

MINISTRY OF HEALTH AND FAMILY WELFARE

(Food Safety and Standards Authority of India)

Notification New Delhi, dated the 1st August, 2011

3.1.3 Artificial Sweeteners

1) Use and sale of artificial Sweeteners

Artificial sweeteners mentioned in column 2 of the table below, may be used only in the food articles mentioned in column 3 and in quantities not exceeding the limits mentioned in column 4 and as per provision contained in these regulations and Appendices and shall bear the label declarations as provided in the regulation 2.4.5 (24, 25, 26, 27, 28 & 29) of Food Safety and Standards (Packaging and Labeling) Regulations, 2011.

Sl. No.	Name of Artificial Sweetener	Article of food	Maximum limit of Artificial
1	2	3	4
I.	Saccharin Sodium	Carbonated Water	100 ppm
		Soft Drink Concentrate	*100 ppm
		Supari	4000 ppm
		Pan Masala	8000 ppm
		Pan Flavouring Material	8.0 percent
		Synthetic Syrup for dispenser	450 ppm
		Sweets (Carbohydrates based and Milk products based) : Halwa, Mysore Pak, Boondi Ladoo, Jalebi, Khoya Burfi, Peda, Gulab Jamun, Rasogolla and similar milk product based sweets sold by any name.	500 ppm
		Chocolate (White, Milk, Plain, Composite And Filled)	500 ppm
		Sugar based/ Sugar free confectionery	3000 ppm
		Chewing gum /Bubble gum	3000 ppm
		II.	Aspartame (methylester)
Soft Drink concentrate	*700 ppm		
Biscuits, Bread, Cakes and Pasteries	2200 ppm		
Sweets (Carbohydrates based and Milk products based) : Halwa, Mysore Pak, Boondi Ladoo, Jalebi, Khoya Burfi, Peda, Gulab Jamun, Rasogolla and similar milk product based sweets sold by any name	200 ppm		
Jam, Jellies, Marmalades	1000 ppm		
Chocolate (White, Milk, Plain, Composite And Filled)	2000 ppm		
Sugar based/ Sugar free confectionery	10000 ppm		
Chewing gum/ Bubble gum	10000 ppm		
Synthetic Syrup for dispenser	3000 ppm		
Custard powder mix	1000 ppm		
Vegetarian jelly crystals	3000 ppm		
Fruit Nectar	600 ppm		
Vegetable Nectar	600 ppm		
Ice Cream, Frozen Dessert and Pudding	1000 ppm		
Flavoured Milk	600 ppm		
Ready to Serve Tea and Coffee based Beverages	600 ppm		
Yoghurt	600 ppm		

III. Acesulfame Potassium	Ready to eat Cereals	1000 ppm
	Non-Carbonated water based beverages (non-alcoholic)	600 ppm
	Carbonated water	300 ppm
	Soft Drink concentrate	*300 ppm
	Biscuits, Bread, Cakes and Pasteries	1000 ppm
	Sweets (Carbohydrates based and Milk products based) : Halwa, Mysore Pak, Boondi Ladoo, Jalabi, Khoya Burfi, Peda, Gulab Jamun, Rasogolla and similar milk product based sweets sold by any name	500 ppm

1	2	3	4
		Chocolate (White, Milk, Plain, Composite and Filled)	500 ppm
		Sugar based/ Sugar free confectionery	3500 ppm
		Chewing gum/ Bubble gum	5000 ppm
		Synthetic Syrup for dispenser	1500 ppm
		Ready to serve tea and coffee based Beverages	600 ppm
		Ice lollies / ice candy	800 ppm
		cereal based beverages	500 ppm
		Fruit Nectars	300ppm
		Concentrate for fruit nectars	300 ppm (in final Beverage for consumption)
		Non carbonated water based beverages (non alcoholic)	300 ppm
IV.	Sucralose	Carbonated water	300 ppm
		Soft drink concentrate	*300 ppm
		Biscuits, breads, cakes and Pastries	750 ppm
		Sweets (Carbohydrates based and Milk products based) : Halwa, Mysore Pak, Boondi Ladoo, Jalebi, Khoya Burfi, Peda, Gulab Jamun, Rasogolla and similar milk product based sweets sold by any name	750 ppm
		Yoghurts	300 ppm
		Sweetened butter milk	300 ppm
		Ice Cream	400 ppm
		Jam, Jellies and Marmalades	450 ppm
		Frozen fruit	150 ppm
		Chutney	800 ppm
		Confectionery	1500 ppm
		Chewing gum	1250 ppm
		Cookies	750 ppm
		Doughnuts /scones /muffins	800 ppm
		Cake mixes	700 ppm
		Ready to serve tea and coffee beverages	600 ppm
		Ice lollies/Ice candy	800 ppm
		Vegetable juice	250 ppm
		Vegetable nectar	250 ppm
		Concentrates for vegetable juice	1250 ppm
		Concentrate for vegetable nectar	1250 ppm
		Lozenges	1500 ppm
		Non-carbonated water based beverages (non-alcoholic)	300 ppm
		Jelly Crystals	*300 ppm
		Custard powder/ ready to eat custard dessert	*260 ppm
		Chocolate	800 ppm
		Dried ice cream mixes	**400 PPM
		Frozen Dessert	400 PPM
		Milk lollies and milk ices	400 PPM
V.	Neotame	Carbonated water	33 ppm
		Soft drink concentrate	*33 ppm

Explanation I : Pan flavouring material refers to the flavouring agents permitted for human consumption to be used for pan. It shall be labelled as—

"PAN FLAVOURING MATERIAL"

**Explanation II* : Maximum limit of artificial sweetener in the product shall be as in reconstituted beverage or food or in final beverage or food for consumption, as the case may be. The product label shall give clear instruction for reconstitution of products for making final beverage or food for consumption as the case may be.

Provided where the artificial sweetener(s) is/are used in carbonated water / sweetened aerated water / fruit beverage / carbonated fruit beverage / fruit nectar, the requirement of minimum total soluble solids shall not apply

Provided further that Saccharin Sodium or Aspartame (Methyl ester) or Acesulfame Potassium or Sucralose or Neotame may be sold individually as Table Top Sweetener and may contain the following carrier or filler articles with label declaration as provided in Regulation 2.4.5 (24, 25, 26, 27, 28 & 29) of Food Safety and Standards (Packaging and Labeling) Regulations, 2011. namely:—

Dextrose
Lactose
Maltodextrin
Mannitol
Sucrose
Isomalt
Citric Acid
Calcium silicate
Carboxymethyl Cellulose
Cream of Tartar, IP
Cross Carmellose sodium
Colloidal silicone dioxide
Glycine
L-leucine
Magnesium stearate IP
Purified Talc
Poly vinyl pyrrolidone
Providone
Sodium hydrogen carbonate
Starch
Tartaric acid
Erythritol .

Provided further also that where sucralose is marketed as Table Top Sweetener, the concentration of sucralose shall not exceed six mg per tablet or hundred mg of granule.

*** Explanation III*: Maximum limit of artificial sweetener in Dried Ice cream Mixes shall be as in reconstituted ice-cream for consumption and the Dried Ice-cream Mixes label shall give clear instruction for reconstitution of products for making final ice cream"

2) No mixture of artificial sweeteners shall be added to any article of food or in the manufacture of table top sweeteners.

