Illustration of the
Sampling plan for tree nuts and dried produce
UNECE Recommendation
2015 Edition

in trial until November 2019

Slides 6 to 78 have been taken at the workshop in Naples May 2018.
Slides 81 to xx have been taken at the workshop in Izmir in November 2018.
Slides xx to xx summarize the observations and clarification needed.

The text of the UNECE Recommendation is printed in blue bold, the explanatory notes in *black bold italics*.

2.3 Place of control
A conformity check may be carried out during the packing operation at the point of dispatch, during transport, at the point of destination.
Illustration: Sampling of produce at arrival or import. The produce is presented in the transport vehicle.

2

Sampling

A conformity check shall be made by assessing bulk or composite samples. It is based on the principle that the quality of the randomly taken samples is representative of the quality of the lot.

The inspector selects at random the primary samples to be inspected.

Illustration: In order to allow at random sampling, the transport vehicle must be unloaded – at least to a degree that it is possible to take primary samples from each part of the lot.

This means, at the arrival point the produce must have been unloaded and at dispatch point the produce must be inspected before it is loaded onto the transport vehicle.

3

Workflow of sampling a lot

Primary samples   *initial 5 (or 10) packages*

⬇⬇⬇⬇

Secondary samples   *300-1000 g each*

⬇⬇⬇⬇

Composite sample   *minimum 3 kg*

⬇

Reduced sample   *minimum:*   *2 x 100 nuts in shell*
                                                1 kg + 1 kg nut kernels,
⬇⬇   *1 kg + 1 kg dried grapes*
                                                2 x 1 kg sticky and
                                                   irregular dried produce

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Example 1

Inspection of Inshell Walnuts

Size of the lot: 1,100 kg net weight
                    100 bags à 10 kg

The lot is checked for conformity with
UNECE STANDARD DDP-01 (2014) FOR INSHELL WALNUTS
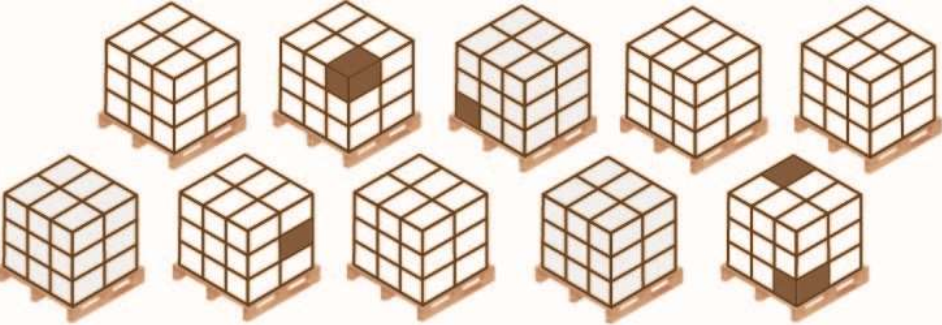
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2.5
Presentation of produce

The presentation of the lot is made by the trader as well as the supply of all information deemed necessary for the identification of the consignment or lot and for the inspection.

Illustration: Primary samples are presented by the trader and selected by the inspector.

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Sampling
A conformity check shall be made by assessing bulk or composite samples. It is based on the principle that the quality of the randomly taken samples is representative of the quality of the lot.
The inspector selects at random the primary samples to be inspected.

Illustration: Primary samples must be selected at random from the lot and they must be taken from different pallets of the lot.

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1. Initial Sampling
The inspector shall determine the size of the bulk sample in such a way as to be able to assess the lot.

The inspector shall select <u>a minimum of 5 samples for lots up to 1000 packages</u> and a minimum of 10 samples for lots over 1000 packages to test conformity;

Illustration: 5 primary samples have been selected.

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2.3   Place of inspection
A conformity check may be carried out during the packing operation at the point of dispatch, during transport, at the point of destination.
In cases where the authorised service does not carry out the conformity check in their own premises, the trader shall provide facilities enabling the conduct of a conformity check.
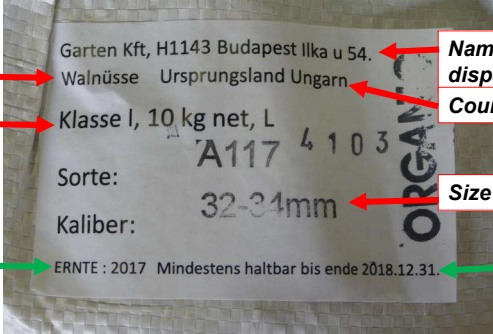
Ilustration: Example of place of inspection.   9

2.8.2   Verification of marking
The marking shall be checked for correctness, completeness and readability according to the provisions of the standard. This shall be done <u>on the basis of primary samples</u>.

