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NEW UNECE STANDARDS

WHOLE DRIED CHILLI PEPPERS

Document submitted by Mexico^(*)

This document has been prepared following the decision by the Working Party to initiate work on a new Standard for whole dried chilli peppers (ECE/TRADE/C/WP.7/2007/27, para. 32).

^(*) The present document has been submitted after the official documentation deadline by the Trade and Timber Division due to resource constraints.

UNECE STANDARD DDP- ...
concerning the marketing and commercial quality control of

WHOLE DRIED CHILLI PEPPERS
(ancho, de árbol, guajillo, mulato, pasilla and puya)

I. DEFINITION OF PRODUCE

This Standard applies to whole dried chilli peppers of varieties (cultivars) grown from *Capsicum annum* L., (Commercial types: ancho, de árbol, guajillo, mulato, pasilla and puya) intended for direct consumption or for food when they are intended to be mixed with other products for direct consumption without further processing. This Standard does not apply to whole dry chilli peppers for industrial processing.¹

II. PROVISIONS CONCERNING QUALITY

The purpose of the Standard is to define the quality requirements of whole dried chilli peppers at the export-control stage, after preparation and packaging.

A. Minimum requirements

In all classes, subject to the special provisions for each class and the tolerances allowed, the whole dried pepper must display the following characteristics:

- dried in accordance with section “B. Moisture content”
- intact; however, slight superficial damage is not considered as a defect
- sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded
- clean, practically free of any visible foreign matter
- sufficiently developed
- sufficiently ripe and with peduncle
- present characteristic shape of the type and colour in accordance with section “D. Colour”²
- free from live insects or mites whatever their stage of development
- free from damage caused by pests, including the presence of dead insects and mites, their debris or excreta
- free from blemishes, areas of discolouration or spread stains in pronounced contrast with the rest of the produce

¹ For the correct application of this Standard, see other definitions contained in annex I.

² For examples of colour and visual quality, see annex II.

- free from mould filaments visible to the naked eye
- free of abnormal external moisture
- present taste (pungency or hotness) characteristic in accordance with section “E. Pungency”
- present the characteristic strong smell.
- free of foreign smell and/or taste; Free from any toasted or burnt taste;

The condition of the whole dried chillies must be such as to enable them:

- to withstand transport and handling
- to arrive in satisfactory condition at the place of destination.

B. Moisture content

The whole dried chillies shall have different moisture content depending on the type, based on the following designations.

TABLE 1

Maximum moisture content in % (m/m)	
Ancho	12.5
De árbol	9.0
Guajillo	13.5
Mulato	12.5
Pasilla	13.5
Puya	10.0

C. Classification

In accordance with the defects allowed in section “IV. Provisions concerning tolerances”, whole dried chilli peppers of varieties (cultivars) grown from *Capsicum annuum* L., (guajillo, ancho, mulato, de árbol, puya and pasilla) are classified into the following classes:

Extra Class, Class I and Class II.

The classified product is designed by name, type, size and quality.

The defects allowed must not affect the general appearance of the produce as regards quality, keeping quality and presentation in the package.

D. Colour

Colour classification for whole dried chillies is mandatory, depending on the type, based on the colours defined below:

TABLE 2

Colour				
Type	Colour (°Hue)³	Extra	Class I	Class II
Guajillo	47.33-56.96	Uniform; intense or dark red with no discoloration	Uniform; intense or dark red with no discoloration	Uniform; intense or dark red with slight discoloration
Puya	45.48 -46.51	Uniform; intense or dark red with no discoloration	Not totally uniform; intense or dark red with no discoloration	Not totally uniform; intense or dark red slightly discoloured
Ancho	54.07 - 59.21	Uniform; light red to dark red, free from discolouring	Uniform; intense red to dark red with no discoloration.	Uniform; intense red to dark red slightly discoloured.
Mulato	70.54 – 71.27	Uniform; intense black, free from discolouring	Uniform; intense black, free from discolouring	Non-uniform; black, discoloured.
Pasilla	70.28 – 74.66	Uniform intense black without discolouration	Uniform black without discolouring.	Non-uniform; black or greenish. Slightly discoloured.
De árbol	46.74 - 57.23	Not applicable	Uniform; intense red without any discolouration	Intense red. May present discolouring stains.

