open and tilt the container and wash the covering sauce and then the full contents with hot tap water (approx. 40 °C), using a wash bottle (e.g. plastic) on a tared circular sieve,
iii) wash the contents of the sieve with hot water until free of adhering sauce. Where necessary separate optional ingredients (spices, vegetables, fruits) with pincers. Incline the sieve at an angle of approximately 17° - 20° and allow the fish to drain two minutes, measured from the time the washing procedure has finished,
iv) remove adhering water from the bottom of the sieve by using paper. Weigh the sieve containing the washed drained fish, and
v) the washed drained weight is obtained by subtracting the weight of the sieve from the weight of the sieve and drained product.

3.3.2.3 *Removal of contents – deglazed weight [applicable for glazed seafood, frozen shrimps and crabmeat, for glazed vegetables and with modifications (see footnotes) especially for broccoli]*

The glaze protects the product from contamination, preserves it longer, and also gives ”good looking” to the product.

Vessel with water: The temperature of the water should be 27 °C ± 1 °C[12], and the amount of water should be equal to at least 8 times the weight of sample taken on the sieve and of an appropriate temperature for the product (CODEX Standards may be used as guidance).

Open the package and pour the contents carefully across the mesh of the sieve(s), distributing them over the surface of the sieve, avoiding product damage. If the product contains caps or cavities, carefully invert by hand all parts which fall onto the sieve(s) with the cup or cavities facing upwards. Any solid material adhering to the container’s internal surfaces may be removed carefully with a spoon or similar implement and added to the contents of the sieve. Do not shake the material on the sieve.

Immerse sieve and test sample in the vessel containing the specified quantity of water until the end-point of melting all glaze is reached[13], i.e. all of the added glaze has been removed and the still-frozen product core remains. It is important that product is not left in the warm water beyond this point to avoid any thawing of the core product with attendant "drip loss".

After all glaze that can be seen[14] or felt is removed (i.e. when the external surface of the sample changes from "smooth" or "slippery" to "rough") and the sample separates easily, remove sieve with sample.

Note 1: If there are significant clumps of product frozen together, this may well indicate that the product has not been properly stored, and has been subject to varying temperatures. Such temperature abuse can lead to water migration from the product and changes in the apparent glaze level. Samples showing such "clumping" should not be accepted for analysis.

Note 2: There are frozen products without glaze, packed in vacuum, so that the film of plastic packaging surrounding the product offers protection given by the glaze.

[12] In case of frozen broccoli or similar vegetables with small caves between the florets: temperature of the water: 35 °C to 39 °C. Moreover, the water in the vessel should be agitated.

[13] In case of frozen broccoli or similar vegetables with small caves between the florets:
The recommended deglazing duration in immersion liquid is 180 seconds. To test whether the end-point of melting all ice is reached:
Remove the visually largest floret and cut them lengthwise in order to examine the presence of ice crystals. If any ice crystals trapped within the floret head can still be seen, then removal of all applied glaze cannot be guaranteed and the determination of deglazed net weight is invalid. In such circumstances, a further sub-sample must be drawn from the original frozen sample and the complete test repeated but with the immersion time in the bain marie increased by 120 seconds to a total of 5 minutes.

[14] In case of frozen broccoli or similar vegetables with small caves between the florets:
Perform a visual check after cutting the florets.

3.3.2.4 *Draining*

Tilt the sieve(s) to an angle of 17° - 20° from the horizontal to facilitate draining.

Allow to drain for 2 minutes from the time at which all the product is on the sieve, or for the washed and deglazed products 2 minutes from the time the washing or deglazing ceases. For mozzarella, the product has to drain for 20 seconds[15].

3.3.3 Weighing

Reweigh the sieve plus contents (weight Pe_2). Calculate the drained quantity, the drained washed quantity or the deglaze quantity as follows:

$$P = Pe_2 – Pe_1$$

- where:

P is the quantity of the product,
Pe_1 is the tare weight of the clean sieve, and
Pe_2 is the weight of the sieve plus the product after draining.

Note 1: If the prepackages is greater than the allowed filling amount given in point 3.2.1, repeat the process for deglazing, draining and weighing with the portions (subsamples) until the whole amount of contents is reached. Add the net weight of subsamples to get the whole net weight.

Note 2: The measurement uncertainty of deglazing broccoli is larger than the allowance in the Directive (1/5 TNE). This must be considered when applying the method.

Note 3: Take into account the uncertainty of procedure when applying the method for decision. For determination of uncertainty see also reports on investigations of the methods, if available.

Note 4: All weighing should be recorded with a scale accuracy of less than 1/20 TNE or a display resolution of 0,1 g.

[15] Based on the Italian technical specification UNI/TS 11587 (June 2015). Determination of the drained weight of mozzarella cheese in light brine.