Illustration: The print on the bag provides the obligatory indications such as name and address of the dispatcher, the country of origin and the nature of produce. On a voluntary basis, the net weight and the information "of controlled production" are indicated.   10

2.8.2   Verification of marking
The marking shall be checked for correctness, completeness and readability according to the provisions of the standard. This shall be done on the basis of primary samples.

Illustration: The obligatory indications are highlighted in red, the optional indications in green. Result of inspection: All obligatory indications are present.

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2.1 Size of the secondary sample
In the case of packed produce, secondary samples have to be taken from each primary sample to constitute the composite sample. The minimum size of the secondary sample taken from each primary sample shall be between 300 g and 1 kilo, in case the produce is packed loose in the package.

Illustration: A secondary sample of about 1 kg is taken from the first bag and the four other bags taken as primary samples.

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2.2 Size of the composite sample
The composite sample should be at least 3 kg in case of produce of a 100 units-weight of 1 kg or less.

Illustration: This carton contains the composite samples made of the five secondary samples. The size of the composite sample was about 5 kg.

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2.2
Produce in the composite sample must be evenly mixed.

Illustration: The composite sample is mixed by means of a laboratory tray.

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2.8.3   Verification of characteristics of the produce

Illustration: The indicated size is 32-34 mm. A reduced sample of 200 nuts in shell is checked for uniformity in size. The check is done by means of round-hole sieves of 32, 33, 34, 35 and 36 mm stacked one on top of the other.

15
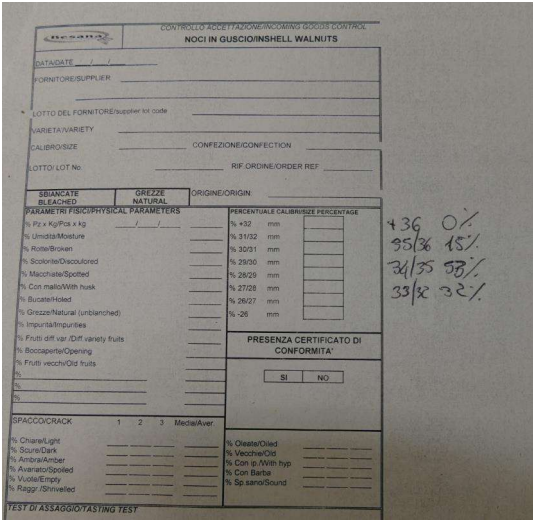
2.8.3   Verification of characteristics of the produce
Illustration: The reduced sample is shaken and the number of nuts meeting the size of the respective sieve is determined.

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2.8.3   Verification of characteristics of the produce

Illustration: Example of an inspection sheet.
In this case: 15 % of the nuts are larger than 34 mm. The uniformity of the indicated size (32-34 mm) is not met and the tolerance of 10 % is exceeded.

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2.3 Size of the reduced sample
The reduced sample is taken from the composite sample and must comprise at least:
2 x 100 nuts in case of nuts in shell

Illustration: The nuts are placed in 2 trays with 100 depressions / indentations each.

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2.8.3   Verification of characteristics of the produce

Illustration: The reduced sample of inshell walnuts are assessed for defects of the shell. In one tray 11 out of 100 nuts are set aside for defects of the shell. These 11 nuts are checked, whether the defects are within the limits allowed.

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2.8.3   Verification of characteristics of the produce

Illustration: 5 out of the 11 walnuts with defects of the shell are exceeding the tolerances for external defects.

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2.8.3   Verification of characteristics of the produce

Illustration: In the second tray 8 out of 100 nuts are exceeding the tolerances for defects of the shell. These 8 nuts are checked, whether the defects are within the limits allowed.

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2.8.3   Verification of characteristics of the produce

Illustration: In the reduced sample of 200 inshell nuts, 13 nuts are exceeding the limits for skin defects defined in the minimum requirements. The next photo will show the details

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**2.8.3
Verification of characteristics of the produce**

Illustration
4 units misshapen
6 units dirty; adhering foreign matter exceeding 10 % of the surface area
1 unit cracked; missing portion of the shell exceeding in aggregate an area of a circle one-fourth inch (6 mm)
2 units blemishes; exceeding in aggregate 25 per cent of the surface of the shell

Class I: Tolerances for defects affecting the external appearances of the shell such as shells with adhering husk/hull, dirt and blemishes, open, broken or damaged shells: 10 %

In this reduced sample: 13 out of 200 nuts are affected by these defects affecting the external appearance of the shell = 6.5 %

The lot is in conformity with respect to external defects.

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2.8.3   Verification of characteristics of the produce

Illustration: The reduced sample is cracked to assess possible defects affecting the edible part. Care must be taken, that the kernel remains more or less intact. It is Recommended to crack the nuts with a hammer and to strike on the convex side of the nut.

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2.8.3   Verification of characteristics of the produce

Illustration: A cracked nut with a kernel largely unbroken.