Provided that in case of carbonated water, softdrink concentrate and synthetic syrup for dispenser, wherein use of aspartame and acesulfame potassium have been allowed in the alternative, as per Table under Regulation 3.1.3 (1), these artificial sweeteners may be used in combination with one or more alternative if the quantity of each artificial sweetener so used does not exceed the maximum limit specified for that artificial sweetener in column (4) of

the said Table as may be worked out on the basis of proportion in which such artificial sweeteners are combined. The products containing mixture of artificial sweeteners shall bear the label as provided in regulation 2.4.5 (28 & 29) of Food Safety and Standards (Packaging and Labeling) Regulations, 2011.

Provided that in carbonated water, the combination of Sucralose and Acesulfame K may be used on ratio not to exceed proportionate levels of the permissible levels allowed for these individual artificial sweeteners in carbonated water under label declaration in Regulation 2.4.5 (29) of Food Safety and Standards (Packaging and Labeling) Regulations, 2011.

Provided further that mixture of Aspartame (methylester) and Acesulfame K (in ratio 2:1) may be marketed as table top sweetener and may contain the carrier or filler articles as mentioned in the proviso given under the table in Regulation 3.1.3 (1) and under label declaration as provided in regulation 2.4.5 (24, 25, 26, 28 & 29) of Food Safety and Standards (Packaging and Labeling) Regulations, 2011.

Illustration:- In column (3) of the said Table, in carbonated water, Aspartame (Methyl Ester) or Acesulfame Potassium may be added in the proportion of 700 ppm or 300 ppm respectively. If both artificial sweeteners are used in combination and the proportion of aspartame (Methyl Ester) is 350 ppm, the proportion of Acesulfame Potassium shall not exceed the proportion of 150 ppm;

3) No person shall sell table top sweetener except under label declaration as provided in these Regulations.

Provided that aspartame may be marked as a table top sweetener in tablet or granular form in moisture proof packages and the concentration of aspartame shall not exceed 18 mg per 100 mg of tablet or granules.

4) Use of Polyols in Foods:

No polyols shall be added to any article of food except those mentioned in the table below, in quantities not exceeding the limits shown against them as per provision contained in Appendix A of these Regulations and shall bear the label declaration as per regulation 2.4.5 (46) of Food Safety and Standards (Packaging and Labeling) Regulations, 2011.

Sl. No	Name of Polyols	Article of Food	Maximum limit
1.	Isomalt	(i) Traditional Indian sweets (carbohydrate based and milk based), halwa, mysore paag, boondi laddoo, jalebi, khoya burfi, peda, gulab jamun, rasgulla, and similar milk based sweets sold by any name (ii) Instant sweetmeat mixes (e.g. pongal mix, gulab jamun mix, jalebi mix) (iii) Bakery products (iv) Jams, jellies and Marmalades (v) Edible Ice (vi) Ice cream, frozen dessert, sweetened yoghurt	GMP
2.	Erythritol	Dairy drinks (chocolate and flavoured milk), Carbonated Beverages, Non-Carbonated Water based Beverages (non-alcoholic), Ice Cream, Yoghurt, Puddings, Non Dairy Toppings, Bakery Mixes, Cakes, cookies & pastries, Ready to eat breakfast cereals, soft candies, chocolate and hard candies	GMP
3.	Maltitol / Maltitol syrup	Bakery products, Ice Cream, Frozen Desserts, Jams, Jellies and Marmalades	GMP

5) Use of Polydextrose in Foods

Polydextrose may be used in following food articles as per GMP levels and proper label declaration as provided in regulation 2.4.5 (47) .

Ice Cream, Frozen Desserts, Cakes, Biscuits, Yoghurt, Whip topping, Sugar boiled Confectionery, Lozenges, Jam, fruit jelly, Traditional Indian sweets (carbohydrate based and milk based), halwa, mysore pak, boondi laddoo, jalebi, khoya Burfi, peda, gulab jamun, rasgulla, and similar sweets sold by any name.

3.1.4: Preservatives - "Preservative" means a substance which when added to food, is capable of inhibiting, retarding or arresting the process of fermentation, acidification or other decomposition of food.

1) Classification of Preservatives:

Preservatives shall be divided into following classes :

Class I preservative shall be :-

- Common salt.
- Sugar.
- Dextrose.
- Glucose Syrup.
- Spices.
- Vinegar or acetic acid.
- Honey
- Edible vegetable oils

Addition of Class I preservatives in any food is not restricted, unless otherwise provided in the regulations including Appendix A.

Provided that the article of food to which a Class I preservative has been added conforms to the specifications laid down in Chapter 2 of these regulations.

Class II preservatives shall be :-

- Benzoic acid including salts thereof,
- Sulphurous acid including salts thereof,
- Nitrates or Nitrites of Sodium or Potassium in respect of food like ham, pickled meat,
- Sorbic acid including its sodium, potassium and calcium salts, propionates of calcium or sodium, lactic acid, and acid calcium phosphate.
- Nisin
- Sodium and calcium propionate.
- Methyl or propyl Parahydroxy-Benzoate.
- Propionic acid, including esters or salt thereof,
- Sodium diacetate, and
- Sodium, potassium and calcium salts of lactic acid.

Use of more than one Class II preservative prohibited.

(i) No person shall use in or upon a food more than one Class II preservative:

Provided that where in column (2) of the table given in the regulation 3.1.4 (3) the use of more than one preservative has been allowed in the alternative, those preservatives may, notwithstanding anything contained in regulation 3.1.4 (3) of these Regulations, be used in combination with one or more alternatives, provided the quantity of each preservative so used does not exceed such number of parts out of those specified for that preservative in column (3) of the aforesaid table as may be worked out on the basis of the proportion in which such preservatives are combined.

Illustration.-In the group of foods specified in Item 6 of the table given in regulation 3.1.4 (3) of these Regulations, sulphur dioxide or Benzoic acid can be added in the proportion of 40 parts per million or 200 parts per million respectively. If both preservatives are used in combination and the proportion of sulphur dioxide is 20 parts per million, the proportion of Benzoic acid shall not exceed the proportion of 100 parts per million.

3) Use of Class II preservatives restricted.

The use of Class II preservatives shall be restricted to the following group of foods in concentration not exceeding the proportions given below against each.

<i>Sl. No.</i>	<i>Article of Food</i>	<i>Preservative</i>	<i>Parts per million</i>
(1)	(2)	(3)	(4)
1.	Sausages and sausage meat containing raw meat , cereals and condiments	Sulphur dioxide	450
2.	Fruit, fruit pulp, juice (not dried) for conversion into jam or crystallized glace or cured fruit or other products :	-do-	2,000
	a) Cherries		
	b) Strawberries and raspberries	-do-	2,000
	c) Other fruits	-do-	1,000
3.	Fruit juice concentrate	-do-	1,500
	Dried Fruits		
	a) Apricots, peaches, apples, pears and other fruits	-do-	2000
	b) Raisins and Sultanas	-do-	750
5.	Other non alcoholic wines, squashes, crushes, fruit syrups, cordials, fruit juices and barley water to be used after dilution	Sulphur dioxide or Benzoic acid	350 600
6.	Jam , marmalade, preserve canned cherry and fruit jelly	Sulphur dioxide Or Benzoic acid	40 200
7.	Crystallized glace or cured fruit (including candid peel)	Sulphur dioxide	150
8.	Fruit and fruit pulp not otherwise specified in the schedule	Sulphur dioxide	350
9.	Plantation white sugar , cube sugar, dextrose, gur, jaggery, misri	Sulphur dioxide	70
10.	Khandsari (Sulphur) and Bura	-do-	150
11.	Refined sugar	-do-	40
11.	Corn flour and such like starches	-do-	100
12.	Corn syrup	-do-	450
13.	Canned Rasgolla (The cans shall be internally lacquered with sulphur dioxide resistant laquer)	-do-	100
14.	Gelatine	-do-	1000
15.	Beer	Sulphur dioxide	70
16.	Cider	-do-	200
17.	Alcoholic Wines	-do-	450
18.	Ready to serve beverages	Sulphur dioxide or Benzoic Acid	70 120
19.	Brewed ginger beer	Benzoic Acid	120
20.	Coffee extract	-do-	450
21.	Pickles and chutneys made from fruits or vegetables	Benzoic Acid or Sulphur dioxide	250 100
22.	Tomato and other sauces	Benzoic Acid	750