E. Pungency

Pungency must be analysed in the Scoville scale by the method of high resolution liquid chromatography (HPLC) complying with the next parameters:

³ It is recommended to perform the determination by colorimetry using the Extractable Colour in Capsicums and Their Oleoresins according to the Official Analytical Methods of the American Spice Trade Association Inc. (ASTA) method 20.1

TABLE 3

Pungency intensity (Scoville units⁴)	
Ancho	1 000 – 1 500
De árbol	5 000 – 30 000
Guajillo	3 000 – 5 000
Mulato	1 000 – 1 500
Pasilla	1 000 – 1 500
Puya	5 000 – 30 000

III. PROVISIONS CONCERNING SIZING

Sizing is mandatory, size being a commercial differentiation parameter.

Sizing is determined according to the length (measure from the apex of the fruit without considering the peduncle), width (at the broader part of the fruit - shoulder) and weight (including the peduncle).

Sizing is designated according to the following:

TABLE 4

Type	Class	Length (cm)	Width (cm)	Weight (g)	Flesh weight (g)
Guajillo	Extra	> 14	> 3	> 9	$= ((0.7298)(\text{weight}) - 0.2372) (0.85)$
	Class I	10 – 14	2.5 – 3	5 – 9	
	Class II	< 10	< 2.5	< 5	
Puya	Extra	> 10	> 1.5	> 3.5	$= ((0.7906)(\text{weight}) - 0.5948) (0.85)$
	Class I	8 – 10	1.0 – 1.5	3.0 – 3.5	
	Class II	< 8	< 1.0	< 3.0	
Ancho	Extra	> 10	> 6	> 22	$= ((0.7364)(\text{weight}) - 0.0898) (0.85)$
	Class I	7 – 10	5 – 6	20 – 22	
	Class II	7 – 10	< 5	< 20	
Mulato	Extra	> 10	> 7	> 17	$= ((0.7643)(\text{weight}) - 0.1653) (0.85)$
	Class I	7 – 10	5 – 7	14 – 17	
	Class II	< 7	< 5	< 14	
Pasilla	Extra or "Flower"	> 20	> 3	> 7.5	$= ((0.6889)(\text{weight}) + 0.1187) (0.85)$
	Class I	14 – 20	2.5 – 3	7.0 – 7.5	

⁴ The Scoville scale is a system to measure the pungency in chillies. High resolution chromatography of liquids (HPLC) can also be used to measure content of capsaicin in chillies.

Type	Class	Length (cm)	Width (cm)	Weight (g)	Flesh weight (g)
	Class II	< 14	< 2.5	< 7.0	
De árbol	Extra	Not applicable	Not applicable	Not applicable	-----
	Class I	9 – 11	> 1.0	1.0 – 1.5	
	Class II	7 < 9	< 1.0	< 1.0	

IV. PROVISIONS CONCERNING TOLERANCES

Tolerances in respect of quality and size shall be allowed in each package for produce not satisfying the requirements of the class indicated.

A. Quality tolerances

The allowed percentage refers to the lot. The percentage that does not correspond to the designation declared will be evaluated by weight.

Defects allowed	Tolerances allowed percentage of defective produce, by lot or weight		
	Extra	Class I	Class II
(a) Tolerances for whole dried chillies not satisfying the minimum requirements of which no more than			
- Not sufficiently developed (optional)	2	2	2
- Mouldy	0	0	0
- Fragmented or broken	5	5	5
- Damaged by pests	0	0	0
- Rotting	0.5	1	1.5
- Live insects (by number)	0	0	0
(b) Size tolerances			
- For produce not conforming to the size indicated, if sized	5	15	Not applicable
(c) Tolerances for other defects			
- Foreign matter, including rachis, pits, fragments of pits and dust (by weight)	1	1	1