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2.8.3   Verification of characteristics of the produce

Illustration: First step: The cracked nuts (kernel and shells) are placed in the tray.
Second step: one by one, the shells are eliminated and the kernels are checked.
Kernels are placed in an empty tray – the kernels without any defect are placed in the
tray from the bottom line to the top, the defective kernels are placed from the top
row to the bottom.

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2.8.3
Verification of characteristics of the produce
11 units mouldy (= 5.5 % in reduced sample of 200 nuts)
8 units shriveled; i.e. dried tough portions affecting more than 25 per cent of the kernel
    (= 4 % in reduced sample of 200 nuts)

Class I:
  4 % Tolerances for mouldy kernels
10 %Tolerances for not sufficiently developed, shrunken or shrivelled kernels

The lot is in conformity with respect to internal defects.

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2.8.4 Determination of inspection result

The result of inspection is representative for the lot, as all samples (primary, secondary and reduced sample) are taken at random.

In the case where defects are detected, the inspector shall determine the respective percentage of the produce not in conformity with the standard by number or weight – as specified in the standard.

If the percentage of defects found is close +/- 10 percent to the tolerance another bulk sample, equal in number to the first sample, must be checked. The overall result is reported as an average of the two checks.

The final result is given as a rounded integer.

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2.8.4 Determination of inspection result

Result of the inspection:

100 % complete labelling

7 % external defects or defects of the shell – in conformity (standard 10 % for Class I)

4 % mouldy kernels – in conformity (standard 4 % for Class I)

6 % shrivelled kernels – in conformity (standard 10 % for Class I)

Total of 10 % of defects affecting the edible part (standard 10 % for Class I).

15 % lager size than indicated – not in conformity (standard 10 % for Class I)

As the lot shows defects exceeding the size tolerances, the size of the sample must be increased as specified in the sampling plan.

2. Sample size in case of non-conformity

The bulk sample shall comprise the following minimum quantities whenever a lot is declared unsatisfactory: 7 packages in case of lots consisting of 101 to 300 packages.

The lot in the given example consists of 110 packages. 5 packages have been taken for the initial inspection. Another 2 packages have to be taken as samples.

Moreover, with respect to the 3rd paragraph of 2.8.4 a second bulk sample has to be taken.

In order to fulfil both requirements, a second sample of 9 packages must be taken and this second bulk sample must be checked.

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2.8.4 Determination of inspection result

Result of the inspection of two bulk samples:

Defect	1. Bulk sample = 5 packages	2. Bulk sample = 9 packages	Total of both bulk samples
Defects of the shell	13	10	23 = 5.7 % ≡ 6 %
Mouldy kernels	8	9	17 = 4.2 % ≡ 4 %
Shrivelled kernels	11	8	19 = 4.7 % ≡ 5 %
Defects affecting edible part	19	17	36 = 9 %
Sizing	30	20	50 = 12.5 % ≡ 13 %
Size of reduced sample	200	200	400

The lot is in conformity for defects of the shell, for mouldy kernels and defects affecting the edible part. The lot is not in conformity for sizing. A non-conformity report must be issued. The final result is given as a rounded integer.

Possible follow-up: The lot is resized to eliminate the oversizes or the indication of the size is changed to "32 mm and above".

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Observations at the workshop:

1) According the sampling provisions, sizing has to be checked on the basis of the reduced sample (2 x 100 nuts in case of inshell produce). The industry takes a composite sample of 6 kg and checks sizing on the basis of the composite sample. We should discuss the appropriate sample size.

2) In case of inshell walnuts: An explanatory note should be developed to differentiate between "mould filaments visible to the naked eye" and "duvet" and to define on how to assess these defects when evaluating the sample. (see photos below)

3) The standard says: "In the calculation of tolerances, whatever the class, two half-empty walnuts or four quarter-empty walnuts are counted as one empty walnut." Does this apply to shriveled kernels as well?

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Example 2

Inspection of Almond Kernels

Size of the lot: 19,960 kg net weight
20 big bags à 998 kg each

The lot is checked for conformity with
UNECE STANDARD DDP-06 (2016) FOR ALMOND KERNELS

32
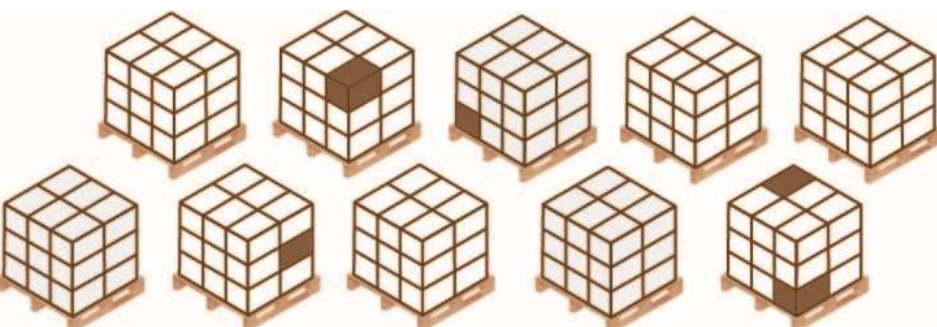
1. Initial Sampling
The inspector shall determine the size of the bulk sample in such a way as to be able to assess the lot.