4 Extent of filling and manner of marking containers

4.1 The methods used for the labelling, presentation (including packaging) and advertising of prepacked foodstuffs for sale to the ultimate consumer should not mislead the consumer to a material degree as to, amongst other things, the quantity of product.

4.2 Under Annex II of Directive 94/62/EEC on packaging and packaging waste, packaging shall be so manufactured that the packaging volume and weight is limited to the minimum adequate amount to maintain the necessary level of safety, hygiene and acceptance for the packed product and for the consumer.

4.3 In order to meet the labelling objective, the nominal drained weight (which includes, if applicable, the deglazed weight) or the nominal drained washed weight shall be indicated on the container label, and shall[16] be described as "drained weight" or "drained washed weight" respectively. The indication shall be expressed in gram (g) or in kilogram (kg) and shall be in the same proximity and the same font and point size as the nominal weight declared on the container.

Note 1: The quantity may also be stated by number where permitted in domestic legislation, for example number for glazed oysters.

4.4 In order to meet the presentational and minimum packaging objectives, the drained weight indicated on the container (nominal drained weight or nominal drained washed weight) shall comply, on average, with one of the percentages provided in Table 4, which are expressed as a percentage of the container capacity (see Annex I of this guide).

Note 2: See "Sources of information" after Table 4 (section 5).

Note 3: The percentages may not be achievable for product with large particle sizes packed in small capacity cans, e.g. Whole Carrots.

Table 4: Minimum Nominal Drained Weights (expressed as a percentage of the capacity of the container – glass jars minus 20 ml)

Product	Container Capacity ml	Drained Weight %[17]	Source	Method	Sieve mesh mm
Fruit					
Apricots Whole	All	46	CODEX	Drained	2.5
Apricot Halves – Heavy Syrup	All	54	CODEX	Drained	2.5
Apricot Halves – Light Syrup	All	55	CODEX	Drained	2.5
Broken Mandarin Segments	All	58	CODEX	Drained	2.5
Chestnuts	≥ 300	60	CODEX	Drained	2.5
Chestnuts	< 300	55	CODEX	Drained	2.5

[16] Drained washed weight is not legally required (see scope of this document).
[17] This percentage is calculated from the weight of water the container will hold. This percentage may not be attainable for large products packed in small quantities.

Product	Container Capacity ml	Drained Weight %[17]	Source	Method	Sieve mesh mm
Fruit Cocktail	All	60	CODEX	Drained	2.5
Grapefruit Segments	All	50	CODEX	Drained	2.5
Mandarin Oranges	All	56	CODEX	Drained	2.5
Sweet Orange	All	50	CODEX	Drained	2.5
Pummelo	All	40	CODEX	Drained	2.5
Mangoes	All	50	CODEX	Drained	2.5
Morello Cherries with Stones	All	53	CODEX	Drained	2.5
Morello Cherries without Stones	All	53	CODEX	Drained	2.5
Peach Halves/Slices – Heavy Syrup	All	57	CODEX	Drained	2.5
Peach Halves/Slices – Light syrup	All	59	CODEX	Drained	2.5
Pears Whole – Containers ≤ 425 ml	All	46	CODEX	Drained	2.5
Pears Whole – Containers > 425 ml	All	50	CODEX	Drained	2.5
Pears Other variants – Containers ≤ 425 ml	All	46	CODEX	Drained	2.5
Pears Other variants – Containers > 425 ml	All	53	CODEX	Drained	2.5
Pears Diced – Containers ≤ 425 ml	All	50	CODEX	Drained	2.5
Pears Diced – Containers > 425 ml	All	56	CODEX	Drained	2.5
Pineapple Crushed	All	63	CODEX	Drained	2.5
Pineapple Other variants	All	58	CODEX	Drained	2.5
Plums Whole	All	50	CODEX	Drained	2.5
Plums Halves	All	55	CODEX	Drained	2.5
Raspberries	All	37	CODEX	Drained	2.5
Strawberries	All	35	CODEX	Drained	2.5
Sweet Cherries with Stones	All	53	CODEX	Drained	2.5
Sweet Cherries without Stones	All	53	CODEX	Drained	2.5
Tomatoes Whole	All	50	CODEX	Drained	11.2
Tomatoes Chopped	All	50	CODEX	Drained	4.75
Tropical Fruit Salad	All	50	CODEX	Drained	2.5
White Heart Cherries with Stones	All	53	CODEX	Drained	2.5
White Heart Cherries without Stones	All	53	CODEX	Drained	2.5