- Whole dried chillies belonging to other varieties {or types} than that indicated on the package	0	0	0
- Loose capstems or peduncules	5	5	5
- Chillies belonging to other varieties {or types} than that indicated on the package	0	0	0
- Slight defects: stains, burns, scrapes and deformations in no more than 5% of the surface of the product	2	10	100
- Serious defects in guajillo chillies: stains, burns, scrapes, scars and deformations in more than 5% of the surface and less than 30% of it, that affect the flesh of the product	0	0	40
- Serious defects in all other chillies (ancho, mulato, de árbol, puya and pasilla): stains, burns, scrapes, scars and deformations in more than 5% of the surface and less than 30% of it that affect the flesh of the product	0	0	100

V. PROVISIONS CONCERNING PRESENTATION

A. Uniformity

The contents of each package must be uniform and contain only whole dried chillies of the same origin, quality, size and variety or commercial type.

The visible part of the contents of the package must be representative of its entire contents.

B. Packaging

Whole dried chillies must be packed in such a way as to protect the produce properly.

The materials used inside the package must be new, clean and of a quality so as to avoid causing any external or internal damage to the produce. The use of materials, particularly of paper or stamps bearing trade specifications, is allowed, provided the printing or labelling has been done with non-toxic ink or glue.

Packages must be free of all foreign matter in accordance with the table of tolerances in section "IV. Provisions concerning tolerances".

VI. PROVISIONS CONCERNING MARKING

Each package⁵ must bear the following particulars in letters grouped on the same side, legibly and indelibly marked and visible from the outside:

A. Identification

Packer and/or Dispatcher: Name and physical address (e.g. street/city/region/postal code and, if different from the country of origin, the country) or a code mark officially recognized by the national authority⁶.

B. Nature of produce

- name of the produce
- name of the variety and commercial type
- type or style.

C. Origin of produce

- country of origin and, optionally, district where grown or national, regional or local place name.

D. Commercial specifications

- class
- size (if sized; expressed in accordance with section III)
- variety and/or commercial type
- code or lot number
- crop year and month
- packing date.

E. Official control mark (optional)

⁵ Package units of produce prepacked for direct sale to the consumer shall not be subject to these marking provisions, but shall conform to national requirements. However, the markings referred to shall in any event be shown on the transport packaging containing such package units.

⁶ The national legislation of a number of countries requires the explicit declaration of the name and address. However, in cases where a code mark is used, the reference “packer and/or dispatcher” (or equivalent abbreviations) must be indicated in close connection with the code mark, and the code mark should be preceded by the ISO 3166 alpha country code of the recognizing country, if not the country of origin.

ANNEX I

COMMONLY USED TERMINOLOGY FOR WHOLE DRIED CHILLIES

Ancho chilli:

Fruits have a conical shape, with sizes that vary in longitude and width. The base of the insertion of the peduncle can be flat or with indented shoulders; the body is generally flattened; the apex is pointed or round, and presents from two to four loculi. Its production as dry pepper is achieved mostly by artificially dehydrating the fruits, although a large part of this type of chilli is commercialized fresh.

De árbol chilli:

Small fruits, with a uniform intense or dark red coloration, with no discoloration, cylindrical, with a shape prominently long and pointed, characterized by their high pungency.

Guajillo chilli:

Also known as mirasol. Generally, it is long, with a sharp end; its body is cylindrical, smooth and with slight undulations. It has two to three loculi; its position is hanging, even when there are some variants with erected fruits. This type of chilli is moderately pungent and its commercial production is in its majority dried in the plant in a natural way.

Mulato chilli:

With a shape similar to the ancho chilli, it has the same variation in the growth habit and shape of the fruit, but generally less pungent. The basic difference with ancho chilli is the colour, which is dark brown when ripe and blackish brown once it is dehydrated.

Pasilla chilli:

Fruit with a long undulated body that ends in a flat or pointed apex; it presents from two to three loculi. Its production is mainly destined for dehydrating, with a small amount consumed fresh.

