CHILLIES AND CAPSICUMS (Capsisum frutescens and others), whole or ground (powdered)

1. Description

Chillies and capsicums are the juiceless dried pods (fruits) of plants of the genus *Capsicum*, particularly *Capsicum annum, C. frutescens, C. chinese, C. pubescens, C. pendulum*. In longitudinal cross-section, the pods are roughly triangular in shape, with the base of the triangle at the point of attachment to the peduncle (stalk). The pods contain variable numbers of yellow-white, hard, disc-like seeds, 1 to 5 mm in diameter. The number and size of the seeds is dependent on the species. The placenta contains the highest concentration of the pungent capsaicinoids. The mature pods may vary in colour from dark blackish-red through orange-yellow to yellow-green, according to the species. Dimensions may vary from 20 to 120 mm long and between 4 and 50 mm in diameter, again according to the species.

Ground powdered chillies and ground powdered capsicums are the products obtained by grinding whole chillies and capsicums, respectively, without any added matter. The powder may be ground to any required particle size, and blends are often made of various chillies/capsicums to maintain a constant "heat strength" (capsaicinoid content) or colour. For international trade, the usual maximum particle size is 500 µm.

2. Odour and flavour

Chillies and capsicums have a characteristic odour, initially pleasant and fruity, followed quickly by a strongly acrid note causing nasal irritation.

Note 1. The characteristic odour becomes stronger when the chillies are rubbed or ground.

Note 2. Chillies, chillie powder and cayenne have a characteristic odour, initially pleasant and fruity and slightly earthy followed quickly by a strongly acrid note causing nasal irritation. The characteris tic taste is initially pleasant, sweet and fruity followed by a strong burning sensation which is very persistent.

3. Freedom from insects, moulds, etc

Chillies and capsicums, whole or ground (powdered), shall be free from living insects and moulds, and shall be practically free from dead insects, insect fragments and rodent contamination visible to the naked eye (corrected, if necessary, for abnormal vision). Minimum ASTA cleanliness specifications are shown in Table 13.

Microbial limits are generally specified when the material is required for further processing.

Indicative limits are:

Salmonella absent in (at least) 25g

Yeast and moulds: target 10^5/g; absolute maximum 10^6/g

E Coli.: target 10^2/g; absolute maximum 10^3/g

Other requirements to be agreed between buyer and seller

Microbiological counts may be reduced by the use of legally permissible treatments.

4. Extraneous matter

Extraneous matter includes:

a) all matter present in the sample which is not from chillies or cap sicums of the variety under consideration;

b) all other foreign matter and, in particular, stalks, leaves, soil and sand.

Extraneous matter does not include unripe, marked or broken fruits of the variety under consideration.

The proportion of extraneous matter in whole chillies and capsicums shall not exceed 1% (m/m).

5. Unripe, marked or broken fruits

The proportion of unripe, marked or broken chillies and capsicums in whole chillies and capsicums shall not exceed 2% (m/m).

6. Chemical requirements

Whole or ground (powdered) chillies and capsicums shall comply with the requirements given below:

Chemical composition of whole chillies, chillie powder and cayenne

Parameter	Requirement
Total ash % (m/m) (on dry basis) max.	10.0 (whole) 10.5 (ground)
Acid-insoluble ash % (m/m) (on dry basis) max.	2.0 (whole) 2.5 (ground)
Moisture content % (m/m) max.	13.0 (whole) 11.0 (ground)

In addition, the proportion of ground (powdered) chillies or capsicums that passes through a sieve of nominal aperture size 500 µm shall not be less

than 95%.

7. Packing

Whole chillies and capsicums - Whole chillies and capsicums shall be packed in clean, sound containers made of a material which does not affect the product. Woven polypropylene sacks are widely acceptable.

Ground (powdered) chillies and capsicums - Ground (powdered) chillies and capsicums shall be packed in clean, sound, airtight, opaque containers, made of a material which does not affect the product.

For details on marking, storage and transport of containers, see Annex 4.

OLEORESIN CAPSICUM

Definition	• Oleoresin capsicum, obtained by solvent extrac tion of Capsicum annum or Capsicum frutescens.
Spice equivalent	• 1 kg of product 20% capsaicin replaces approximately 48-50 kg of good grade ground capsicum.
Capsaicin content	• 1 to 20% (UV spectrophotometric method)
Colour value	• 4,000 to 10,000 ASTA units
Residual solvent	• < 20 ppm
Appearance and odour	• A clear red to reddish brown viscous liquid. Powerful characteristic odour of freshly ground cap sicum and a very high bite. 1% capsicum is equiva lent to approximately 150,000 Scoville Units.

CORIANDER SEED (whole or ground)

1. Description

Coriander is the dried mature fruit of *Coriandrum sativum*. The colour of the fruit should be yellowish brown to light brown and the shape should generally be spherical to elliptical, measuring about 2 mm to 6 mm in diameter.