Product	Container Capacity ml	Drained Weight %[17]	Source	Method	Sieve mesh mm
Vegetables, Cereals and Pulses					
White peeled asparagus (whole, short)	All	59	CODEX	Drained	2.5
White unpeeled asparagus	All	57	CODEX	Drained	2.5
Green asparagus	All	50	CODEX	Drained	2.5
Asparagus other types of presentation	All	58	CODEX	Drained	2.5
Carrots Baby Whole Halves	All	62.5	CODEX	Drained	2.5
Carrots Lengthways portion	All	52	CODEX	Drained	2.5
Carrots Strips, Quarters, Pieces, Rounds, Chunk or Pieces	All	56.5	CODEX	Drained	2.5
Carrots Diced	All	62.5	CODEX	Drained	2.5
Carrots Whole	All	57	CODEX	Drained	2.5
Gherkins Whole (fresh pack)	All	53	CODEX	Drained	2.5
Gherkins Whole (cured)	All	55	CODEX	Drained	2.5
Gherkins Sliced (fresh pack)	All	55	CODEX	Drained	2.5
Gherkins Sliced (cured)	All	57	CODEX	Drained	2.5
Green / Wax Beans Whole	All	50	CODEX	Drained	2.5
Green / Wax Beans Shoestring, Sliced lengthwise, French style	All	50	CODEX	Drained	2.5
Green / Wax Beans Other presentations	All	52	CODEX	Drained	2.5
Mixed Pickles	All	50	CODEX	Drained	2.5
Mushrooms Whole	All	53	CODEX	Drained	2.5
Mushrooms Sliced	All	53	CODEX	Drained	2.5
Mushrooms Chopped	All	53	CODEX	Drained	2.5
Mushrooms in water, brine and/or exuded juices; vinegar; wine and oil packs	All	53	CODEX	Drained	2.5
Mushrooms in Sauce	All	27.5	CODEX	Washed	2.5
Onions (pickled)	All	50	CODEX	Drained	2.5
Hearts of palm	All	50	CODEX	Drained	2.5

Product	Container Capacity ml	Drained Weight %[17]	Source	Method	Sieve mesh mm
Hearts of palm Other Styles	All	52	CODEX	Drained	2.5
Green Peas – Extra small, very small and small	All	66	CODEX	Drained	2.5
Green Peas – Medium and large	All	62.5	CODEX	Drained	2.5
Green Peas – Not graded	All	59	CODEX	Drained	2.5
Red Cabbage (pickled)	All	45	CODEX	Drained	2.5
Sweet Corn	All	61	CODEX	Drained	2.5
Fish, Meat and Others					
Sardines in Oil	All	70	EEC STD	Drained	2.5
Sardines in Brine or Water	All	70	EEC STD	Drained	2.5
Sardines in Tomato Sauce	All	65	EEC STD	Washed	2.5
Tuna Steak in Oil	All	65	EEC STD	Drained	2.5
Tuna Steak in Brine or Water	All	70	EEC STD	Drained	2.5
Tuna Chunks in Oil	All	65	EEC STD	Drained	2.5
Tuna Chunks in Brine or Water	All	70	EEC STD	Drained	2.5
Tuna Flake in Oil	All	65	EEC STD	Drained	2.5
Tuna Flake in Brine or Water	All	70	EEC STD	Drained	2.5

5 Sources of information

1. Codex Alimentarius Standards (CODEX). Please check if CODEX standards have been updated since publication of this guide.
2. Council Regulation (EEC) 2136/89 of 21/06/1989 laying down common marketing standards for preserved sardines.
3. Council Regulation (EEC) 1536/92 of 09/06/1992 laying down common marketing standards for preserved Tuna and Bonito.
4. Commission Regulation (EC) No 1010/2001 of 23/05/2001 concerning the minimum quality requirements for mixed fruit under the production aid scheme.

Annex 1 Minimum nominal drained weight

This is expressed as a percentage of the container capacity.

A.1 Capacity of a container (container volume)

A.1.1 The basis for the determination should be calculated on the weight of demineralized water at 20 °C which the closed container will hold when completely filled.

A.1.2 Open Top Cans

The determination is to be carried out in accordance with EN/ISO 90-1:1999 Light gauge metal containers. Definitions and determination of dimensions and capacities. Part 1: Open top cans.

A.1.3 Glass Containers

The determination is to be carried out in accordance with the method for brimful capacity detailed in "Determination of Water Capacity of Containers" CAC/RM 46-1972 last amended 2002. The basis for the determination should be calculated on the weight of demineralized water at 20 °C which the closed container will hold when completely filled less 20 ml.

Note 1: This CODEX document assumes that the density of water at 20 °C is 1 g/ml to calculate an approximation of the volume.

Annex 2 Contact Details for Competent Departments Responsible for Compliance with the Metrological Requirements of Drained Weight

Up to date information about contact details for Competent Departments is to be found at www.welmec.org.