Puya chilli:

Elongated fruit, medium size, smaller than mirasol chillies and bigger than de árbol chillies, with a uniform intense red or dark red colour, with no discoloration. Its production is dehydrated mainly in a natural way in the plant before use in salsas. After the de árbol chilli, it is considered highly pungent.

Dried chilli (Dehydrated):

Fruit that has undergone a process of water loss by natural or artificial means.

Essential and/or volatile oils:

These are chemical components that give the fruits their characteristic smell and taste. The main components are the capsaicinoids and the oleoresins.

Fruit contaminated by animals:

Fruit that contains proof that it has been chewed or bitten by rodents, birds or other animals; or contains particles of bird feathers or animal hair.

Fruit contaminated by micro-organisms:

Fruit in which sign of mould, mycelium and/or bacteria are found.

Fruit in physiological ripe or in season:

Fruit that has completed its development and has reached the level of ripeness characteristic of the type of chilli that makes it suitable for the dehydrating process. In guajillo, ancho, puya and de árbol chillies, the fruit has an intense red colour, while in the mulato and pasilla chillies it is dark red.

Fruit infested by insects:

Fruit that contains insects, live or dead, or insect debris, or that it has evidently served as food to some insect.

Capsaicinoids:

Compounds responsible for the pungent or hot flavour in the chillies. The main and most pungent of all capsaicinoids is the Capsaicin, which is found in the seeds and placenta of the peppers.

Package:

Material that envelops, contains and protects the products for transport or storage.

Pack:

Any container or wrapping in which the product is held for its sale to the consumer.

Faeces or excrement:

Bodily waste of any species, which is considered a contaminant.

Moisture:

The percentage of humidity present in chillies once they have been dehydrated and are about to be commercialized.

Insects:

Small animal of the class Insecta in adult, nymph, larva or pupa state.

Loculus:

Small chamber or cavity of the fruit that is formed by the arranging of the walls of the ovary; it is observed by making a transversal cut.

Foreign matter:

All material or substance different to that which constitutes the fruit and the peduncle. This includes: stalks, dirt, sand, stones, waste, wires, cords, foreign seeds, dust and leaves, as well as insect debris.

Oleoresins:

The liquid extract of chilli in form of intense red oil with the typical smell of the chilli that contains all the extracted pigments and capsaicinoids.

Pungency:

Sharp or intense sensation caused by the effect of the capsaicins after the ingestion of chilli or its sub-products.

ANNEX II

WHOLE DEHYDRATED CHILLIES - EXAMPLES OF COLOUR AND VISUAL QUALITY

GUAJILLO PEPPER		
		
EXTRA CLASS	CLASS I	CLASS II

ANCHO PEPPER		
		
EXTRA CLASS	CLASS I	CLASS II

MULATO PEPPER		
		
EXTRA CLASS	CLASS I	CLASS II

PASILLA PEPPER		
		
EXTRA CLASS OR FLOWER	CLASS I	CLASS II

PUYA PEPPER		
		
EXTRA CLASS	CLASS I	CLASS II

DE ÁRBOL PEPPER		
DOES NOT APPLY		
EXTRA CLASS	CLASS I	CLASS II

REFERENCES

- ISO 972: 1997 Chillies and capsicums, whole or ground (powdered) - Specifications.
- ISO 930: 1997 Spices and condiments - Determination of acid-insoluble ash
- ISO 3513 Chillies - Determination of Scoville index.
- ISO 7543-1 Chillies and chilli oleoresins - Determination of total capsaicinoid content - Part 1: Spectrometric method
- ISO 7543-2 Chillies and chilli oleoresins - Determination of total capsaicinoid content -- Part 2: Method using high-performance liquid chromatography
- Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias. Centro de Investigación Regional del Noreste. Campo Experimental Palma de la Cruz. Nuevas Variedades del Chile Mirasol para el Centro Norte de México. Folleto Técnico Nro. 21, Marzo 2001.
- Pozo Campodónico, Octavio. Descripción de Tipos y Cultivares de Chile (*Capsicum* spp.) en México. Secretaría de Agricultura y Recursos Hidráulicos/Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (SARH/INIA). Folleto Técnico Nro. 77, Octubre 1981.