The inspector shall select <u>a minimum of 5 samples for lots up to 1,000 packages</u> and a minimum of 10 samples for lots over 1,000 packages to test conformity;

Illustration: 5 out of the 20 big bags making the lot are selected as primary samples.

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Sampling
A conformity check shall be made by assessing bulk or composite samples. It is based on the principle that the quality of the randomly taken samples is representative of the quality of the lot.
The inspector selects at random the primary samples to be inspected.

Illustration: Primary samples must be selected at random from the lot. In case of big bags, these big bags are the primary samples. Different big bags have to be selected.

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2.5
Presentation of produce

The presentation of the lot is made by the trader as well as the supply of all information deemed necessary for the identification of the consignment or lot and for the inspection.

Illustration: The overall appearance of the content of the primary samples is checked. 35
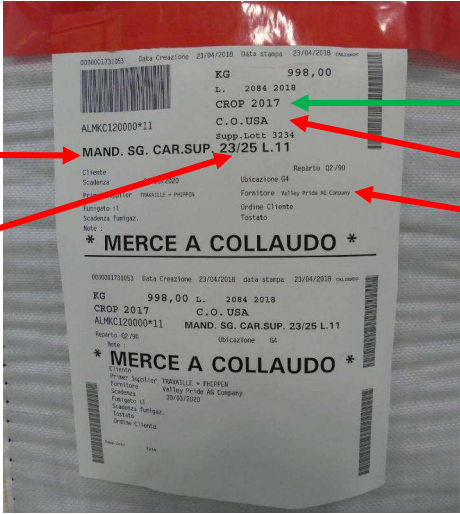
2.8.2   Verification of marking
The marking shall be checked for correctness, completeness and readability according to the provisions of the standard. This shall be done on the basis of primary samples.

Illustration: One label on the big bag provides handling advice for the big bag. The country of origin "China" does not refer to the produce contained in the bag but to the bag. 36

2.8.2   Verification of marking
The marking shall be checked for correctness, completeness and readability according to the provisions of the standard. This shall be done on the basis of primary samples.

Illustration: The obligatory indications are highlighted in red, the optional indications in green. Result of inspection: Missing indications: class and address of the dispatcher.

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2.3   Place of inspection
A conformity check may be carried out during the packing operation at the point of dispatch, during transport, at the point of destination.

In cases where the authorised service does not carry out the conformity check in their own premises, the trader shall provide facilities enabling the conduct of a conformity check.