(1)	(2)	(3)	(4)
23.	Pickled meat and bacon	Sodium and/or Potassium Nitrite expressed as Sodium Nitrite	200
24.	Corned Beef	Sodium and/or Potassium Nitrite expressed as Sodium Nitrite	100
25.	Meat Food Products	Sodium and /or Potassium Nitrite expressed as Sodium Nitrite	200
26.	Danish tinned caviar	Benzoic acid	50
27.	Dehydrated vegetables	Sulphur dioxide	2,000
28.	Tomato puree and paste	Benzoic acid	750
29.	Syrups and sharbats	Sulphur dioxide	350
		or	
		Benzoic acid	600
30.	Dried ginger	Sulphur dioxide	2,000
31.	Cheese or processed cheese	Sorbic acid including its sodium, potassium and calcium salt (calculated as sorbic acid)	3,000
		Nisin	12.5
32.	Flour confectionery	Sorbic acid including its sodium, potassium and calcium salt (calculated as sorbic acid)	1,500
33.	Smoked fish (in wrappers)	Sorbic acid	Only wrappers may be impregnated with sorbic acid
34.	Dry mixes of rasgollas	Sulphur dioxide	100
35.	a) Soups (other than canned)	Sulphur dioxide	150
	b) Dried Soups	Sulphur dioxide	1,500
	c) Dehydrated soup mix when packed in containers other than cans	Sulphur dioxide	1,500
36.	Fruits, vegetables , flakes, powder, figs	Sulphur dioxide	600
37.	Flour for baked food	Sodium diacetates or propionates or methyl propyl hydroxy benzoate	2,500 3,200 500
38.	Preserved chappatis	Sorbic acid	1,500
39.	Paneer or channa	Sorbic acid and its sodium potassium or calcium salts (calculated as sorbic acid)	2,000
		Or	

(1)	(2)	(3)	(4)
		Propionic acid and its sodium or potassium salts (calculated as propionic acid)	2,000
40.	Fat spread	Sorbic acid and its sodium potassium and calcium salts (calculated as sorbic acid) Or Benzoic acid and its sodium or potassium salts (calculated as benzoic acid) or both	1,000 1,000 1,000
	Jams, jellies, marmalades, preserve, crystallized glazed or candid fruits including candid peels fruit bars	Sorbic acid and its sodium potassium or calcium salts (calculated as sorbic acid)	500
	Fruit juice concentrates with preservatives for conversion in juices, nectars for ready to serve beverages in bottles/pouches selling through dispensers	-do-	100
43.	Fruit juices (tin , bottles or pouches)	-do-	200
44.	Nectars, ready to serve beverages in bottles/pouches selling through dispensers	-do-	50
45.	Prunes	Potassium Sorbate (calculated as sorbic acid)	1000

4) Use of Class II preservatives in mixed foods

In a mixture of two or more foods or groups of foods mentioned against each item in the Table under regulation 3.1.4 (3) of these Regulations the use of Class II preservative or preservatives shall be restricted to the limit up to which the use of such preservative or preservatives is permitted for the foods or groups of foods contained in such mixture.

Illustration.-In the food specified in item 23 of the table given in regulation 3.1.4 (3) sulphur dioxide can be added to dehydrated vegetables in the proportion of 2,000 parts per million. If this food is mixed with the food specified in item 24 given in the said table, that is to say tomato puree and paste, where benzoic acid is permitted to an extent of 250 p.p.m., then in the mixture containing equal parts of these two foods, the proportion of Sulphur dioxide and Benzoic acid, shall be 1,000 p.p.m. and 125 p.p.m. respectively.

5) Restriction on use of nitrate and nitrite.

No nitrate or nitrite shall be added to any infant food.

6) Use of Natamycin for surface treatment of cheese (hard).

Natamycin may be used for surface treatment of cheese (hard) under label declaration as specified in Regulation (33) of packaging and labeling regulations., subject to the following conditions, namely :—

Maximum level of application of Natamycin shall not exceed 2mg/dm³

The penetration depth of Natamycin in cheese (hard) shall not exceed 2mm.

The maximum residue level of Natamycin in the finished cheese (hard) shall not exceed 1mg/dm³

3.1.5: Anti-oxidants,

"Anti-oxidant' means a substance which when added to food retards or prevents oxidative deterioration of food and does not include sugar, cereal, oils, flours, herbs and spices;

Restriction on use of anti-oxidants.

No antioxidant other than lecithin, ascorbic acid and tocopherol shall be added to any food unless otherwise provided in Chapter 2 and Appendix A of these Regulations

Provided that the following anti-oxidants, not exceeding in concentration mentioned against each, may be added to edible oils and fats except ghee and butter, namely :—

1	Ethyl Gallate		
2	Propyl gallate	or mixture thereof	0.01 percent
	Octyl gallate		
	Dodecyl gallate		
5	Ascorbyl palmitate		0.02 percent
6	Butylated hydroxyanisole (BHA)		0.02 percent
7	Citric Acid		0.01 percent
	Tartaric acid		
	Gallic acid		
10	Resin Guaiace		0.05 percent
11	Tertiary Butyl Hydro Quinone (TBHQ)		0.02 percent

Provided that dry mixes of Rassgollas and vadas may contain Butylated hydroxyanisole (BHA) not exceeding 0.02 per cent calculated on the basis of fat content:

Provided further that anti-oxidants permitted in the 3.1.5 (2) of these Regulations may be used in permitted flavouring agents in concentration not exceeding 0.01 per cent.

Provided further that wherever Butylated hydroxyanisole (BHA) is used in conjunction with the anti-oxidants mentioned at item Nos. 1 to 4 of the preceding proviso, the quantity of the mixture shall not exceed the limit of 0.02 per cent:

Provided further that Ghee and Butter may contain Butylated hydroxyanisole (BHA) in a concentration not exceeding 0.02 per cent.

Provided further that fat spread may contain Butylated hydroxyanisole (BHA) or Tertiary butyl hydro quinone (TBHQ) in a concentration not exceeding 0.02 per cent by weight on fat basis.

Provided further that ready-to-eat dry breakfast cereals may contain Butylated Hydroxyanisole (BHA) not exceeding 0.005 percent (50ppm).

Provided further that in ready to drink infant milk substitute, lecithin and ascorbyl palmitate may be used upto maximum limit of 0.5 gm./100ml. and 1mg./ 100ml. respectively.

Provided further that chewing gum/ bubble gum may contain Butylated hydroxyanisole (BHA) not exceeding ppm.

