



Processing of Guava Beverages



**Indian Institute of Food Processing Technology
Thanjavur**

Beverages

Beverages can be classified into two groups: (a) Non- alcoholic or unfermented beverages which includes pure or natural juice, sweetened juice, ready to serve, nectar, squash, crush, syrup, cordial, barley water, carbonated beverage, fruit juice concentrate and fruit juice powder and (b) Alcoholic and fermented beverage which includes wine and cider etc. The quality of fruit and their variety should have firm ripe fruit with high pulp content and low fibre, excellent flavor, taste and pulp colour and high total soluble solids with low acidity for beverages.

Guava Ready - To - Serve Beverage

Ready-to-serve beverages are the most popular bottled products which contains at least 10% fruit juice and 10% total soluble solids. Ready –to-serve beverage can be made from a wide variety of fruits such as mango, guava, bael, citrus, pineapple, litchi, papaya and plum. FSSAI specifications for ready-to-serve beverage are: (i) minimum percent of TSS 10 and (ii) minimum 10 % of fruit juice. The permissible limit of preservative as sulphur dioxide 70ppm and as benzoic acid 120ppm.

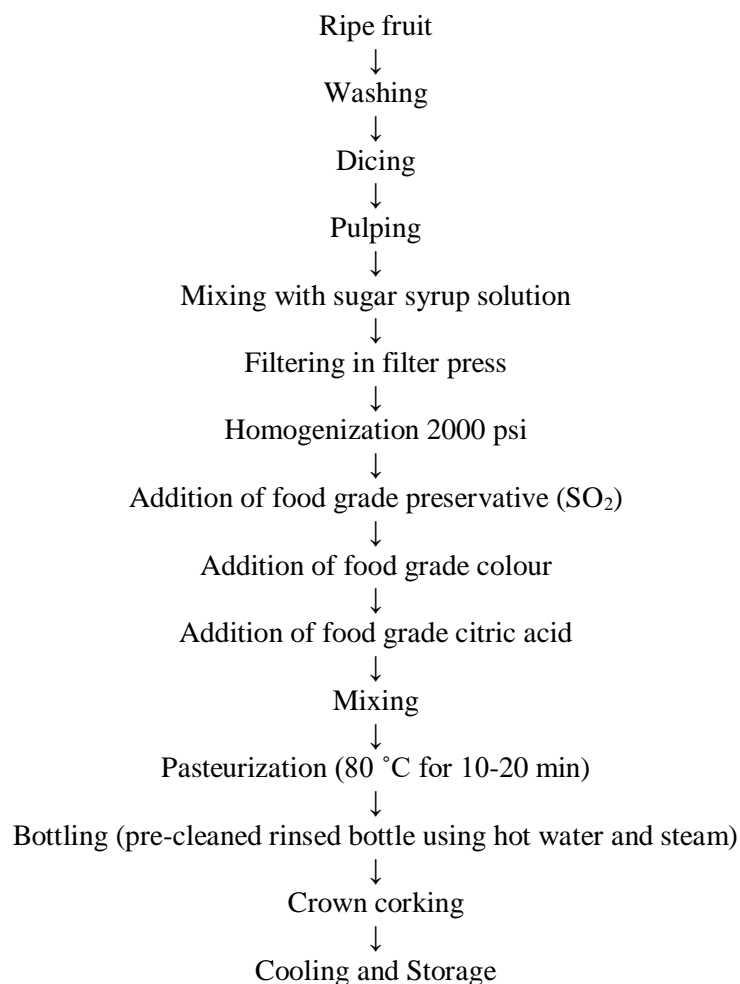
FSSAI specification

Pulp	10%,
Total soluble solids	10 to 15° brix
acidity	0.3 – 0.5%
sodium metabisulphite	70ppm
Sodium Benzoate –	120ppm (For Coloured fruits)