2. Odour and flavour

Coriander, either whole or ground (powdered), has a typical fragrant and aromatic flavour characteristic of the spice. It shall be free from mustiness and all foreign flavour.

Note 1. The characteristic flavour (odour and taste) becomes very much stronger when coriander is cracked or ground.

Note 2. Coriander seeds have a mild but very distinctive warm and fragrant odour, characteristic of the plant. The flavour is initially sweet and fruity (slightly reminiscent of oranges) with a more pungent aftertaste on chewing.

3. Freedom from insects, moulds, etc

Coriander, whole or ground (powdered), shall be free from living insects, and shall be practically free from moulds, dead insects, insect fragments and rodent contamination visible to the naked eye (corrected, if necessary, for abnormal vision). Minimum ASTA cleanliness specifications are shown in Table 13.

4. Extraneous matter

For the purpose of this standard, all materials other than the coriander seeds and all other matter of animal, vegetable or mineral origin shall be considered as extraneous matter. The total percentage of extraneous matter in whole coriander shall not exceed the values specified in the table below. Ground (powdered) coriander shall not contain added colouring matter, bleach or preservatives.

Requirements for coriander

Characteristic	Requirement			
	Whole			Ground
	Grade 1	Grade 2	Grade 3	
Extraneous matter, % (m/m), max.	1.5	2	4	-
Split fruits, % (m/m), max.	5	10	10	-
Damaged, discoloured fruits, etc. % (m/m), max.	2	3	7	-
Volatile oils, % (ml/100g), on dry basis, min.				
group A		0.6		0.6
group B		0.1		0.1

Characteristic	Requirement			
	Whole			Ground
	Grade 1	Grade 2	Grade 3	
group C		0.4		0.4
Moisture content, % (m/m), max.	9	9	9	9
Total ash, % (m/m), on dry basis, max.	-	-	-	7
Acid-insoluble ash, % (m/m) on dry basis, max.	-	-	-	1.5

5. Packing

Whole or ground (powdered) coriander shall be packed in clean and sound containers made of a material which does not affect the product but which protects it from the ingress or loss of moisture and volatile matter.

OIL OF CORIANDER

Definition
- Oil of coriander: The oil obtained by steam distillation from the fruits of Coriandrum sativum.

Appearance and colour
- Clear, mobile liquid, almost colourless to pale yellow.

Odour
- Characteristic, spicy, characteristic of coriander seeds, recalling that of linalol.

Relative density at 20/20°C
- Minimum: 0.862
  Maximum: 0.878

Refractive index at 20°C
- Minimum: 1.462
  Maximum: 1.470

Optical rotation at 20°C
- Range from + 5° to + 13°

Miscibility with 65% (*V/V*) ethanol at 20°
- The miscibility with 65% (*V/V*) shall Cbe eight volumes in one volume of essen Ctial oil to give a clear solution. No turbidity or opalescence shall appear on the further addition of the solvent.

Acid value
- Maximum: 3.0

Packing
- Preferably aluminium or glass containers (40 kg carboy).

Storage
- Store in full, tight containers, in a cool place protected from light.

GINGER (*Zingiber officinale*) (whole or ground)

1. Definition

Dried ginger, whether whole, in pieces or sliced, processed for food use and derived from the rhizomes of one or more of the subspecies of the species *Zingiber officinale*.

Whole ginger

This is the dried rhizome of the plant, known as 'ginger root'. The irregularly shaped rhizomes are tough, fibrous and may be peeled, split or sliced dependent on origin and grade. The colour is from dark grey/brown to pale cream depending on origin and processing.

Note: Lighter coloured ginger is traditionally more highly prized and gives a lighter aromatic (lemony) and less fiery flavour. Darker gingers give more heat, which is of value in food processing.

Ground ginger

The colour of ground ginger varies from mid-brown to pale yellow dependent on origin and initial processing, e.g. peeling. A major proportion of the ground ginger now traded is blended from two or more origins to combine the characteristics mentioned above in the most appropriate way for final use.

2. Odour and flavour

Ginger in root form has relatively little aroma, but that which is present should be characteristic, clean and warm. The ginger shall be free from mustiness and other foreign odour and taste when examined by sensory analysis.

The flavour is enhanced on breaking the root, dependent on origin/subspecies. The flavour is warm and lemony, through to hot and spicy. Ground ginger has these characteristics but at a higher level.

3. Freedom from insects, moulds, etc

The ginger shall be free from living insects and mould growth when inspected visually. It should be free in practical terms from dead insect fragments and rodent contamination visible to the naked eye (corrected if necessary for abnormal vision). Minimum ASTA cleanliness specifications are given in Table 13.

Microbiological details

Generally these are specified when the material is required for further processing. Indicative limits are:

Salmonella absent in (at least) 25g

Yeast and moulds: target 10^5/g; absolute maximum 10^6/g

E Coli.: target 10^2/g; absolute maximum 10^3/g

Other requirements to be agreed between buyer and seller

Microbiological counts may be reduced by the use of legally permissible treatments.