Use of anti-oxidants in Vitamin D Preparation: Vitamin D preparation may contain anti-oxidants prescribed in Regulation 3.1.4 (2) of these Regulations not exceeding 0.08 per cent.

3.1.6: Emulsifying and Stabilising agents

1) Emulsifying agents' and "stabilising agents" means substances which when added to food, are capable of facilitating a uniform dispersion of oils and fats in aqueous media or vice versa, and/or stabilising such emulsions and include the agents specified below and in Chapter 2 and Appendix A of these regulations:

Agar, alginic acid, calcium and sodium alginates, carrageen, edible gums (such as guar, karaya, arabic, carobean, furcellaran, tragacanth, gum ghatti), dextrin, sorbitol, pectin, sodium and calcium pectate, sodium citrate, sodium phosphates, sodium tartrate, calcium lactate, lecithin, albumen, gelatin, quillaia, modified starches, hydrolysed proteins, monoglycerides or diglycerides of fatty acids, synthetic lecithin, propyleneglycol stearate, propyleneglycol alginate, methyl ethyl cellulose, methyl cellulose, sodium carboxy-methyl cellulose, stearyl tartaric acid, esters of monoglycerides and diglycerides of fatty acids monostearin sodium sulphoacetate, sorbitan esters of fatty acids or in combination [poly-oxy-ethylene sorbitan, monostearate] sodium stearyl-2-lactylate and calcium stearyl-2-lactylate Polyglycerol Esters of fatty acids and polyglycerol Ester of interesterified Ricinoleic acid and Glycerol esters of wood rosins (Ester Gum)

2) Restriction on use of emulsifying and stabilizing agents - No emulsifying or stabilising agents shall be used in any food, except where the use of emulsifying or stabilising agent is specifically permitted :

Provided that the following emulsifying or stabilising agents shall not be used in milk and cream, namely:

Monoglycerides or diglycerides of fatty acids, synthetic lecithin, propyl-ene glycol stearate, propylene glycol alginate, methyl ethyl cellulose, methylcellulose, sodium carboxymethyl cellulose, stearyl tartaric acid, esters of monoglycerides and diglycerides of fatty acids, monostearin sodium sulphoacetate, sorbitan esters of fatty acids or in combination

Provided further that Polyglycerol esters of fatty acids and Polyglycerol ester of interesterified Ricinoleic acid may be used in bakery products and in chocolate to the extent of 0.2 per cent by weight.

Provided that Diacetyl Tartaric acid esters of Mono and Diglycerides may be used in Bread and Cakes.

Use of starch phosphate - Starch phosphate, a gum arabic substitute, may be used in syrup, ice-cream powder, salad dressing and pudding to a maximum extent of 0.5 per cent.

Use of modified starches - Modified food starches (derivative starches) may be used in confectionery, flavours, dairy products (where use of emulsifier/stabiliser is allowed in Appendix A and Chapter 2. glazes, icings, gravies, sauces, soups, coatings upto a maximum concentration of 0.5 per cent by weight.

Provided that modified food starches (derivative starches) may be used in snacks, frozen potato products, baked foods, and salad dressing/mayonnaise, upto a maximum concentration of 5 percent by weight.

Use of emulsifying and stabilising agents in flavouring agents - The emulsifying and stabilising agents may be added to flavouring agents.

Use of emulsifying and stabilising agents in fruit products - The following emulsifying and stabilising agents may be added to Fruit Products:

- Pectin
- Sodium alginate
- Calcium alginate
- Alginic acid
- Propylene glycol alginate.

Use of emulsifying and stabilising agents in frozen desserts - The emulsifying and stabilizing agents as defined under the Regulation 3.1.6 (1), may be added to frozen desserts.

Use of Hydroxypropyl Methyl Cellulose in various foods

Hydroxypropyl Methyl Cellulose may be used in the following food products, not exceeding the maximum levels mentioned in column 3 of the table given below

Sl No	Article of food	Maximum level
(i)	Non dairy whip topping	2.0%
(ii)	Snacks, savouries, luncheon meat and poultry products, instant mixes such as idli mix, dosa mix, upma mix, pongal mix, puliyogore mix, gulab jamun mix, jalebi mix, vada mix, etc, salad dressing/mayonnaise, mixes for gravies, ice cream, frozen desserts, puddings and custards	1.0%
(iii)	Mixes for dairy based drinks	0.5%

9) Use of Xanthan gum.-Xanthan gum may be used in the following products, namely :—

- Non dairy whip toppings maximum 0.5% by weight
- Bakery mixes maximum 0.5% by weight

10) use of acid treated starch in sugar confectionery: Acid treated starch may be used in sugar confectionery on GMP basis

3.1.7: Anticaking Agents

1) Restriction on use of anticaking agents.

No anticaking agents shall be used in any food except where the use of anticaking agents is specifically permitted.

Provided that table salt, onion powder, garlic powder, fruit powder and soup powder may contain the following anticaking agents in quantities not exceeding 2.0 per cent either singly or in combination namely :—

carbonates of calcium and magnesium.

phosphates of calcium and magnesium .

silicates of calcium, magnesium, aluminium or sodium or silicon dioxide;

myristates, palmitates or stearates of aluminium ammonium, calcium, potassium or sodium.

Provided that that calcium potassium or sodium ferrocyanide may be used as crystal modifiers and anti-caking agent in common salt, iodised salt and iron fortified salt in quantity not exceeding 10 mg/kg singly or in combination expressed as ferrocyanide.

3.1.8: Antifoaming agents in edible oils and fats.

1) Dimethyl Polysiloxane, food grade, may be used as an antifoaming agent in edible oils and fats for deep fat frying upto a maximum limit of 10 parts per million.

Provided that mono and diglycerides of fatty acids of edible oil may be used as antifoaming agent in jam, jellies and marmalade

Explanation-For the purpose of this Regulation,"Anti foaming agent" means substance which retards deteriorative changes and foaming height during heating.

3.1.9: Use of release agents in confectionery.

1) Spreadasil silicon spray (Dimethyl Polysiloxane) if used, as release agent in confectionery, shall not exceed 10 ppm of the finished product.

3.1.10: FLAVOURING AGENTS AND RELATED

SUBSTANCES 1) Flavouring agents:

Flavouring agents include flavour substances, flavour extracts or flavour preparations, which are capable of imparting flavouring properties, namely taste or odour or both to food. Flavouring agents may be of following three types :—

Natural Flavours and Natural Flavouring substances means flavour preparations and single substance respectively, acceptable for human consumption, obtained exclusively by physical processes from vegetables, for human consumption

Nature-Identical Flavouring Substances means substances chemically isolated from aromatic raw materials or obtained synthetically; they are chemically identical to substances present in natural products intended for human consumption, either processed or not.

Artificial Flavouring Substances means those substances which have not been identified in natural products intended for human consumption either processed or not;

Use of anti-oxidants, emulsifying and stabilising agents and food preservatives in flavour.

The flavouring agents may contain permitted anti-oxidants, emulsifying and stabilising agents and food preservatives.

Use of Anticaking agent in flavours: Synthetic Amorphous Silicon Dioxide may be used in powder flavouring substances to a maximum level of 2 percent

Restriction on use of flavouring agents :—

The use of the following flavouring agents are prohibited in any article of food, namely :—

(i) Coumarin and dihydrocoumarin;

Tonkabean (Dipteryl adorat);

?-asarone and cinamyl anthracilate".