Ingredients

Mango pulp	- 1 litre
Sugar	- 600g
Water	- 2.5 litre
Citric acid	- 5 g

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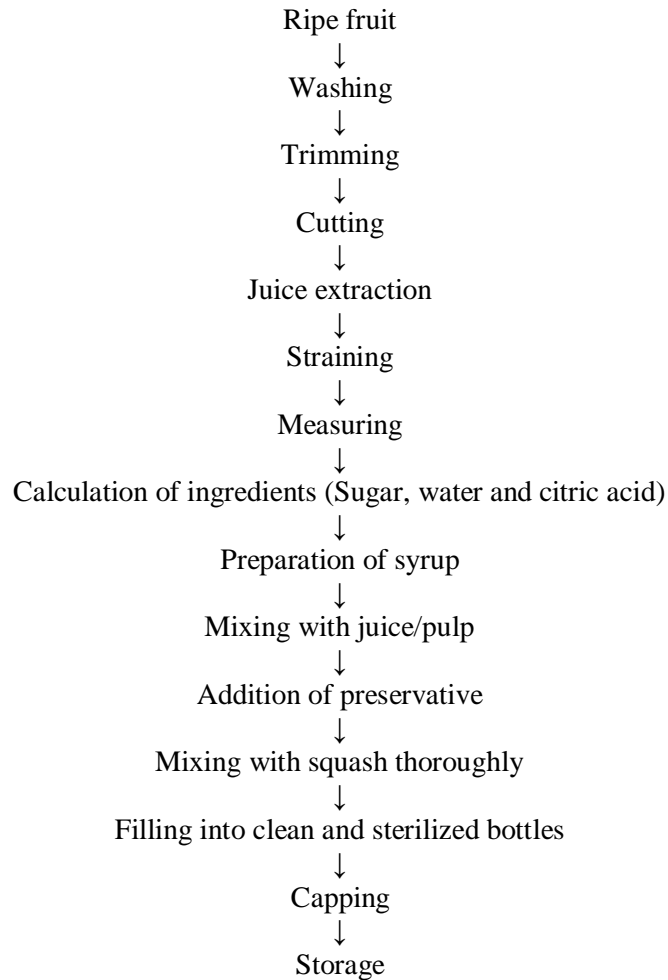


Squash

A type of fruit beverage which contain at least 25% percent juice and 45% total soluble solids. It also contains about 1% acidity and 350ppm sulphur dioxide and 600ppm sodium benzoate (for coloured juices). It is diluted before being served in the proportion of 1:3.

Squash can be prepared from a wide variety of fruit viz., mango, mandarin orange, lime/lemons, guava, aonla, pineapple, papaya, bael, litchi, phalsa, karonda, jamun, pomegranate, plum, etc. FSSAI specifications for squash are: (i) minimum per cent of total soluble solids 40 and (ii) minimum per cent of fruit juice 25. The permissible limit of the preservative as sulphur dioxide 350 ppm or as benzoic acid 600ppm.

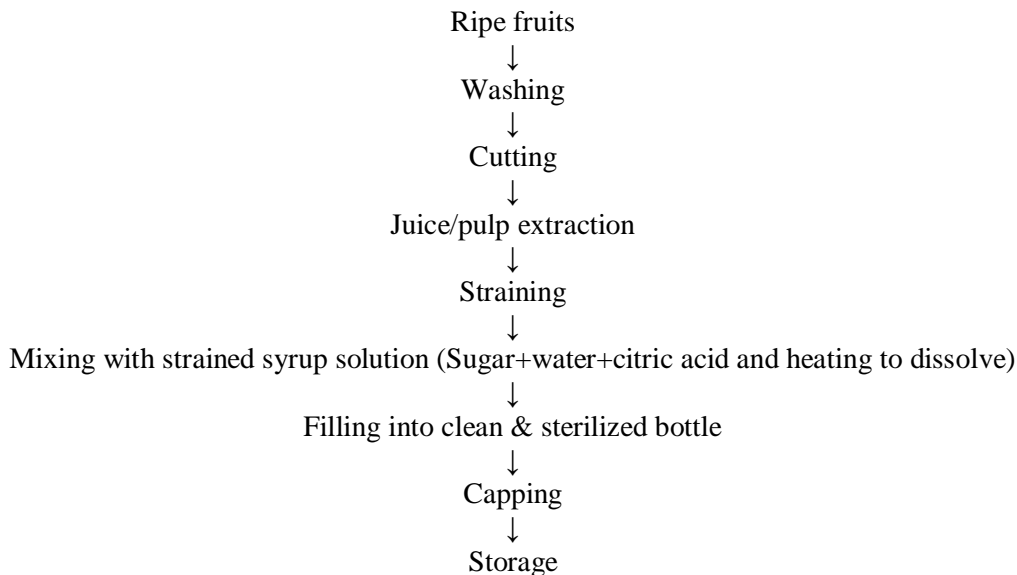
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Syrup