Infestation

Whole ginger should be inspected for worm holes, which arise in the root during growth. If worm holes are detected, the ginger should be fumigated. Neither whole nor ground dried ginger is prone to infestation. In cases of infestation, fumigations with subsequent cleaning or sifting if necessary are efficient.

4. Extraneous matter

The content of any foreign matter in whole ginger shall be not greater than 0.25 (m/m). The content of small roots longer than 10 mm or greater than 3 mm in diameter in whole ginger shall be not greater than 0.5 % (m/m). Ground ginger shall be free from visible extraneous matter when inspected visually.

5. Chemical composition

The chemical composition shall comply with the requirements specified below.

Chemical composition of ginger, whole and in pieces

Parameter	Requirement
Total ash % (m/m) (on dry basis) max.	8.0
Acid-insoluble ash % (m/m) (on dry basis)max.	2.5
Moisture % (m/m) max.	12.0
Volatile oil mL/100 g (on dry basis) min.	1.5

Chemical composition of ground ginger	
Parameter	**Requirement**
Total ash % (m/m) (on dry basis) max.	8.0
Acid-insoluble ash % (m/m), (on dry basis) max.	2.5
Moisture % (m/m) max	12.0
Volatile oil ml/100 g (on dry basis) min.	1.0
NOTE. A high acid-insoluble ash may give an indication of an abnormal extraneous matter content.	

Trace metals

Levels of lead and arsenic in herbs and spices are currently controlled by national legislation.

Trace metal in ginger	Maximum level mg/kg
Arsenic	5
Lead	10
Copper	20
Zinc	50
NOTE. Statutory Instruments are subject to amendment and reference should be made to those currently in force.	

6. Packaging and storage

To avoid condensation, a container that is permeable to air shall be used for packing and storing bulk material. Woven polyproplene bags are preferred.

OIL OF GINGER

Definition	• Oil obtained from steam distillation of the dried coarse ground rhizome of Zingiber officinale.
Colour and appearance.	• Light yellow to yellow Specific gravity at 25°/25°.0.871 to 0.882
Odour	• Characteristic, warm, spicy aroma.
Optical rotation	• - 28° to - 45°
Refractive index at 20°C	• 1.4880 to 1.4940
Stability	• Alkali: Relatively stable in weak alkali. Unstable in the presence of strong alkali. Acids: Unstable in the presence of strong acids.
Solubility	• Ethanol: Soluble, usually with turbidity.
Packing	• Should be shipped in glass or aluminium containers.
Storage	• Store preferably in tight, full containers in a cool place protected from light.

GROUND (powdered) PAPRIKA
(Capsicum annum)

1. Description

Ground paprika is derived from ground dried indehiscent many-seeded berries of Capsicum annuum cultivars. The berries differ in shape and colour but they all have relatively thin and slightly juicy pericarps. According to origin, berries are from 0.8 cm to 12 cm wide, and from 0.8 cm to 30 cm long, three-or four-lobed, and may be linear, conical or globose. Colours range from red to orange, yellow, or brown when ripe. Seeds are flat, oval from 2 mm to 5 mm in width. The majority of seeds develop on the semi-globe shaped placenta in the lower part of the fruit. Seeds vary from light yellow to yellowish brown.

Mild paprika is reddish uniform powder, the tint depending on the total natural colour content and the fineness of grinding. Increasing redness is taken to mean increasing quality. Hot paprika is brick red in colour with a brownish tinge, lower qualities showing a yellowish tinge. Ground (powdered) paprika is prepared from the pericarp and the seeds of the paprika fruit, plus small proportions of other parts of the placenta, the calyx and the stalk. This proportion should not be greater that that of the fruit itself.

2. Odour and flavour

The odour of ground (powdered) paprika shall be pleasantly aromatic; according to its quality, its taste shall be free from pungency, slightly pungent or very pungent. It should be free from off-flavours or off-odours (for example, musty, rancid or other foreign, disagreeable tastes or odours).

3. Freedom from insects, moulds, etc

Ground (powdered) paprika shall be free from living insects and moulds, and shall be practically free from dead insects, insect fragments and rodent contamination visible to the naked eye (corrected, if necessary, for abnormal vision) or with such magnifications as may be necessary in any particular case. Minimum ASTA cleanliness specifications are shown in Table 13 for whole fruits (requirements as for chillies/capsicums).

Microbiological details

Generally, these are specified when the material is required for further processing.

Indicative limits are:

Salmonella absent in (at least) 25g

Yeast and moulds: target 10^5/g; absolute maximum 10^6/g

E Coli.: target 10^2/g; absolute maximum 10^3/g

Other requirements to be agreed between buyer and seller

Microbiological counts may be reduced by the use of legally permissible treatments.

4. Extraneous matter

Extraneous matter includes: a) all vegetable matter other than fruits of paprika; b) colouring agents, oils or other products added to improve the quality or to mask defects. Ground (powdered) paprika should be free from extraneous matter; whole paprika should not contain more than 0.5% extraneous matter.