Estragole

Ethyl Methyl Ketone

Ethyl-3-Phenylglycidate

Eugenyl methyl ether

Methyl ? naphthyl Ketone

P.Propylanisole

Saffrole and Isosaffrole

Thujone and Isothujone ? & ?

thujone. 5) Solvent in flavour.

Diethylene Glycol and Monoethyl ether shall not be used as solvent in flavours.

3.1.11: Use of Flavour Enhancers

1) Monosodium Glutamate -

Monosodium Glutamate may be added to foods as per the provisions contained in Appendix A, subject to Good Manufacturing Practices (GMP) level and under proper label declaration as provided in Regulation 2.4.5 (18) of Food Safety and Standards (Packaging and Labeling) Regulations, 2011. It shall not be added to any food for use by infant below twelve months and in the following foods:—

List of foods where Monosodium Glutamate is not allowed

Milk and Milk Products including Buttermilk.

Fermented and renneted milk products (plain) excluding dairy based drink.

Pasteurized cream.

Sterilised, UHT, whipping or whipped and reduced fat creams.

Fats and Oils, Foodgrains, Pulses, Oil seeds and grounded/ powdered foodgrains.

Butter and concentrated butter.

Fresh fruit.

Surface treated fruit.

Peeled or cut fruit.

Fresh vegetables, Surface treated fruit, Peeled or cut fruits.

Frozen vegetables.

Whole, broken or flaked grains, including rice.

Flours of cereals, pulses and starches.

Pastas and noodles (only dried products).

Fresh meat, poultry and game, whole pieces or cuts or comminuted.

Fresh fish and fish products, including mollusks, crustaceans and echinoderms.

Processed fish and fish products, including mollusks, crustaceans and echinoderms.

Fresh eggs, Liquid egg products, Frozen egg products.

White and semi-white sugar (sucrose and saccharose, fructose, glucose (dextrose), xylose, sugar solutions and syrups, also (partially) inverted sugars, including molasses, treacle and sugar toppings.

Other sugars and syrups (e.g. brown sugar and maple syrup).

Honey

Salt

Herbs, spices and condiments, seasoning (including salt substitutes) except seasoning for Noodles and Pastas, meat tenderizers, onion salt, garlic salt, oriental seasoning mix, topping to sprinkle on rice, fermented soyabean paste, Yeast.

Infant food and Infant milk substitute including infant formulae and follow-on formulate.

Foods for young children (weaning foods).

Natural Minerals water and Packaged Drinking water.

Concentrates (liquid and solid) for fruit juices.

Canned or bottled (pasteurized) fruit nectar.

Concentrates (liquid and solid) for fruit juices.

(xxx) Canned or Bottled (pasteurized) fruit nectar.

Coffee and coffee substitutes, tea, herbal infusions, and other cereal beverages excluding cocoa.

Wines.

Margarine

Fat Spread

Fruits and Vegetables products except those where Monosodium Glutamate is permitted under Appendix A of these Regulations.

Carbonated Water

Baking Powder

Arrowroot

Sago

(xl) Plantation Sugar, Jaggery and

Bura. (xli) Ice-Candies.

(xlii) Ice cream and Frozen

desserts. (xliii) Cocoa Butter

(xliv) Saccharine

(xlv) Malted Milk Food and Milk based foods

(xlvi) Bread

(xlvii) Vinegar

(xlviii) Sugar Confectionery, Toffee,

Lozenges. (xlix) Chocolate

(l) Pan Masala

(li) Alcoholic Beverages.

3.1.12: SEQUESTERING AND BUFFERING AGENTS (ACIDS, BASES, AND SALTS)

"Sequestering agents" means substances which prevent adverse effect of metals catalysing the oxidative break-down of foods forming chelates; thus inhibiting decolourisation, off taste and rancidity;

"Buffering agents" means materials used to counter acidic and alkaline changes during storage or processing steps, thus improving the flavour and increasing the stability of foods;

1) Restrictions on the use of sequestering and buffering agents.

Unless otherwise provided in these regulations the sequestering and buffering agents specified in column (1) of the Table below, may be used in the groups of food specified in the corresponding entry in column (2) of the said Table, in concentration not exceeding the proportions specified in the corresponding entry in column (3) of the said Table :

TABLE

Sl. No.	Name of sequestering And buffering agents	Groups of food	Maximum level of use (parts per Million) (ppm) (mg./kg.)
(1)	(2)	(3)	(4)
1.	Acetic Acid	(i) Acidulant, buffering and neutralizing agents in beverages soft drinks	Limited by G.M.P.
		(ii) in canned baby foods	5,000
2.	Adipic acid	Salt substitute and dietary food	250
3.	Calcium Gluconate	In confections	2,500
4.	Calcium Carbonate	As a neutralizer in number of foods	10,000
5.	Calcium oxide	As a neutralizer in specified dairy product	2,500
6.	Citric acid malic acid	Carbonated beverage and as an acidulant in miscellaneous foods	Limited by G.M.P.
7.	DL Lactic Acid (food grade)	As acidulant in miscellaneous foods	Limited by G.M.P.
8.	L(+) Lactic Acid (food grade)	As acidulant in miscellaneous foods	Limited by GMP
9.	Phosphoric acid	Beverages, soft drinks	600
10.	Polyphosphate containing less than 6 Phosphate moieties	(a) Processed cheese, bread	40,000
		(b) Milk Preparations	4,000
		(c) Cake Mixes	10,000
		(d) Protein foods	4,000
11.	L (+) Tartaric acid	Acidulants	600
12.	Calcium Disodium, Ethylene, Diamine tetra acetate	(i) Emulsions containing refined vegetable oils, eggs, vinegar, salt, sugar and spices;	50
		(ii) Salad dressing;	
		(iii) Sandwich spread or fat Spread	
13.	Fumaric acid	As acidulant in Miscellaneous foods	3000ppm

NOTE :- DL Lactic acid and L(+) Tartaric acid shall not be added to any food meant for children below 12 months (The lactic acid shall also conform to the specification laid down by the Indian Standards Institution.)

3.1.13: Use of Glycerol Esters of Wood Resins (Ester Gum)—

The maximum limit of glycerol esters of wood resins(ester gum) when used in flavour emulsions, soft drink concentrate and carbonated water shall not exceed 100 ppm. of the final beverage for consumption.

3.1.14: Use of Sucrose Acetate Isobutyrate - The maximum concentration of Sucrose Acetate Isobutyrate when used in non-alcoholic beverages as a clouding agent shall not exceed 300 ppm;

3.1.15: Use of Lactulose Syrup in foods:

Lactulose syrup may be used in special milk based infant food formulations, which is to be taken under medical advice upto a maximum level of 0.5 per cent of final food subject to label declaration.

Lactulose syrup may be used in bakery products upto 0.5 per cent maximum by weight.

