

PAKISTAN STANDARD

**MARMALADE
(2nd REVISION)**



(ALL RIGHTS RESERVED)
PAKISTAN STANDARDS AND QUALITY CONTROL AUTHORITY
Standards Development Centre,
PSQCA Complex, Standardization Wing II, 1st Floor, Plot - ST-7/A, Block-3,
Scheme No.36, Gulistan-e-Jauher, Karachi

**PAKISTAN STANDARD SPECIFICATION
FOR
MARMALADE (2nd REV)**

0. FOREWORD

- 0.1 This Pakistan Standard was adopted by the Pakistan Standards & Quality Control Authority, Standards Development Centre on **30.03.2010** after the draft finalized by the Fruits and Vegetable Products Technical Committee, had been approved by the National Standards Committee for Agricultural and Food Products.
- 0.2 Pakistan Standards & Quality Control Authority laid down this standard specification on Marmalade (PS:514) was established in 1964, first revised in 1985 and now the committee felt it necessary to revise in the light of latest development made in the Industries
- 0.3 The assistance has been derived from CAC/WHO Standard 296 is acknowledged with thanks.
- 0.4 In the preparation of this Standard the views of the manufacturers, consumers, technologists and testing authorities have been taken into consideration.
- 0.5 For the purpose of deciding whether a particular requirement of this Standard is complied with the final value, observed or calculated expressing the result of a test analysis, shall be round off in accordance with PS: 103 Methods of Rounding off Numerical Values; the number of significant places retained in the rounded off value shall be the same as that of the specified value in this Standard.

1. SCOPE

- 1.1 This Standard applies to Marmalades, as defined in clause 2 below and offered for direct consumption, including for catering purposes or for re-packing if required.
- 1.2 This standard does not apply to:
- (a) products when indicated as being intended for further processing such as those intended for use in the manufacture of fine bakery wares, pastries or biscuits;
 - (b) products which are clearly intended or labeled as intended for special dietary uses;
 - (c) reduced sugar products or those with a very low sugar content;
 - (d) products where the foodstuffs with sweetening properties have been replaced wholly or partially by food additive sweeteners.
- 1.3 The terms, "preserve" or "conserve" are sometimes used to represent products covered by this Standard. The use of the terms "preserve" and "conserve" are thereby required to comply with the requirements for jam as prescribed in PS:2096-2010 .

2. Description

2.1 Product Definitions

2.1.1 Citrus Marmalade

The product obtained from a single or a mixture of citrus fruits and brought to a suitable consistency. It may be made from one or more of the following ingredients: whole fruit or fruit pieces, which may have all or part of the peel removed, fruit pulp, puree, juice, aqueous extracts and peel and is mixed with foodstuffs with sweetening properties as defined in Clause 2.2, with or without the addition of water.

2.1.2 Non Citrus Marmalade

The product prepared by cooking fruit, whole, in pieces, or crushed adding foodstuffs with sweetening properties as defined in Clause 2.2 to obtain a semi liquid or thick liquid.

2.1.3 Jelly Marmalade

The product described under citrus marmalade from which all the insoluble solids have been removed but which may or may not contain a small proportion of thinly cut peel.

2.2 Other Definitions

For the purposes of this Standard the following definitions shall also apply:

| Product | Definition |
|--|--|
| Fruit | Means all of the recognised fruits and vegetables that are used in making Marmalade, including but not limited to those fruits mentioned in this Standard, either fresh, frozen, canned, concentrated, dried, or otherwise processed and/or preserved which shall be sound, wholesome and clean and of suitable ripeness but free from deterioration and containing all its essential characteristics except that it has been trimmed, sorted and otherwise treated to remove any blemishes, bruises, toppings, tailings, cores, pits (stones) and may or may not be peeled. |
| Fruit Pulp | The edible part of the whole fruit, if appropriate less the peel, skin, seeds, pips, etc. which may have been sliced or crushed but which has not been reduced to a puree. |
| Fruit Puree | The edible part of the whole fruit, if appropriate, less the peel, skin, seeds pips and similar which has been reduced to a puree by sieving or other processes. |
| Aqueous extracts | The aqueous extract of fruits which subject to losses necessarily occurring during proper manufacture, contains all the water-soluble constituents of the fruit concerned. |
| Fruit Juices and concentrates | Products as defined in the Codex General Standard for Fruit Juices and Nectars PS: 4973 |
| Citrus fruit | Fruit of the Citrus L. family. |
| Foodstuffs with sweetening properties | (a) All sugars as defined in the Pakistan Standard for Refined Sugars & White Sugar (PS: 1822) (b) Sugars extracted from fruit (fruit sugars); (c) Fructose syrup; (d) Brown sugar (PS: 3409) (e) Honey as defined in the Pakistan Standard for Honey PS: 1934 |

3 ESSENTIAL COMPOSITION AND QUALITY FACTORS**3.1 COMPOSITION****3.1.1 Basic Ingredients**

- (a) Fruit ingredient, as defined in clause 2.2, in quantities laid down in Clauses 3.1.2 (a) – (b) below.

In the case of jellies the quantities where appropriate shall be calculated after deduction of the weight of water used in preparing the aqueous extracts.

- (b) Foodstuffs with sweetening properties as defined in Clause 2.2.

3.1.2 Fruit Content**(a) Citrus Marmalade**

The product, as defined in Clause 2.1.3, shall be produced such that the quantity of citrus fruit ingredients used in the manufacturing of 1000 g of finished product must not be less than 200 g of which at least 75 g must be obtained from the endocarp*. In addition the term "jelly marmalade" as defined in Clause 2.1 may be used when the product contains no insoluble matter but may contain small quantities of thinly cut peel.

** In the case of citrus fruit the endocarp means the fruit pulp (or flesh) which is often subdivided into segments and vesicas containing the juices and the seeds.*

(b) **Non Citrus Marmalade**

The product, as defined in Clause 2.1.2, shall be produced such that the quantity of fruit ingredient used as a percentage of the finished product shall not be less than 30% in general, with the exception of the following fruits:

- 11% for ginger.

3.2 **SOLUBLE SOLIDS**

The soluble solids content for the finished products defined in Clauses 3.1.2 (a) – (b) shall in all cases be between 40 to 65% or less.

AOAC 932.14C ISO 2173:2003(Codex General Method for processed fruits and vegetables)

3.3 **QUALITY CRITERIA**

3.3.1 **General Requirements**

The end product shall be of an appropriate gelled consistency, having normal colour and flavour appropriate to the type or kind of fruit ingredient used in the preparation of the mixture, while taking into account any flavour imparted by optional ingredients or any permitted colouring agents used. It shall be free from defective materials normally associated with fruits. Jelly and extra jelly shall be reasonably clear or transparent.

3.3.2 **Defects and Allowances for Jams**

The products covered by this Standard shall be largely free of defects such as plant material skins (if peeled), stones and pieces of stones and mineral matters. In the case of berry fruits, Dragon fruit and passion fruit, seeds shall be considered a natural fruit component and not a defect unless the product is presented as "seedless".

3.4 **CLASSIFICATION OF "DEFECTIVES"**

A container that fails to meet one or more of the applicable quality requirements as set out in clause 3.3.1 should be considered as a "defective".

3.5 **LOT ACCEPTANCE**

A lot should be considered as meeting the applicable quality requirements referred to in Clause 3.3.1 when the number of "defectives" as defined in Clause 3.4 does not exceed the acceptance number (c) of the appropriate sampling plan with an AQL of 6.5.

4 **FOOD ADDITIVES**

Only those food additive classes listed below are technologically justified and may be used in products covered by this Standard. Within each additive class only those food additives listed below, or referred to, may be used and only for the functions, and within limits, specified.

4.1 Acidity regulators, antifoaming agents, firming agents, preservatives and thickeners used in accordance with Table 3 of the Codex General Standard for Food Additives (CODEX STAN 192-1995) are acceptable for use in foods conforming to this Standard.