5. Chemical composition

Ground (powdered) paprika is graded according to origin, colour, degree of pungency and physical and chemical characteristics.

Physical and chemical requirements

Ground (powdered) paprika shall comply with the requirements given in the table below.

Characteristic	Requirement		
	Grade		
	I	II	III
	Free from pungency or scarcely pungent	Sweet to slightly pungent	Pungent
Degree of fineness of grinding, mm	0.50	0.60	0.60
Moisture content, % (m/m), max.	11.0	11.0	11.0
Total Ash, % (m/m) on dry basis, max.	6.5	7.5	10.0
Acid-insoluble ash, % (m/m) on dry basis, max.	0.5	0.8	1.6
Non-volatile ether extract, % (m/m) on dry basis, max.	17.0	17.0	17.0
Crude fibre content % (m/m) on dry basis, max.	25.0	25.0	30.0
Capsaicin content, mg/100 g on dry basis, max.	0 to 10*	20*	30*
Natural colouring matter, g/kg on dry basis, min.	2.5	2.0*	1.5

*Recommended values

Trace metals

Levels of lead and arsenic in herbs and spices are currently controlled by national regulations.

ESA guidelines are as follows:

Trace metal	Maximum level mg/kg
Arsenic	5
Lead	10
Copper	20
Zinc	50
Tin	200

6. Packing
Ground (powdered) paprika shall be packed in new, sound, clean, hermetically sealed containers made of a material which does not affect the colour, odour or the flavour of the product. The mass of the containers may be from 0.05 to 50 kg.

OLEORESIN PAPRIKA (Soluble)

Description
- Obtained by solvent extraction of the dried ripe fruits of Capsicum annum, with subsequent removal of solvent.

Appearance
- Dark somewhat viscous red liquid. Oleoresin paprika is evaluated strictly on a unit colour basis.

Capsaicin content
- 2.8 to 3.0 % (spectrophotometric method)

Colour value
- Variable according to client demand. Generally 40,000 to 100,000 ASTA colour units.

Dispersibility
- Dispersible in water and vegetable oils.

Residual solvent
- < 10 ppm

Storage
- Store preferably in tight full containers in a cool place protected from light.

Packing
- Preferably glass (carboys) or suitable steel lined containers.

Odour
- Characteristic, mild odour.

WHITE PEPPER (*Piper nigrum*) (whole or ground)

1. Description

Whole white pepper is obtained in two ways:

- from black pepper of *Piper nigrum*, using the whole dry berry generally picked before complete ripening and removing the outer pericarp, with or without preliminary soaking in water.

- from the whole ripe berry of *Piper nigrum*, removing the outer pericarp by the same procedure.

Berries of white pepper are almost spherical grains of diameter 3 mm to 5 mm. The colour of white pepper varies from matt grey-brownish to pale ivory white. Ground white pepper is obtained by grinding whole white pepper, without any added matter.

2. Odour and flavour

The flavour of white pepper when it is ground shall be characteristic, slightly sharp and very aromatic. The product shall be free from extraneous odours and flavours, including mouldy and rancid odours.

3. Freedom from insects, moulds, etc

White pepper shall be free from mould and living insects and practically free from dead insects, insect fragments and rodent contamination visible to the naked eye (corrected, if necessary, for abnormal vision). Minimum cleanliness specifications are shown in Table 13.

Microbiological details

Generally, these are specified when the material is required for further processing. Indicative limits are:

Salmonella absent in (at least) 25g

Yeast and moulds: target 10^5/g; absolute maximum 10^6/g

E Coli.: target 10^2/g; absolute maximum 10^3/g

Other requirements to be agreed between buyer and seller

Microbiological counts may be reduced by the use of legally permissible treatments.

Infestation

Pepper can be subject to certain infestations. Fumigation is recommended for affected material with subsequent sifting.

4. Extraneous matter

Whole white pepper shall meet the requirements given in the table below.

Characteristic	Requirements	
	Pepper SP	Pepper P
Extraneous matter, % (m/m) max.	1.0	0.8
Light berries, % (m/m) max.	4.0	3.0
Pineheads or broken berries, (m/m) max.	15	10
Bulk density, g/l, min.	600	600

5. Chemical characteristics - See table below.

Chemical composition of whole pepper	
Parameter	**White**
Total ash % (m/m) (on dry basis) max	4.0
Acid-insoluble ash % (m/m) (on dry basis) max.	0.3
Moisture % (m/m) max.	15.0
Volatile oil ml/100g (on dry basis) min.	1.5
Piperine % (m/m) (on dry basis) min.	4.0

Chemical Composition of ground pepper	
Parameter	**White**
Total ash % (m/m) (on dry basis) max.	4.0
Acid-insoluble ash % (m/m) (on dry basis) max.	0.3
Moisture % (m/m) max.	15.0
Volatile oil ml/100g (on dry basis) min.	0.5
Piperine % (m/m) (on dry basis) min.	4.0

Trace metals
Levels of lead, arsenic and tin in herbs and spices are currently controlled by national legislation. ESA guidelines are as follows:

Levels for trace metals in pepper	
Trace metal	Maximum level MG/KG
Arsenic	5
Lead	10
Copper	20
Zinc	50
Tin	200

6. Packing
Whole white pepper and ground white pepper shall be packed in clean, sound, dry packages, made of a material which does not affect the product. Woven polypropylene bags are widely accepted.