3.1.16: Use of Dimethyl Dicarbonate:

Dimethyl Dicarbonate may be used in fruit drinks, ready to drink tea beverages, isotonic/sports drinks and flavoured water upto 250 mg/litre subject to a maximum methanol content in final product as 200 mg/litre

3.1.17: Other substances to be used in Specified limits

The use of substances specified in column (1) in the food mentioned in column (2) of the Table given below shall not exceed the limit specified in column (3) of the said table, namely :—

TABLE

S.No.	Substances	Food	Maximum level of use (ppm) mg/kg
1	2	3	4
1.	Ammonium Carbonate	Baked food confections	5,000
2.	Ammonium bicarbonate	-do-	GMP
3.	Baking powder	Baked foods	GMP
4.	Ammonium Phosphate Monobasic	Bread	2,500
5.	Ammonium persulphate	-do-	2,500
6.	Calcium Phosphate	-do-	2,500
7.	Calcium Carbonate	-do-	5,000
8.	Potassium Bromate and /or Potassium Iodate	-do-	50
9.	Ammonium Chloride	-do-	500
10.	Fungal Alpha-amylase	-do-	100
11.	Sodium Stearoyl-2 Lactylate or Calcium Stearoyl-2 Lactylate (Singly or in combination)	-do-	5,000
12.	L-Cystein Mono Hydrochloride	-do-	90
13.	Benzoyl Peroxide	Flour for bakery	40
14.	Potassium bromate	-do-	20
15.	Ascorbic acid	-do-	200
16.	Gluconodelta Lactone	Cured meat or meat products	5,000
17.	Chlorine	Flour for bakery	2,000
18.	Ascorbic acid/Iso Ascorbic acid and its salts singly or in combination	Corned beef, Luncheon Meat, Cooked Ham, Chopped Meat, Canned Chicken, Canned Mutton and Goat Meat.	500
19.	Phosphates (Naturally present and added) expressed as P ₂ O ₅	Luncheon Meat, Cooked Ham, Chopped Meat.	8000

3.1.18: Carry Over Of Food Additives

For the purpose of the standards specified in chapter 2 of these regulation the "Carry Over" principle applies to the presence of additives such as colours, flavouring agents, anti-oxidants anti-caking agents, emulsifying and stabilising agents, and preservatives in food, as a result of the use of raw material or other ingredients in which these additives were used. The presence of contaminants is not covered by this purpose.

The presence of an additive in food through the application of the carry over principle is admissible in general unless otherwise specifically prohibited in the regulations provided the total additive including the carry over through the raw material or other ingredients does not exceed the maximum amount so permitted.

3.2: Standards of Additives

Food Colours: Standards of various Food Colours with characteristics are specified in the table below:

1 Tartrazine

Common Name	Tartrazine
Synonyms	FD and C Yellow No.5, E.E.C. Serial No.E 102, L-Gebb 2, C.I. Food Yellow 4.
Colour of the 0.1 Per cent (M/V) solution in distilled water.	Yellow
Colour Index Number (1975)	No 19140
Class	Monoazo.
Chemical Name	Trisodium salt of 5-hydroxy-1-p- sulphopheny1-4-(p-sulphophenylazo) pyrazol-3-carboxylic acid.
Empirical formula	C ₁₆ H ₉ N ₄ O ₉ S ₂ Na ₃
Molecular Weight	534.37
Solubility	Soluble in water. Sparingly soluble in Ethanol.
General Requirements	The material shall conform to the requirements prescribed in Table below:—

TABLE

<i>Sl. No. Characteristic</i>	<i>Requirement</i>
1. Total dye content, corrected for Sample dried at 105±1 ^o C for 2 hours, per cent by mass, Min.	87
2. Loss on drying at 135 ^o C and Chlorides and Sulphates expressed as sodium salt, percent by mass, Max.	13
3. Water insoluble matter, percent by mass, Max.	0.2
4. Combined ether extracts, percent by mass,max	0.2
5. Subsidiary dyes, percent by mass, Max.	1.0
6. Dye intermediates, percent by mass, Max.	0.5
7. Lead, mg/kg, Max.	10
8. Arsenic, mg/kg, Max.	3
9. Heavy metals, mg/kg, Max.	40

It shall be free from mercury, copper and chromium in any form; aromatic amines, aromatic nitro compounds, aromatic hydrocarbons, and cyanides.;

2. SUNSET YELLOW

Common Name	Sunset Yellow
Synonyms	FD and C Yellow No.6, Janus Orange S, C.I. Food Yellow 3, -Orange 2, Janune soil, EEC Serial No.E.10
Colour of the 0.1 Percent (M/V) solution in distilled water	Orange Colour Index Number (1975) No 15985
Class	Monoazo
Chemical Name	Disodium salt of 1.(4-sulphophenylazo) 2-naphthol-6-sulphonic acid
Empirical formula	$C_{20}H_{12}O_6Na_2$
Molecular Weight	452.37
Solubility	Soluble in water. Sparingly soluble in Ethanol
General Requirements	

The material shall conform to the requirements prescribed in Table below:—

TABLE

Requirements for Sunset Yellow, FCF

<i>Sl. No. Requirements for Sunset Yellow, FCF Characteristic</i>	<i>Requirement</i>
1. Total dye content, corrected for Sample dried at $105 \pm 1^\circ \text{C}$ for 2 hours, per cent by mass, Min.	87
2. Loss on drying at 135°C , percent by mass and Chlorides and Sulphates expressed as sodium salt, percent by mass, Max	13
3. Water insoluble matter, percent by mass, Max.	0.2
4. Combined ether extracts, percent by mass. Max.	0.2
5. Subsidiary dyes, (lower sulphonated dyes including traces of orange II) percent by mass, Max.	3.0
6. Dye intermediates, percent by mass, Max.	0.5
7. Lead, mg/kg, Max.	10
8. Arsenic, mg/kg, Max.	3
9. Heavy metals, mg/kg, Max.	40

It shall be free from mercury, copper and chromium in any form; aromatic amines, aromatic nitro compounds, aromatic hydrocarbons, and cyanides;

3. ERYTHROSINE

Common Name	Erythrosine
Synonyms	FD and C Red No.3 C.I. Food Red 14, LB-Rot-I
Colour of the 0.1 Percent (M/V) solution in distilled water	Red
Colour Index Number (1975)	No 45430
Class	Xanthene
Chemical Name	Disodium or dipotassium salt of 2',4', 5', 7', tetraiodo-fluorescein

Empirical formula	$C_{20}H_6O_5I_4Na_2 \cdot H_2O$
Molecular Weight	879.87 (Disodium Salt)
Solubility	Soluble in water. Sparingly soluble in Ethanol
General Requirements	

The material shall conform to the requirements prescribed in Table below:—

TABLE

<i>Sl. No. Requirements for Sunset Yellow, FCF Characteristic</i>	<i>Requirement</i>
Total dye content, corrected for Sample dried at $105 \pm 1^\circ C$ for 2 hours, per cent by mass, Min.	87
Loss on drying at $135^\circ C$ percent by mass and Chlorides and Sulphates expressed as sodium salt percent by mass, Max.	13
3. Water insoluble matter, percent by mass, Max.	0.2
4. Ether extractable matter, (alkaline), percent by mass, Max.	0.2
5. Inorganic Iodide, percent by mass as sodium iodide, Max.	0.1
Subsidiary colouring matters except fluorescein, percent by mass, Max.	4
7. Fluorescein, mg/kg, Max.	20
8. Organic compounds other than colouring matter	0.2
(a) Tri-iodoresorcinol, percent by mass, Max.	0.2
(b) 2-(2,4-dihydroxy-3,5-di-iodobenzoyl) benzoic acid, percent by mass, Max.	0.2
9. Lead, mg/kg, Max.	10
10. Arsenic, mg/kg, Max.	3
11. Zinc, mg/kg, Max.	50
12. Heavy metals, mg/kg, Max.	40

It shall be free from mercury, copper and chromium in any form; aromatic amines, aromatic nitro compounds, aromatic hydrocarbons, and cyanides.