4.2 **ACIDITY REGULATORS**

| INS No | Name of the Food Additive | Maximum Level |
|--|---------------------------|---------------|
| 334; 335(i), (ii); 336(i), (ii),: 337 | Tartrates | 3,000 mg/kg |

4.3 **ANTIFOAMING AGENTS**

| INS No | Name of the Food Additive | Maximum Level |
|--------|---------------------------|---------------|
| 900a | Polydimethylsiloxane | 10 mg/kg |

4.4 **COLOURS**

| INS No | Name of the Food Additive | Maximum Level |
|-----------------------|--|------------------------------------|
| 100(i) | Curcumin | 500 mg/kg |
| 101(i), (ii) | Riboflavins | 200 mg/kg |
| 104 | Quinoline Yellow | 100 mg/kg |
| 110 | Sunset Yellow FCF | 300 mg/kg |
| 120 | Carmines | 200 mg/kg |
| 124 | Ponceau 4R (Cochineal Red A) | 100 mg/kg |
| 129 | Allura Red AC | 100 mg/kg |
| 133 | Brilliant Blue FCF | 100 mg/kg |
| 140 | Chlorophyll | GMP |
| 141(i), (ii) | Chlorophylls and Chlorophyllins, Copper Complexes | 200 mg/kg |
| 143 | Fast Green FCF | 400 mg/kg |
| 150a | Caramel I-Plain | GMP |
| 150b | Caramel II Caustic Sulfite Process | 80,000 mg/kg |
| 150c | Caramel III – Ammonia Process | 80,000 mg/kg |
| 150d | Caramel IV – Sulfite Ammonia Process | 1,500 mg/kg |
| 160a(i) | Carotenes, <i>beta</i> -, (synthetic) | 500 mg/kg singly or in combination |
| 160a(iii) | Carotenes, <i>beta</i> - (<i>Blakeslea trispora</i>) | |
| 160e | Carotenal, <i>beta</i> -apo-8'- | |
| 160f | <i>Beta</i> -apo-8'-Carotenoic acid, ethyl esters | |
| 160a(ii) | Carotenes, <i>beta</i> - (vegetable) | 1,000 mg/kg |
| 160d(i), 160d(iii) | Lycopenes | 100 mg/kg |
| 161b(i) | Lutein from <i>Tagetes erecta</i> | 100 mg/kg |
| 162 | Beet Red | GMP |
| 163(ii) | Grape Skin Extract | 500 mg/kg |
| 172(i)-(iii) | Iron Oxides | 200 mg/kg |

4.5 **PRESERVATIVES**

| INS No | Name of the Food Additive | Maximum Level |
|---------------------------|---------------------------|--|
| 200-203 | Sorbates | 1,000 mg/kg |
| 210-213 | Benzoates | 1,000 mg/kg |
| 220-225, 227, 228, 539 | Sulfites | 50 mg/kg as residual SO ₂ in the end product, except when made with sulfited fruit when a maximum level of 100 mg/kg is permitted in the end product. |

4.6 FLAVOURINGS

The following flavorings are acceptable for use in foods conforming to this Standard when used in accordance with good manufacturing practices and in compliance with the Codex Guidelines for the Use of Flavorings (CAC/GL 66-2008): natural flavoring substances that are extracted from the named fruits in the respective product; natural mint flavor; natural cinnamon flavor; vanillin, vanilla or vanilla extracts.

5 CONTAMINANTS

5.1 The products covered by this Standard shall comply with the maximum levels of the Codex General Standard for Contaminants and Toxins in Food and Feed (Codex Stan 193)

5.2 The products covered by this Standard shall comply with the maximum residue limits for pesticides established by the PSQCA or any other internationally recognized standard.

6 HYGIENE

6.1 It is recommended that the products covered by the provisions of this Standard be prepared and handled in accordance with the appropriate Clause of the Pakistan Standard Code of Practice – General Principles of Food Hygiene (PS:3944) and other relevant Pakistan texts such as codes of hygienic practice and codes of practice.