38
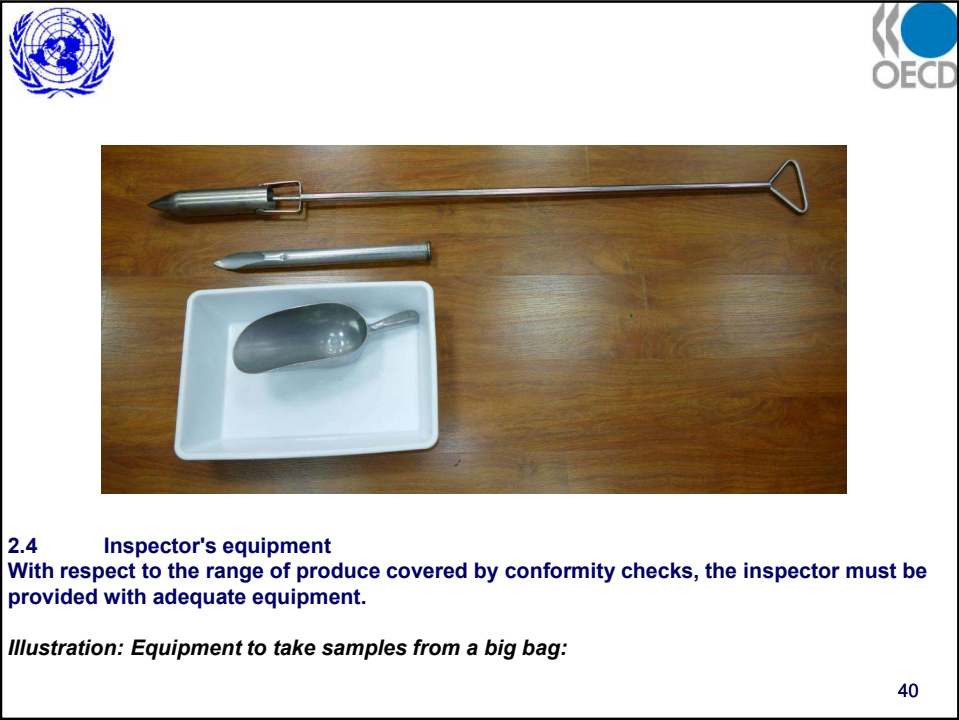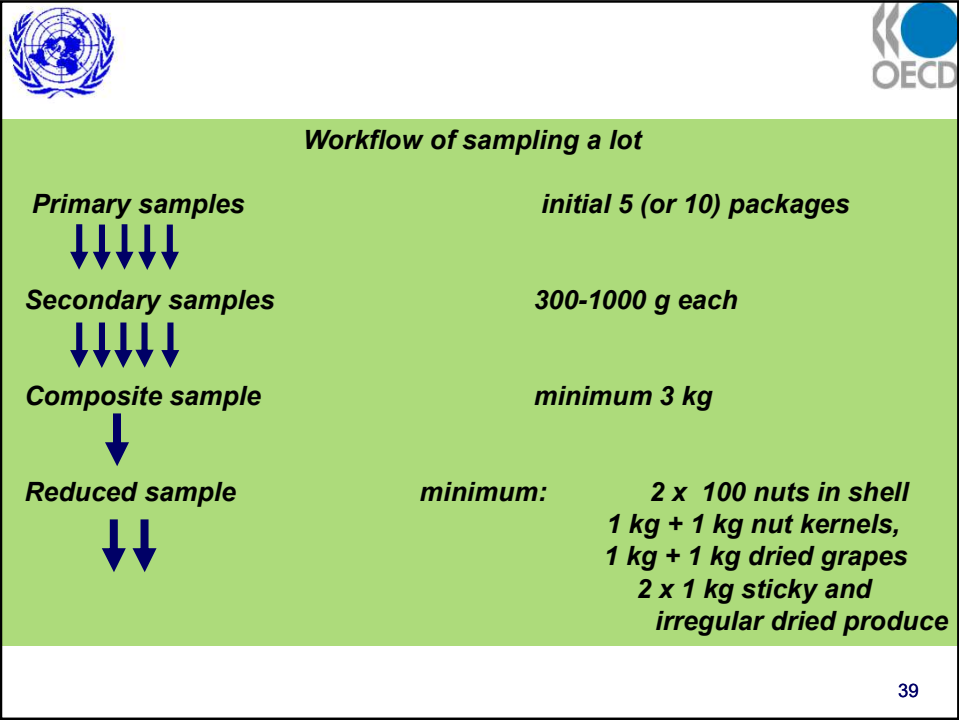
Workflow of sampling a lot

Primary samples   initial 5 (or 10) packages

⬇⬇⬇⬇⬇

Secondary samples   300-1000 g each

⬇⬇⬇⬇⬇

Composite sample   minimum 3 kg

⬇

Reduced sample   minimum: 2 x 100 nuts in shell
⬇⬇   1 kg + 1 kg nut kernels,
                                                 1 kg + 1 kg dried grapes
                                                 2 x 1 kg sticky and
                                                    irregular dried produce

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2.4   Inspector's equipment
With respect to the range of produce covered by conformity checks, the inspector must be provided with adequate equipment.

Illustration: Equipment to take samples from a big bag:

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Sampling
A conformity check shall be made by assessing bulk or composite samples. It is based on the principle that the quality of the randomly taken samples is representative of the quality of the lot.

Illustration: Taking the secondary samples at random, i.e. from different parts of the big bag.

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Sampling
A conformity check shall be made by assessing bulk or composite samples. It is based on the principle that the quality of the randomly taken samples is representative of the quality of the lot.

Illustration: Taking the secondary samples at random, i.e. from different parts of the big bag.

42

Sampling
A conformity check shall be made by assessing bulk or composite samples. It is based on the principle that the quality of the randomly taken samples is representative of the quality of the lot.

Illustration: The big bag has carefully to be sealed after the secondary sample has been taken.

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Sampling
A conformity check shall be made by assessing bulk or composite samples. It is based on the principle that the quality of the randomly taken samples is representative of the quality of the lot.

Illustration: Taking the secondary samples at random, i.e. from different parts of the big bag.

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Sampling
A conformity check shall be made by assessing bulk or composite samples. It is based on the principle that the quality of the randomly taken samples is representative of the quality of the lot.

Illustration: Taking the secondary samples at random, i.e. from different parts of the big bag.

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2.2   Size of the composite sample
The composite sample should be at least 3 kg. Produce in the composite sample must be evenly mixed.