4. INDIGO CARMINE Common Name

Synonyms

Colour of the 0.1 Percent (M/V) solution in distilled water

Colour Index Number (1975) Class

Chemical Name Empirical formula

Molecular Weight Solubility

General Requirements

The material shall conform to the requirements prescribed in Table below:—

TABLE Requirement for Indigo Carmine

<i>Sl. No. Characteristic</i>	<i>Requirement</i>
1. Total dye content, corrected for Sample dried at $105 \pm 1^{\circ}\text{C}$ for 2 hours, per cent by mass, Min. Loss on drying at 135°C , percent by mass and Chlorides and Sulphates expressed as sodium salt, 15 percent by mass, Max.	85
3. Water insoluble matter, percent by mass, Max.	0.2
4. Combined ether extracts, percent by mass. Max.	0.2
5. Subsidiary dyes, percent by mass, Max.	1.0
6. Isatin Sulphonic acid, percent by mass, Max.	0.5
7. Lead, mg/kg, Max.	10
8. Arsenic, mg/kg, Max.	3
9. Heavy metals, mg/kg, Max.	40

It shall be free from mercury, copper and chromium in any form; aromatic amines, aromatic nitro compounds, aromatic hydrocarbons, and cyanides.

5. β -CAROTENE.

β -Carotene is obtained as dark violed hexagonal prisms when crystallised from benzene methanol solution; or as red rhombic, almost quardratic plates, from petroleum ether.

Synonyms	C.I. natural yellow 26
Colour Index Number (1976)	No.75130
Class	Carotenoids
Chemical Name	all trans β -Carotene
Empirical formula	$\text{C}_{40}\text{H}_{56}$
Molecular Weight	536.89
Melting Point	$183^{\circ}\text{C} \pm 1^{\circ}\text{C}$

Solubility.- Soluble in carbon disulphide, benzene and chloroform, moderately soluble in normal hexane, cyclohexane, ether, petroleum ether and oils; practically insoluble in methanol ; insoluble in water.

Spectrophotometric Requirement.-The wavelengths of absorption maxima of all trans β -Carotene in cyclohexane (0.2 mg per 100 ml. approximately) and in-1cm cell shall be 456 m μ to 484 m μ region. There shall be no cis-peak in the 330 m μ to 355 m μ region.

A solution of β -carotene in chloroform on addition of antimony trichloride solution shall give a dark blue colour having maximum absorption at a wavelength of 590 m μ .

Colour Reaction- When 2ml. of concentrated sulphuric acid is added to 2m. of 0.2 per cent solution of β -Carotene in chloroform, the acid layer shall turn blue.

The material shall have a minimum purity of 96.0 per cent.

Maximum limit of metallic impurities shall be:—

Arsenic (as As)	3 ppm
Lead (as Pb)	10 ppm.
Heavy metal	40 ppm.

And shall also meet the following requirements:—

(i) Subsidiary colouring matter, percent by weight, Max	3
(ii) Sulphated ash, percent of total colouring matters, Max	0.1

6-CHLOROPHYLL:

Chlorophyll, the green pigment of plants, is extracted and widely used as a colouring matter for various food items.

Synonyms	C.I. Natural Green 3; Lebensmittel Green No.1
Colour Index Number (1956)	No.75810
Colour Index Number (1924)	No. 12499
Color	Green
Class	Phorbin (dihydrophorbin)
Chemical Name	Chlorophyll a - magnesium complex of 1,3,5,8-tetramethyl 4-ethyl-2-vinyl-9-keto-10 carbomethoxy phorbinphytyl-7-propionate. Chlorophyll b magnesium complex 1,5,8 trimethyl-3-formyl-4-ethyl-2- vinyl-9-keto-10 carbomethoxyphorbinphytyl-7-propionate
Empirical formula	Chlorophyll a - $C_{55}H_{72}O_5N_4Mg$ Chlorophyll b- $C_{55}H_{70}O_6N_4Mg$
Molecular Weight	Chlorophyll a- 893.54 Chlorophyll b - 907.52

General- The material shall be an intensely dark green, aqueous, ethanolic, or oily solution of chlorophyll degradation products. It shall be soluble in ethanol, ether, chloroform and benzene. It shall be insoluble in water.

Identification test- A solution of chlorophyll in ethanol shall be blue with deep red fluorescence.

Brown-phase Reaction-When green ether or petroleum ether solution of chlorophyll is treated with a small quantity of a 10 per cent solution of potassium hydroxide in methanol, the colour shall become brown quickly returning to green.

Note.- This test is applicable only when chlorophyll has not been treated with alkalies.

Maximum limits for metallic impurities shall be:—

Arsenic (as As)	3 ppm
Lead (as Pb)	10 ppm
Copper (as Cu)	30 ppm
Zinc (as Zn)	50 ppm

The material shall also conform to the following requirements:—

CHLOROPHYLL - MAGNESIUM COMPLEX

<i>Sl. No.</i>	<i>Characteristic</i>	<i>Requirement</i>
1	Total combined phaeophytines and their magnesium complexes, percent by weight, max.	10
2	Residual solvents, mg/kg, Max. Acetone, methanol, ethanol, propan-2-ol, hexane Dichloromethane	50 10

7 - CAMEL

Caramel shall be prepared from the food grade carbohydrates or their combinations in the presence of food grade acids, alkalis or salts. It shall be of four types, namely:—

Type-I- Plain Caramel-It shall be prepared by heating carbohydrates with or without acids or alkalis, or their salts. No. ammonium or sulphite compounds are used.

Type-II-Caustic sulphite caramel- It shall be prepared by heating carbohydrates with or without acids or alkalis or their salt in the presence of sulphite compounds; no ammonium compounds are used.

Type - III - Ammonia Process Caramel- It shall be prepared by heating carbohydrates with or without acids or alkalis or their salts in the presence of ammonium compounds; no sulphites are used.

Type-IV- Ammonia Sulphite Caramel- It shall be prepared by heating carbohydrates with or without acids or alkalis or their salts in the presence of both sulphite and ammonium compounds.

RAW MATERIALS

1. Carbohydrates - Caramel shall be prepared from the following carbohydrates or their mixtures:—

Sucrose, glucose, fructose, invert sugar, lactose, malt syrup, molasses, starch hydrolysates and fractions there of and/or polymer thereof.

2. Acids and alkalis- The acids used are sulphuric acid, phosphoric acid, acetic acid, or citric acid and the alkalis used are sodium, potassium or calcium hydroxide or mixture thereof.

Where the ammonium compounds are used, they are one or more of the

following:— Ammonium hydroxide

Ammonium Carbonate and

Bicarbonate Ammonium phosphate

Ammonium sulphate

Ammonium sulphite, Bisulphite, Metasulphite

Where the sulphite compounds are used, they are one or more of the following:—

Sulphurous acid, Potassium, Sodium or ammonium Sulphite or Bisulphite.

It shall be a dark brown to black liquid or solid materials having the characteristic odour of burnt sugar and a pleasant, bitter taste. Its solution, when spread in a thin layer on a glass plate should appear homogeneous, transparent and have reddish-brown colour. It shall be miscible with water. It shall be free from any other extraneous colouring matter. It may contain permitted emulsifying and stabilising agents.

It shall conform to the requirements prescribed in Table 1 below. All requirements shall be on solids basis, except metallic impurities.