6.2 The products should comply with any MICROBIOLOGICAL CRITERIA established in accordance with the Principles for the Establishment and Application of Microbiological Criteria for Foods (CAC/GL 21-1997) or may apply following limits.

Microbiological Limits

| S.# | Organism | Limites |
|-----|---------------|-----------------------|
| 1 | Coliforms | Less than 10 cfu/gram |
| 2 | Yeast & Molds | Less than 10 cfu/gram |

7 WEIGHTS AND MEASURES

7.1 FILL OF CONTAINER

7.1.1 Minimum Fill

The container should be well filled with the product which should occupy not less than 90%(minus any necessary head space according to good manufacturing practices).of the water capacity of the container. The water capacity of the container is the volume of distilled water at 20°C which the sealed container will hold when completely filled.
CAC/RM 46-1972 (Codex General Method for processed fruits and vegetables) see Annexure -A

7.1.2 Classification of "Defectives"

A container that fails to meet the requirement for minimum fill of clause 7.1.1 should be considered as a "defective".

8 LABELLING

In accordance with the PS: 1485 for the Labelling of Prepackaged Foods.

8.1 LABELLING OF NON-RETAIL CONTAINERS

Information for non-retail containers shall be given either on the container or in accompanying documents, except that the name of the product, lot identification, and the name and address of the manufacturer, packer, distributor or importer, as well as storage instructions, shall appear on the container. However, lot identification, and the name and address of the manufacturer, packer, distributor or importer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

9. PACKING AND MARKING

PACKING — The product shall be packed in hygienically suitable containers.

MARKING — Each container shall be clearly marked or labeled with following particulars.

- a) Name of the product*.
- b) Name and address of the manufacturer.
- c) Net weight /volume (Average weight principle will be applicable).
- d) Date of manufacture & expiry.
- e) List of Ingredients** (Halal).
- f) Pakistan Standard number, Mark & Licence number.
- g) Batch or code number.

*The name of the product shall provide an indication of the fruit(s) used in descending order of weight of the raw material used. In the case of products made with three or more different fruits the alternative phrase "mixed fruit" or similar wording or by the number of fruits may be used.

The name of the product may also provide an indication of the variety of fruit and /or may include an adjective describing the character e.g. "seedless", "shred less".

**The products covered by this Standard may also give an indication of the fruit ingredient content in the form of "prepared with X g of fruit per 100 g" and the total sugar content with the phrase "total sugar content X g per 100 g". If an indication of fruit content is given this should relate to the quantity and type of fruit ingredient used in the product as sold with a deduction for the weight of any water used in preparing the aqueous extracts.

**If ascorbic acid is added to preserve colour, its presence shall be declared in the list of ingredients as ascorbic acid.

10. SAMPLING

PS: 630 for Methods of Sampling and Test for Fruits & Vegetable Products shall apply.

11. METHODS OF ANALYSIS

- 11.1 The relevant Testing Method of ISO, CAC and of other internationally recognized standard methods may be taken into account for analysis purpose.

Annexure -A**DETERMINATION OF WATER CAPACITY OF CONTAINERS
(CAC/RM 46-1972)****1 SCOPE**

This method applies to glass containers*.

2 DEFINITION

The water capacity of a container is the volume of distilled water at 20°C which the sealed container will hold when completely filled.

3 PROCEDURE

3.1 Select a container which is undamaged in all respects.

3.2 Wash, dry and weigh the empty container.

3.3 Fill the container with distilled water at 20°C to the level of the top thereof, and weigh the container thus filled.

4 CALCULATION AND EXPRESSION OF RESULTS

Subtract the weight found in 3.2 from the weight found in 3.3. The difference shall be considered to be the weight of water required to fill the container. Results are expressed as ml of water.

*For determination of water capacity in metal containers the reference method is ISO 90.1:1986