46

2.2   Size of the composite sample
The composite sample should be at least 3 kg.

47
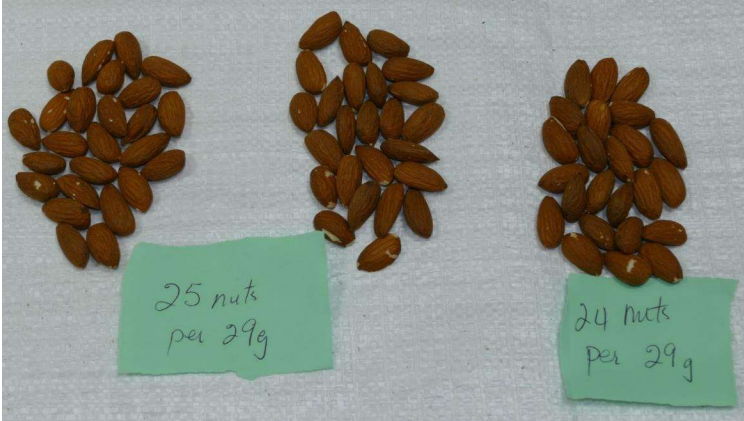
1.17   Reduced sample
The reduced samples is the quantity of produce taken at random from the bulk or composite sample whose size is restricted to the minimum quantity necessary but sufficient to allow the assessment of certain individual criteria.
Several reduced samples may be taken from a bulk or composite sample in order to check the conformity of the lot against different criteria.

Illustration: In order to check the size, the reduced sample of 3 x 30 g (≈ 1 ounce) is taken from the composite sample. This sample size is determined by the industry.

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2.8.3   Verification of characteristics of the produce
The characteristics of the produce shall be checked for conformity with the minimum requirements, classification, sizing, and uniformity according to the provisions of the standard. This shall be done on the basis of the reduced sample.

Illustration: The indicated size is 23/25. The size checked is 24/25. The lot is in conformity.

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2.3   Size of the reduced sample
The reduced sample is taken from the composite sample and must comprise at least:
• 2 x 1 kg but at least 2 x 100 units in case of nut kernels

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2.8.3   Verification of characteristics of the produce
The almond kernels are checked for defects.

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2.8.3   Verification of characteristics of the produce

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2.8.3
Verification of characteristics of the produce

Illustration
  4 doubles and twins – no defect
  2 shrivelled; i.e. tough portions exceeding 25 % of the kernel = 0.2 %
  3 pieces, i.e. more than 1/8 missing = 0.4 %
  4 dark kernels, i.e. discolouration exceeding 20 % of the surface = 0.4 %
  5 mechanical damage; i.e. less than 1/8 missing = no defect
32 scratched kernels; i.e. less than1/8 missing = no defect

Class I: 4 % tolerance for shrivelled kernels, 3 % for discoloration and 3 % for split and broken kernels.
The defects found are within the tolerances allowed. The lot is in conformity.

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2.8.4 Determination of inspection result

The result of inspection is representative for the lot, as all samples (primary, secondary and reduced sample) are taken at random.

In the case where defects are detected, the inspector shall determine the respective percentage of the produce not in conformity with the standard by number or weight – as specified in the standard.

If the percentage of defects found is close +/- 10 percent to the tolerance another bulk sample, equal in number to the first sample, must be checked. The overall result is reported as an average of the two checks.

The final result is given as a rounded integer.

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2.8.4 Determination of inspection result

Result of the inspection of one bulk sample :

	Reduced Sample		
Defect			*Percentage*
Doubles, twins	*20 g*		
Splits, broken	*2 g*		
Shrivelled kernels	*3 g*		
Dark colour	*6 g*		
Size of reduced sample	*1,000 g*	*1,000 g*	

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2.8.4 Determination of inspection result
Result of the inspection:

100 % incomplete labelling (address of dispatcher and class are missing)

0.2 % shrivelled kernels – in conformity (standard 2 % for Class I)
0.4 % dark kernels – in conformity (standard 3 % for Class I)
0.4 % broken kernels – in conformity (standard 3 % for Class I)

The lot is not in conformity with the standard. As the bulk sample of 5 primary samples is of the appropriate size to state a non-conformity. A non-conformity report must be issue.

Possible follow-up:
Correction of the labelling – add address and class.

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Observations at the workshop

1) In case of big bags (≥ 1,000 kg net weight), the industry takes samples from 5 % of the lot, 3 % of the lot as secondary sample, the composite sample is about 10 kg, the reduced sample = 1 kg).
2) According the sampling provisions, sizing has to be checked on the basis of the reduced sample (2 x 1kg in case of nut kernels). The industry takes 3 samples of 30 g or 1 ounce each. We should discuss the appropriate sample size.
3) In case of almond kernels, the industry is checking for scratches and very small pieces missing. While the standard does not take note of those defects. Moreover, the minimum requirements count "missing parts exceeding 1/8" as a defect, while the standard provides a tolerance for "pieces" as well as a tolerance for "split and broken". This should be checked.