BLACK PEPPER (*Piper nigurm*) (whole or ground)

1. Description

Whole black pepper is the whole dry berry of *Piper nigrum*, generally picked before complete ripening. Berries of black pepper have a diameter of 3 mm to 6 mm and are of a brown, grey or black colour with a wrinkled pericarp. Ground black pepper is obtained by grinding whole berries, without any added matter.

2. Odour and flavour

The flavour of black pepper when it is ground shall be characteristic, strongly sharp and very aromatic. The product shall be free from extraneous odours and flavours, including mouldy and rancid odours.

> **Note:** The appearance of berries has no direct relation to their flavour. Small berries can be more aromatic than berries of better appearance or larger size.

3. Freedom from insects, moulds, etc

Black pepper shall be free from mould and living insects and practically free from dead insects, insect fragments and rodent contamination visible to the naked eye (corrected, if necessary, for abnormal vision) or with magnification if necessary in specific cases. Minimum ASTA cleanliness specifications are shown in Table 13.

Microbiological details

Generally, these are specified when the material is required for further processing. Indicative limits are:

Salmonella absent in (at least) 25g

Yeast and moulds: target 10^5/g; absoulte maximum 10^6/g

E Coli.: target 10^2/g; absolute maximum 10^3/g

Other requirements to be agreed between buyer and seller

Microbiological counts may be reduced by the use of legally permissable treatments.

Infestation

Pepper can be subject to certain infestations. Fumigation is recommended for affected material with subsequent sifting.

4. Extraneous matter

Whole black pepper shall meet the requirements given in the table below:

Characteristic	Requirements	
	Pepper NP or SP	Pepper P
Extraneous matter, % (m/m) max.	2.5	1.5
Light berries, % (m/m) max.	11	5.0
Pineheads or broken berries, (m/m) max.	7.0	4.0
Bulk density, g/l, min.	450	49

5. Chemical characteristics - See table below.

Chemical composition of whole pepper	
Parameter	**Black**
Total ash % (m/m) (on dry basis) max	7.0
Acid-insoluble ash % (m/m) (on dry basis) max.	1.7
Moisture % (m/m) max.	15.0
Volatile oil ml/100g (on dry basis) min.	2.0
Piperine % (m/m) (on dry basis) min.	3.5

Chemical Composition of ground pepper	
Parameter	**Black**
Total ash % (m/m) (on dry basis) max.	7.0
Acid-insoluble ash % (m/m) (on dry basis) max.	1.7
Moisture % (m/m) max.	15.0
Volatile oil ml/100g (on dry basis) min.	1.0
Piperine % (m/m) (on dry basis) min.	3.5

Trace metals
Levels of lead, arsenic and tin in herbs and spices are currently controlled by national legislation. ESA guidelines are as follows:

Trace metal	Maximum level MG/KG
Arsenic	5
Lead	10
Copper	20
Zinc	50
Tin	200

Note: Statutory Instruments are subject to amendment and reference should be made to those currently in force

6. Packing

Whole black pepper and ground black pepper shall be packed in clean, sound, dry packages, made of a material which does not affect the product.

OLEORESIN BLACK PEPPER (Soluble)

Definition
- Obtained by solvent extraction of the dried unripe berries of Piper nigrum, with subsequent removal of solvent.

Appearance and odour
- Homogeneous, dark green, olive green, pourable emulsion with the characteristic aroma of black pepper.

Piperine content
- 12 to 13% (UV spectrophotmetric method)

Volatile oil
- 3% to 4%

Dispersibility
- Dispersible in water and vegetable oils.

Spice equivalent
- One part of oleoresin can replace six to eight parts of freshly ground pepper.

Residual solvent
- < 10 ppm

Storage
- Store preferably in tight full containers in a cool place protected from light.

Packing
- Preferably glass (carboys) or suitable steel lined drums.

Note: Decolourised pepper oleoresin can be obtained by the partial removal of chlorophyll.

OLEORESIN BLACK PEPPER

Definition	• Obtained by solvent extraction of the dried unripe berries of Piper nigrum.
Appearance and odour	• The viscous oleoresin is olive-green to olive-brown in colour with aroma and taste characteristic of black pepper.
Piperine content	• 40 to 42% (UV spectrophotmetric method)
Volatile oil	• 20 to 28 ml/100g
Spice equivalent	• 4 to 5 kg of oleoresin replace 100 kg of black pepper
Residual solvent	• < 10 ppm
Storage	• Store preferably in tight full containers in a cool place protected from light.
Packing	• Pail, glass (carboys) or suitable steel lined drums.