A type of fruit beverage contains at least 25% fruit juice/pulp and 66% total soluble solids with about 1.3% acidity. FSSAI specifications for syrup are: (i) minimum percentage of total soluble solids 65 and (ii) minimum percentage of fruit juice 25. The permissible limit of the preservative as sulphur dioxide and benzoic acid are same as mentioned for squashes. Syrup can also be prepared from almond. The technique for preparation of syrup beverage is as below:

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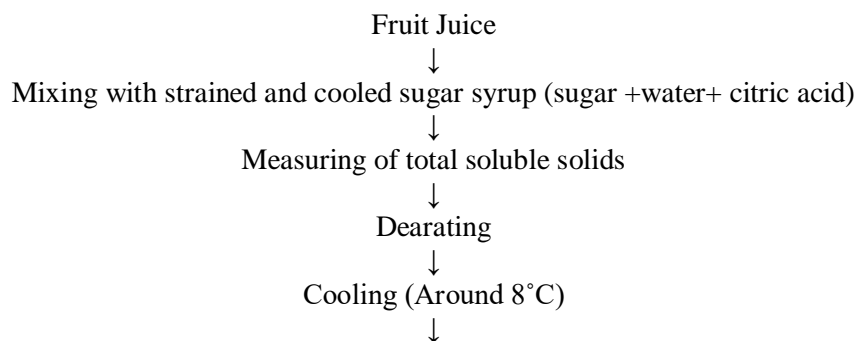


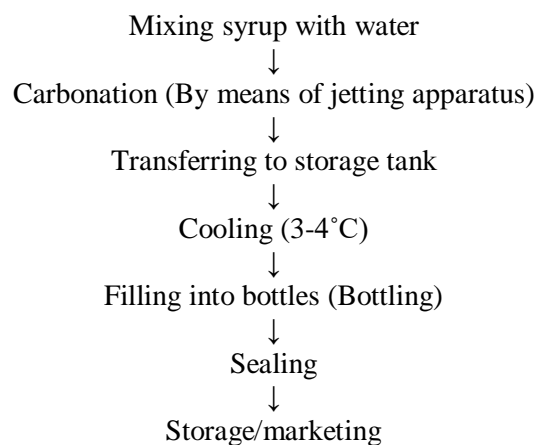
Carbonated Beverage:

Most of the carbonated beverages are based on synthetic, colouring and flavouring agents which are potentially allergenic. Inclusion of fruit juice or fruit juice based carbonated beverage not only imparts its characteristic flavor, colour & taste but also imparts nutritional value. Either fruit juices can be directly carbonated or fruit juice concentrate can be used for carbonation. Fruit based syrup such as pineapple, orange, lime, grape and guava can be used for carbonated soft drink.

Principally fruit juice based carbonated soft drink processing is a procedure with fruit juice, sugar, water, acid and carbon dioxide. The secret of a recipe basis lies in harmonizing the raw materials in such a way that the finished product has refreshing stimulation character. Technique for preparation of carbonated beverage is as below:

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FSSAI STANDARDS AND LIMITS FOR FRUIT BEVERAGES

Product	Preservative	Limits	
Thermally processed fruit beverages/ Fruit drinks/ready to serve fruit beverages	Sulphur dioxide	70 ppm max	
	Benzoic acid	120 ppm max	
	Citric Acid	GMP	
	Fumaric Acid	GMP	
	L-Tartaric Acid	GMP	
	Malic Acid	GMP	
	Ascorbic Acid	GMP	
	Chlorophyll		
	Caramel		
	Curcumin or turmeric		
	Beta-carotene		
	Beta apo-8 carotenal		
	Methylester of Betaapo-8 carotenic acid		
	Ethylester of Betaapo-8 carotenic acid		
	Canthaxanthin		
	Riboflavin, Lactoflavin		
	Annatto		
	Saffron		
	Ponceau 4R		100 ppm maximum
	Carmoisine		
	Erythrosine		
	Tartarazine		
	Sunset Yellow FCF		
	Indigo Carmine		
	Brilliant blue FCF		
	Fast green FCF		

	Natural Flavouring and Natural Flavouring substances / identical substances / artificial substances	Nature flavouring / flavouring	GMP	
	Benzoic Acid and its Sodium, Potassium Salt or both (Calculated as Benzoic Acid)		120 ppm maximum	
	Sulphur di-oxide		70 ppm maximum	
	Sorbic acid its Na, K and Ca salts (calculated as sorbic acid)		300 ppm max	
	Gum Arabic		GMP	
	Potassium Alginates		GMP	
	Pectines		GMP	
	Estergum		100 ppm max	
	Alginic Acid		GMP	
	Gellan Gum		GMP	
	Sodium hexa meta phosphate		1000 ppm max	
Carbonated fruit beverage drink	Citric Acid		GMP	
	L-Tartaric Acid		GMP	
	Malic Acid		GMP	
	Ascorbic Acid		GMP	
	Chlorophyll		GMP	
	Caramel			
	Curcumin or turmeric			
	Beta-carotene			
	Beta apo-8 carotenal			
	Methylester of Betaapo-8 carotenic acid			
	Ethylester of Betaapo-8 carotenic acid			
	Canthaxanthin			
	Riboflavin, Lactoflavin			
	Annatto			
	Saffron			
	Ponceau 4R			100 ppm maximum
	Carmoisine			
	Erythrosine			
	Tartarazine			
	Sunset Yellow FCF			
	Indigo Carmine			
	Brilliant blue FCF			
	Fast green FCF		120 ppm	
Benzoic Acid & its				

	Sodium & Potassium Salt or both (Calculated as Benzoic Acid)	maximum
	Sulphur dioxide (Carry over from fruit products)	70 ppm maximum
	Sorbic Acid and its Cal., Sod., Pot. Salt (calculated as Sorbic Acid)	300 ppm maximum
	Arabic Gum	GMP
	Potassium Alginates	GMP
	Alginic acid	GMP
	Pectines	GMP
	Ester Gum	100 ppm max
	Gellan Gum	GMP
	Sodium hexameta phosphate	1000 ppm max
Squashes, Crushes, Fruit Syrups, Sharbats, Cordial and Barley Water	Sulphur dioxide	350 ppm max
	Benzoic acid	600 ppm max
	Sorbic acid its Na, K and Ca salts (calculated as sorbic acid)	1000 ppm max
	Citric Acid	GMP
	L-Tartaric Acid	GMP
	Fumaric Acid	GMP
	Malic Acid	GMP
	Ascorbic Acid	GMP
	Chlorophyll	200 ppm maximum (on dilution except cordial and barley water)
	Caramel	
	Curcumin or turmeric	
	Beta-carotene	
	Beta apo-8 carotenal	
	Methylester of Betaapo-8 carotenic acid	
	Ethylester of Betaapo-8 carotenic acid	
	Canthaxanthin	
	Riboflavin, Lactoflavin	
	Annatto	
	Saffron	
	Ponceau 4R	200 ppm maximum
	Carmoisine	
	Erythrosine	
	Tartarazine	
Sunset Yellow FCF		
Indigo Carmine		
Brilliant blue FCF		
Fast green FCF		
Natural Flavours and Natural	GMP	

Flavouring substances / identical substances / artificial substances	Nature flavouring / flavouring	
Xanthan gum		0.5 % maximum
Gellan		GMP
Sodium Alginate		GMP
Potassium Alginate		GMP
Calcium Alginate		GMP
Ammonium Alginate		GMP
Sodium hexa meta phosphate		1000 ppm max