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Example 3

Inspection of Dried Grapes

Size of the lot: 22,000 kg net weight
1,760 cartons à 12.5 kg each

The lot is checked for conformity with
UNECE STANDARD DDP-11 (2016) FOR DRIED GRAPES

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2.5
Presentation of produce
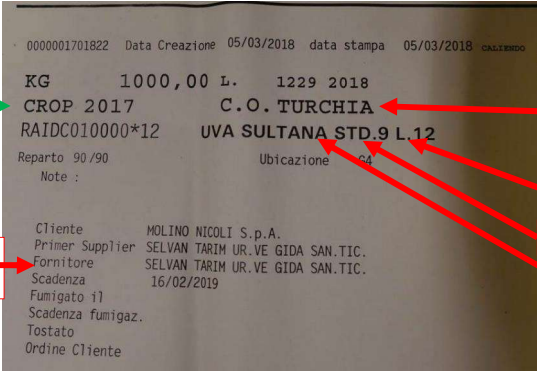
The presentation of the lot is made by the trader as well as the supply of all information deemed necessary for the identification of the consignment or lot and for the inspection.

Illustration: Primary samples are selected by the inspector and presented by the trader.

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Illustration: Primary samples must be selected at random from the lot and they must be taken from different pallets of the lot. – Cartons are restacked to take the primary samples from different parts of the pallet.

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2.8.2   Verification of marking
The marking shall be checked for correctness, completeness and readability according to the provisions of the standard. This shall be done on the basis of primary samples.

Illustration: The obligatory indications on the label of the pallet are highlighted in red, the optional indications in green.

Result of inspection: Missing indications: class and address of the dispatcher.

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2.8.2 Verification of marking
The marking shall be checked for correctness, completeness and readability according to the provisions of the standard. This shall be done on the basis of primary samples.

Illustration: The obligatory indications on the package are highlighted in red.
Result of inspection: Missing indications: class and size.

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Workflow of sampling a lot

Primary samples	**initial 5 (or 10) packages**
Secondary samples	**300-1000 g each**
Composite sample	**minimum 3 kg**
Reduced sample	**minimum: 2 x 100 nuts in shell**
1 kg + 1 kg nut kernels,
1 kg + 1 kg dried grapes
2 x 1 kg sticky and
irregular dried produce

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1.   Initial Sampling
The inspector shall determine the size of the bulk sample in such a way as to be able to assess the lot.
The inspector shall select a minimum of 5 samples for lots up to 1000 packages and a minimum of 10 samples for lots over 1000 packages to test conformity;

Illustration: In this case the inspector decided to take 3 samples only – as because of previous inspection results he/she did see a low risk for non-conformity.

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2.8.1 Verification of packaging and presentation
The packaging, including the material used within the package, shall be checked for suitability and cleanliness according to the provisions of the relevant standard. This shall be done on the basis of primary samples, in case of packed produce. If only certain types of packaging or presentation are permitted, the inspector checks whether these are being used. Moreover, this check is used to get a general impression of the lot.

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2.1 Size of the secondary sample
In the case of packed produce, secondary samples have to be taken from each primary sample to constitute the composite sample.

Illustration: The secondary sample has to be taken at randomly from the primary sample. In case of sticky produce such as dried grapes, the produce must be loosened before the secondary sample can be taken. – An other option would be to open some of the primary samples on the bottom side to get secondary samples from those parts as well.

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2.1 Size of the secondary sample
In the case of packed produce, secondary samples have to be taken from each primary sample to constitute the composite sample.

Illustration: The content of the primary sample has been loosened. The secondary sample can be taken at randomly.

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2.1 Size of the secondary sample
In the case of packed produce, secondary samples have to be taken from each primary
 sample to constitute the composite sample. The minimum size of the secondary sample
taken from each primary sample shall be
• between 300 g and 1 kilo, in case the produce is packed loose in the package.
Illustration: The size of the secondary sample must be such that all secondary samples 69
taken from all primary samples, finally make a composite sample of at least 3 kg.

2.2 Size of the composite sample
The composite sample should be at least 3 kg. Produce in the composite sample must
 be evenly mixed.
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The provisions say that sizing has to be checked on the basis of the reduced sample.
The sampling provisions define the reduced sample for 2 x 1 kg in case of dried produce of a 100 units-weight of 1 kg or less.

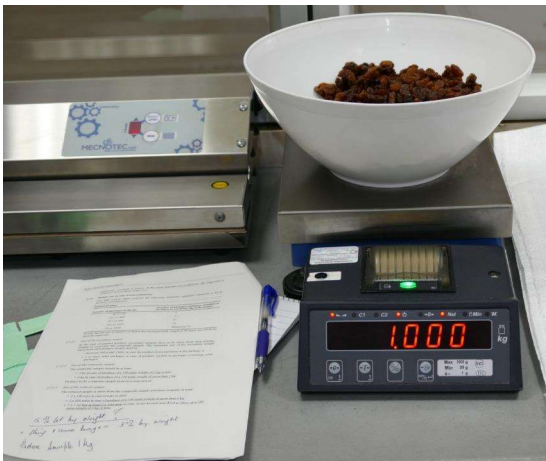*The industry takes 1 kg to check the sizing.*

We should discuss whether the sampling provisions are appropriate for conformity checks on sizing.