OIL OF BLACK PEPPER

Definition Oil of black pepper	• The oil obtained by steam distillation of the whole or broken unripe fruits of Piper nigrum.
Appearance and colour	• Clear, mobile liquid. Almost colourless to bluish-green.
Odour and taste	• Characteristic, recalling that of whole pepper. Mild, lacking the pungency of the spice.
Relative density at 20/20°C	• Minimum: 0.870, Maximum: 0.890
Refractive index at 20°C	• Minimum: 1.480, Maximum: 1.492
Optical rotation at 20°C	• Range from - 16° to + 4°
Miscibility with 95 % (*V/V*) ethanol at 20°C	• The miscibility with 95% (*V/V*) at 20°C ethanol shall be 1 volume in 3 volumes to give a clear solution.
Ester value	• Maximum: 11
Packing	• Aluminium or glass (40 kg carboy).
Storage	• Store in full, tight containers protected from light.

SAFFRON

1. Description

Saffron in filaments: Stimgas of Crocus sativus, dried, dark in red colour and rolled into cornets, serrated or indented at the distal end. The stigmas may be either isolated or joined in twos or threes at the end of a portion of the style (which is also red in colour).

Yellow filaments: Dried yellow stigmas of flowers of Crocus sativus.

Floral waste: Yellow filaments, pollen, stamens, parts of ovary and other parts of the flower of Crocus sativus.

Extraneous matter: Leaves, stems, chaff and other vegetable matter. The only mineral matter permitted is sand, earth and dust.

Saffron in whole filaments is classified into three categories, as shown below.

Classification of saffron in whole filaments.

Characteristics	Category 1 type "Mancha"	Category II type "Rio"	Category III type "Sierra"
Floral waste % (m/m) max.	7	13 to 15	17 to 20
Extraneous matter % (m/m) max.	0.5	1	1

2. Flavour

The flavour of saffron shall be specific, slightly bitter and a little pungent. The product shall be free from foreign flavours.

3. Freedom from insects, moulds, etc

Saffron shall be free from living insects, and shall be practically free from moulds, dead insects, insect fragments and rodent contamination visible to the naked eye (adjusted if necessary for abnormal vision) using the required magnifying instrument in each particular case.

4. Chemical requirements

Saffron in filaments or in powder form shall comply with the requirements laid down in the following table.

Chemical requirements for saffron in filaments or in powder form.

Characteristics	Requirements	
	Saffron in filaments	Saffron in powder form
Water and volatile matter at 103°C, % (m/m) max.	14	8
total ash, % (m/m), on the dry basis:		
max.	8	8
min.	5	5
Ash insoluble in HC1, % (m/m) on the dry basis:		
Category I, max.	1.0	1.0
Categories II and III, max.	1.5	1.5
Extract soluble in cold water, % (m/m), on the dry basis:		
max.	65	65
min.	55	55
Total nitrogen, % (m/m), on the dry basis:		
max.	3.0	3.0
min.	2.0	2.0

5. Packing

Saffron in filaments and in powder form shall be packed in rigid, water-tight, sound and clean containers which shall be of a material that can have no influence on the saffron.

TURMERIC (*Curcuma longa*) (whole or ground)

1. Definition

Dried turmeric, whole or ground (powdered), processed for food use and derived from the cured and dried primary or secondary rhizomes, called commercially bulbs or fingers, of the perennial tropical plant *Curcuma longa*.

Whole turmeric

Whole turmeric is the cured (boiled) primary or secondary rhizomes of *curcuma longa* which are sun-dried and polished after curing. Polishing is carried out by tumbling the rhizomes together in drums after drying. Whole turmeric is graded according to its type, fingers or bulbs, which have appropriate use, and is screened to remove dust and small pieces. A common grading is < 5 % (m/m) of rhizomes under 15 mm in length. Bulbs tend to give a lighter colour than fingers. The size, shape and colour are characterised by the type, sub-species and country of origin. Turmeric for colouring uses is not polished.

The fingers should be hard and brittle and break with a crack.

Ground tumeric

Ground tumeric is produced by grinding whole turmeric with no additions. The colour of the ground material is pale yellow to orange-brown dependent on regional origins within a country or the country or origin. It has dye-like properties and is bleached by direct light.

Origins

Commonly traded origins of turmeric are India, China, Bangladesh, Jamaica, Nepal, Haiti and Peru (in approximate order of darkening yellowness of the ground material).

2. Odour and flavour

Turmeric shall be free from mustiness, rancidity and other foreign odours and tastes when examined by sensory analysis. Whole or ground turmeric shall have the characteristic odour of the spice which is warm, aromatic and earthy, but not musty. The flavour is mild, warm, sweet, and slightly earthy. The ground spice has more flavour and an intense yellow colour which easily colours other materials.

3. Freedom from insects, moulds, etc

Whole tumeric shall be free from living insects and mould growth when inspected visually.