Manufacturers List of Food Processing Machineries

S.No.	Name of the Company	Machineries
1	<p>Buhler (India) Pvt. Ltd.</p> <p>13-D, KAIDB Industrial Area</p> <p>Attibele Bangalore-562 107, India.</p> <p>Tel : 080-7820000, Fax : 080-7820001</p>	Fruits & vegetable processing machineries, sorting machinery.
2	<p>Durapak</p> <p>Old No. 4, New No. 12, Norton First Street, Mandaivellipakkam, 1st St, Krishnapuri, Raja Annamalai Puram, Chennai - 600 028</p> <p>Tamil Nadu, India. Tel.: +91 - 44 4303 3533</p>	Band sealing machine
3	<p>Eakcon Systems Pvt Ltd</p> <p>123, Kothavalchavadi Street, West Saidapet</p> <p>Chennai 600 015, Tamil Nadu, India.</p>	Cold room
4	<p>Avinashiappan Industries</p> <p>No 19-A, Mamara Thottam, Ganapathy Coimbatore - 641 006. Tamil Nadu, India. Mobile No.: +91-9843299089</p>	Vegetable cutter, Fruit Beverage line
5	<p>Industrial Laboratory</p> <p>PB.No:6063, No:38, 1st Floor, 2nd Street</p> <p>Anjugam, 5 No. Gam Jafer Kabent</p> <p>Chennai, TamilNadu, India.</p> <p>Mobile No: +91- 9840836548</p>	Tray Drier, Refrigerator
6	<p>SUNBEST SOLAR</p> <p>238/10, Nehruji road, valli nagar, Theni – 625531</p>	Solar drier

	<p>Mobile number – 9994094400</p> <p>Fax – 91- 4546-255271</p> <p>Phone – 91-4546-255272</p>	
7	<p>Balakrishnan Engineers</p> <p>Address1/93, Mylampatti, Mylampatti Post, Near Chinnampalayam, Coimbatore - 641 062.</p> <p>Emailthangambke@gmail.com /salesbke@gmail.com</p> <p>Office+91 90470 67017</p>	Vegetable cutter, orange juicer, onion peeler
8	<p>Pilot smith pvt ltd</p> <p>Kallettumkara, Trichur District Kerala, India PIN : 680 683</p> <p>meh@pilotsmithindia.com</p> <p>+91 480 - 2881908, 2881157</p>	Juice extractor, blenders, packing machinery, driers and general equipment
9	<p>Accelor food tech pvt ltd</p> <p>22, RVL Nagar, Uppilipalayam Post, Coimbatore – 641 015, Tamil Nadu, India.</p> <p>+91 – 99944-11095</p> <p>info@accelorfoodtech.com</p>	Tray oven dryer, cold rooms, washer, vegetable slicer, steam blancher, steam boiler, pouch packaging machine
10	<p>JMS industries</p> <p>22-B, Gandhiji Road, Kannapa Nagar, Rathinapuri (PO), Coimbatore – 641027.</p> <p>Landline : +91 422 2330235</p> <p>Mobile : +91 97919 43812, +91 94455 20280</p>	Fruit juice plant, steam jacketed kettles, commercial kitchen equipment

	jmsfruits equipments@yahoo.in	
11	<p>Zigma Machinery & Equipment Solutions SF. No. 25, Veerakeralam PO, Vedapatti Road, Poosaripalayam, Coimbatore - 641007, Tamil Nadu, India</p>	Juice processing machine, mango pulper machine, steam jacketted kettles, Amla juice machine, Two stage pulper
12	<p>M. G. Industries 1/11, Venkataswamy Naidu Industrial Estate Bharathi Colony, Peelamedu, Coimbatore - 641004, Tamil Nadu, India</p>	Fruit pulper, fruit juice machine, colloidal mill, boiler, pneumatic plastic ball capper, pet bottle capper, sterilizer tank.
13	<p>Chandran Steels SF No:435/3B, Seerampalayam Village,L&T Bye Pass, Coimbatore, Tamil Nadu, 641021, India http://chandransteels.com/</p>	Steam boiler, kitchen equipments, storage rack