2.8.3   Verification of characteristics of the produce
The characteristics of the produce shall be checked for conformity with the minimum requirements, classification, <u>sizing</u>, and uniformity according to the provisions of the standard. This shall be done <u>on the basis of the reduced sample</u>.

Illustration: Reduced sample to check for conformity of sizing.

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2.3 Size of the reduced sample
The reduced sample is taken from the composite sample and must comprise at least:
• 2 x 1 kg but at least 2 x 100 units in case of dried produce.

Illustration: Two bowls are filled with 1 kg of dried grapes making the reduced sample. 72

2.8.3   Verification of characteristics of the produce
The characteristics of the produce shall be checked for conformity with the minimum requirements, classification, sizing, and uniformity according to the provisions of the standard. This shall be done on the basis of the reduced sample.

Illustration: To check for correct sizing, the number of dried grapes per 100 g are counted. Result 223 units per 100 g.

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2.8.3 Verification of characteristics of the produce
The characteristics of the produce shall be checked for conformity with the minimum requirements, classification, sizing, and uniformity according to the provisions of the standard. This shall be done on the basis of the reduced sample.
Illustration: The reduced sample consists of 2 x 1 kg. The first kg is checked for defects.
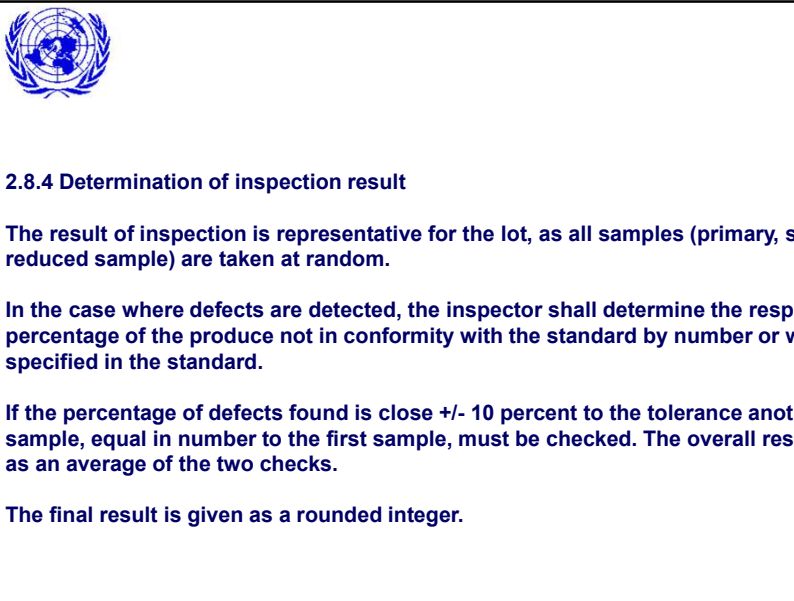
74

2.8.3   Verification of characteristics of the produce

Illustration: The defects found in the first kg are set a side.

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2.8.4 Determination of inspection result

The result of inspection is representative for the lot, as all samples (primary, secondary and reduced sample) are taken at random.

In the case where defects are detected, the inspector shall determine the respective percentage of the produce not in conformity with the standard by number or weight – as specified in the standard.

If the percentage of defects found is close +/- 10 percent to the tolerance another bulk sample, equal in number to the first sample, must be checked. The overall result is reported as an average of the two checks.

The final result is given as a rounded integer.

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2.8.4 Determination of inspection result

Result of the inspection of the bulk sample made of three primary samples:

Defect	Reduced sample		Percentage
Sugared	*10 g*	*14 g*	*2.4 ≡ 2 %*
Shrivelled	*6 g*	*8 g*	*1.4 ≡ 1 %*
Damaged	*7 g*	*7 g*	*0.7 ≡ 1 %*
Sunburn	*5 g*	*9 g*	*0.7 ≡ 1 %*
Sample size	*1,000 g*	*1,000 g*	

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2.8.4 Determination of inspection result
Result of the inspection:

100 % incomplete labelling (address of dispatcher, class and size are missing)
   2 % sugared dried grapes – in conformity (standard 2 % for Class I)
   1 % shrivelled dried grapes – in conformity (standard 3 % for Class I)
   1 % damaged – in conformity (standard 3 % for Class I)
   1 % sunburn– in conformity (standard 3 % for Class I)

The lot is not in conformity with the standard. As the bulk sample of 5 primary samples is of the appropriate size to state a non-conformity. A non-conformity report must be issue.

Possible follow-up: Correction of the labelling – add address and class. In case the lot is going to be re-packed in sales packages, the inspector may decide that the correct labelling must only be done after re-packing.

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