Note: It should be free in practical terms from dead insects, insect fragments and rodent contamination visible to the naked eye (corrected if necessary for abnormal vision). Minimum ASTA cleanliness specifications are shown in Table 13.

Microbiological details

Generally these are specified when the material is required for further processing. Microbiological counts may be reduced by the use of legally permissible treatments.

Salmonella abs. in (at least) 25g

Yeast and moulds: target 10^5/g; absolute maximum 106/g

E Coli.: target 10^2/g; absolute maximum 10^3/g

Other requirements to be agreed between buyer and seller

Infestation

Turmeric may be affected by worms when the holes are evident. In cases of infestation, fumigation may be effective with subsequent kibbling and sifting prior to grinding.

4. Extraneous matter

Whole turmeric

The content of any extraneous and foreign matter in whole turmeric shall not be greater than 0.5 % (m/m). Note: Foreign matter found in whole turmeric includes chaff, dried leaves, soil, stones.

Whole turmeric shall not contain greater than 3 % (m/m) defective turmeric fingers. Note: The following should be considered as defective turmeric fingers: worm-eaten fingers; hollow fingers caused by insect attack; shrivelled fingers due to poor rhizome development; Scorched fingers due to boiling at the curing stage.

Ground turmeric

Ground turmeric shall be free from visible extraneous matter. Note: An abnormal extraneous foreign matter content in ground turmeric may be indicated by a high acid-insoluble ash. However, ground turmeric has also in the past been commonly adulterated with starch (which would lower the acid-insoluble ash).

5. Chemical composition

The chemical composition of whole and ground turmeric shall conform to the requirements specified in the table below.

Chemical composition of dried turmeric, whole and ground	
Parameter	**Requirement**
Total ash % (m/m) (on dry basis) max.	8.0
Acid-insoluble ash % (m/m) (on dry basis) max	2.0 (whole) 2.5 (ground)
Moisture % (m/m) max.	12.0
Volatile oil ml/100 g (on dry basis) min.	2.5 (whole) 1.5 (ground)

Particle size (mesh)

For ground material, particle size is generally quoted as the percentage by mass of material that passes through a test sieve. Turmeric is usually finely ground, to maximise its colouring effect. However, mesh sizes from as coarse as 30 mesh (500 µm) to 150 mesh (100 µm) are sometimes specified.

Colour

This may be visual or extracted and specifications may be set for either on the ground product.

Visual: Turmerics are blended to match a visual colour standard.

Extracted: This is a measurement of the colouring power of turmeric by measurement of the curcumin(oid) content. Darker origins usually have higher curcumin contents.

6. Packaging

To avoid condensation, a container that is permeable to air shall be used for packing and storing bulk rhizomes. Woven polypropylene bags are widely used.

Ground material should be packed in new, sound, clean, hemetically sealed containers made of a material that does not affect the colour, odour or the flavour of the product.

OLEORESIN TURMERIC (INSOLUBLE)

Description	• Obtained by solvent extraction of the dried rhizomes of *Curcuma longa*, with subsequent removal of solvent. Oleoresin turmeric is evaluated strictly on colour value.
Appearance	• A viscous, yellowish to orange red pourable emulsion.
Curcumin content	• Varies from 35% to 45%
Colour value	• 5,000 to 14,000 units (EOA Method 271)
Odour	• Characteristic turmeric odour with an underlying nut like character and bitter after taste.
Spice equivalent	• One part of oleoresin with 35% curcumin can replace 15 to 16 parts of freshly ground turmeric powder
Residual solvent	• < 30 ppm
Storage	• Storage preferably in full tight containers in a cool place, protected from light.
Additives	• Only pure extract of turmeric.

OLEORESIN TURMERIC (SOLUBLE)

Description	• Obtained by solvent extraction of the dried rhizomes of *Curcuma longa*, with subsequent removal of solvent.
Appearance and odour	• Homogeneous, yellowish to orange red pourable emulsion with mild aroma of turmeric.
Dispersal	• Dispersible in water and vegetable oils.
Curcumin content	• Varies: approximately 5 to 10% curcumin (UV spectrophotometric method).
Spice equivalent	• One part of oleoresin with 8% curcumin can replace three to five parts of freshly ground turmeric powder.
Residual solvent	• < 20 ppm
Storage	• Storage preferably in full tight containers in a cool place, protected from light.
Volatile oil content	• Varies from 8.0 to 8.5% (UV spectrophotometric method)
Packing	• preferably glass (carboys) or suitable steel lined containers.

VANILLA (*Vanilla fragrans*)

1. Description

Vanilla belonging to the species *Vanilla fragrans* syn. *Vanilla planifolia* and for certain forms of vanilla obtained from seeds, which may be hybrids of *Vanilla fragrans.*

Four commercial forms are known:

a) **vanilla pods,** consisting of whole pods which may be split;

b) **cut vanilla,** consisting of parts of pods, split or not, and deliberately cut or broken;

c) **vanilla in bulk,** consisting of vanilla in pods and cut vanilla;

d) **vanilla powder,** obtained by grinding vanilla pods without additives after drying.

General characteristics

Vanilla pods

Vanilla pods shall:

a) have the characteristics corresponding to their qualitative category.

b) have undergone a suitable treatment with a view to developing their flavour.

c) have a maximum moisture content conforming to that of their qualitative category.

The pods may be rimy, and may have a mark at the bottom one-third of their length.

They shall not:

a) have undergone any treatment which would induce a change in their natural vanillin content or in the content of any other constituent of the flavour;

b) be moth-eaten, mouldy, creosoted, "poiquees" (blistered), oxidized;

c) have an odour which is not typical of vanilla.

Cut vanilla

Cut vanilla shall:

a) be prepared from vanilla pods meeting the requirements specified:

b) be sound and of good specific flavour;

c) have a maximum moisture content of 30%;

d) be chocolate brown to dark brown in colour.

Vanilla in bulk

Vanilla in bulk shall:

a) be obtained from vanilla pods meeting the requirements specified in the General Characteristics, or from pieces of pods meeting the requirements specified;

b) be of sound and specific flavour;

c) have a maximum moisture content of 30%;

d) be chocolate brown to dark brown in colour.

Pods or pieces are generally wooded, and may have several large stains.

Vanilla powder

Vanilla powder shall:

a) be obtained from vanilla pods, cut vanilla or vanilla in bulk, outlined in the respective general characteristics.

b) have a maximum moisture content of 20%;

c) be sufficiently fine to pass through a sieve of aperture size 1.25 mm;

d) be brown or dark brown in colour;

e) have the natural and very marked flavour of vanilla.

It shall not have:

a) undergone any treatment which could induce a change in its natural vanillin content or in the content of any other constituents of the flavour;

b) contain any extraneous matter;

c) have a musty, creosote or any other odour which is not typical of vanilla.

2. Qualitative classification of vanilla pods

Category 1: A_1 Non-split

Pods which are whole, sound, supple and full, of typical flavour, of uniform chocolate brown to dark brown colour, and without any other stain than the mark. Maximum moisture content: 38%.

B_1 Split

Pods of the same characteristics as those of category A_1, but split.

Category 2: A_2 Non-split

Pods which are whole, sound, supple and full, or typical flavour, of uniform chocolate brown to dark brown colour, and which may have a few stains, the total length of which does not exceed one-third of the length of the pod. Maximum moisture content: 38%.

B_2 Split

Pods of the same characteristics as those of category A_2, but split.

Category 3: A_3 Non-split

Pods which are whole, sound, more or less supple, of typical flavour, chocolate brown to dark brown in colour, and which may have numerous stains the total length of which does not exceed half the length of the pod, as well as a few red filaments which do not exceed one-third of the length of the pod. Maximum moisture content: 30%.

B_3 Split

Pods of the same characteristics as those of the category A_3, but split.

A_4 Non-split Category 4:

Pods which are whole, sound, dry or wooded, of typical flavour, reddish in colour and which may have several stains the total length of which does not exceed half the length of the pod. Maximum moisture content: 25%.

B_4 Split

Pods of the same characteristics as those of category A_4, but split.

3. Freedom from insects, moulds, etc

Vanilla shall be free from insects and moulds, living or dead, when inspected visually. It should be free in pratical terms from insect fragments and rodent contamination visible to the naked eye (corrected if necessary for abnormal vision).

Where moulds develop in cured vanilla during storage, the mouldy beans should be removed, cleaned, re-dried, and then rebundled. In severe cases the mouldy part should be cut off and discarded.

Infestation

Infestations of mites may occur on poor quality and poorly cured vanilla during storage. All beans should be removed from the container, damaged beans or parts of beans should be removed and discarded, the box should be fumigated or scorched with a flame, wrapping materials burnt, and the sound beans heated in an oven at 65^{o}C to 70^{o}C for 10 minutes.

4. Extraneous matter

Vanilla should be free from any extraneous matter.

5. Packing

Vanilla pods

Vanilla pods shall be in packets (bundles) of pods of the same length, and

shall be put in clean, sound watertight containers of a material that will have no effect on the product (for example, tin-plate or wooden boxes lined with waxed paper, or cardboard boxes lined with plastic etc).

The contents of each of these containers shall be uniform from the point of view of category (grade) of vanilla.

A series of these elementary containers, the contents of which are homogenous, constitutes a lot; a consignment is constituted either by a homogenous lot or by several lots belonging to different categories.

Cut vanilla

Cut vanilla shall be put in packets of pods of the same length when they are sufficiently long, and in bulk when they cannot be put in bundles.

They shall then be placed in clean, sound and watertight containers of a material that will have no effect on the product.

Cut vanilla shall be uniform from the botanical point of view

Vanilla in bulk

Vanilla in bulk shall be put in clean, sound and watertight containers of a material that will have no effect on the product.

Vanilla Powder

Vanilla powder shall be put in clean, sound and watertight containers of a material which will have no effect on the product.