TABLE 1 - ROUTINE TEST REQUIREMENTS FOR CAMEL

<i>Sl. No.</i>	<i>Characteristic</i>	<i>Type I Plain</i>	<i>Type II Caustic Sulphite</i>	<i>Type III Ammonia Process</i>	<i>Type IV Sulphite Ammonia</i>
1.	Solid content, per cent by mass	62-77	65-72	53-83	40-75
2.	Colour intensity,	0.01-0.12	0.06-0.10	0.08-0.36	0.10-0.60
3.	Ammonical nitrogen per cent by mass, max.	0.01	0.01	0.4	0.5
4.	4-Methylimidazole	-	-	Max.300 mg/kg & Max.200 mg/kg on equivalent colour basis	Max.1000 mg/kg & Max.250 mg/kg on equivalent colour basis
5.	Lead (as Pb), mg/kg,	Max.	5	5	5 5
6.	Arsenic(as AS) mg/kg.	3	3	3	3

Note: Requirement of ammoniacal nitrogen is based on a product colour having a minimum colour intensity prescribed at Sl. No. (2) proportionately higher values of ammoniacal nitrogen apply for products of higher colour intensity.

Type Test

The material shall also conform to the requirements prescribed in Table 2 below. All requirements shall be on solid basis except metallic impurities.

TABLE 2 - TYPE TEST REQUIREMENTS FOR CARMEL

Sl. No.	Characteristic	Type I Plain	Type II Caustic Sulphite	Type III Ammonia Process	Type IV Sulphite Ammonia
1.	Total sulphur Per cent by mass.	Max.03	1.3-2.5	Max.0.3	1.4-10.0
2.	Sulphur dioxide (as SO ₂)	--	Max. 0.2%	--	Max.0.5%
3.	Total nitrogen, Per cent by mass	Max.0.1	Max.0.2	1.3-6.8	0.5-7.5
4.	Heavy metals mg/kg (Max.)	25	25	25	25
5.	2-Acetyl-4- tetra hydroxy butylimidazole (THI)--	--	--	Max.40 mg/kg & Max. 25 mg/kg on an equivalent colour basis	---
6.	Mercury (as Hg) mg/kg, Max.	0.1	0.1	0.1	0.1
7.	Copper (as Cu) mg/kg, Max.	20	20	20	20

The material shall be filled in amber coloured glass or high density polythylene containers or any other well closed suitable containers with as little air space as possible. The containers shall be such as to preclude contamination of the contents with metals or other impurities.

8. ANNATTO

Class	Carotenoids
Code Number	CI (1975) No. 75120', CI (1975) Natural Orange 4 EEC No.E-160 b
Chemical Name	Annatto extract in oil contains several coloured components, the major single one being bixin which may be present in both Cis and Trans forms. Thermal degradation products of bixin may also be present
Solubility	Water soluble annatto contains norbixin, the hydrolysis product of bixin, in the form of sodium or potassium salt, as the major colouring principle. Both cis and trans forms may be present
Chemical Formula	Bixin C ₂₅ H ₃₀ O ₄ Norbixin C ₂₄ H ₂₈ O ₄
Molecular Weight	Bixin 394.50 Norbixin 380.48

The material shall be of the following two types:

Solution in oil for use in butter and other food products, and

Solution in water for use in cheese and other food products.

General

The material shall be derived only from the plant *Bixa orellana* L. and shall not contain any extraneous colouring matter. It shall be processed, packed, stored and distributed under hygienic conditions in licensed premises.

(1) Solution of Annatto Colour in Oil for Use in Butter and Other Food Products:—

Annatto extract in oil, as solution or suspension, is prepared by extraction of the outer coating of seeds with vegetable oils. In the preparation of the solution of annatto colour in oil, only the edible vegetable oils shall be used, either singly or in a mixture.

The solution of annatto colour in oils shall be clear and shall remain so on storage in suitable containers at 15°C except for a slight deposit of stearine or shall be in the form of a suspension. The suspension on dilution with hot oil to bring the bixin content to 0.24 per cent shall be a clear solution.

Colour

The colour of solution in amyl acetate at a dilution of 1:1000 (m/v) when measured in a Lovibond Tintometer with a 1 cm Cell Spectrophotometrically/Calorimetrically shall be not less than the following:

Yellow units	5.0
Red units	0.4

or be not less than the colour of the following inorganic solution at a liquid depth of one centimeter which may be employed for matching the stated dilution in a plunger type colorimeter using incident light closely approximating the normal day light:

Potassium Bichromate	0.320 g
Cobalt ammonium sulphate (CoSO ₄ (NH ₄) ₂ SO ₄ 6H ₂ O)	2.02 g
Sulphuric acid, Sp-gr 1.84	2ml
Distilled water	To make solution to one litre

These reagents shall be of the analytical reagent grade. Although the solution retains its tinctorial value for a considerable time, after prolonged storage, its optical clarity shall be examined before use, to ensure that no alteration has taken place.

Note 1 - Diluted solution of annatto colour in amyl acetate is not stable in colour quality, particularly if exposed to light, and measurement shall be carried out on the diluted solution without undue delay.

(ii) Solution of Annatto Colour in Water for use in Cheese and Other Food Products:

Water soluble annatto colour is prepared by extraction of the outer coating of the seeds with aqueous alkali (sodium or potassium hydroxide). In the preparation of the solution, potable water shall be used. A little quantity (0.5 to 3 per cent) of alkali may be added.

The solution shall be clear and shall remain so on storage in suitable containers at a temperature of 15°C.

Colour

The colour of the solution in 0.1 N sodium hydroxide or potassium hydroxide at a dilution of 1:1000 (m/v) measured in a 1-cm shall be the same as that specified in (i) above.

The material shall conform to the requirements prescribed in Table below:

TABLE

Requirement for Annatto

<i>Sl. No. Characteristic</i>	<i>Requirement</i>
Carotenoid	
(a) Annatto extract in oil, expressed as bixin, per cent by mass, Min.	0.24
(b) Water-soluble annatto, expressed as norbixin, percent by mass, Min.	0.24
2. Arsenic, mg/kg, Max.	3
3. Lead, mg/kg, Max.	10
4. Copper, mg/kg, Max.	30
5. Heavy metal, mg/kg, Max.	40

9-RIBOFLAVIN

Riboflavin is a yellow to orange-yellow crystalline powder. Melting point about 280°C with decomposition.

Solubility-slightly soluble in water, more soluble in saline solution and in a 10 per cent (w/v) solution of urea, sparingly soluble in alcohol, practically insoluble in chloroform and in solvent ether and soluble in dilute solution of alkali hydroxides.

Synonyms	Vitamin B2, Lactoflavin and Lactroflavine
Color	Yellow to orange-yellow
Class	Isoalloxazine
Chemical Name	6,7-dimethyl-9-(d-1-ribityl)- isoalloxazine
Empirical formula	C ₁₇ H ₂₀ N ₄ O ₆
Molecular Weight	376.38

Identification.-A solution of 1 mg of Riboflavin in 100 ml water is pale greenish yellow in transmitted light, and has an intense yellowish green fluorescence which disappears on the addition of sodium dithionite and mineral acids or alkalis.

Spectrophotometry-Absorption maxima of aqueous solution shall be at 220 to 225, 266, 371 and 444 mu.

Specific Rotation-It shall be determined in a 0.5 per cent w/v solution in a mixture of 1.5 ml of 0.1 N alcoholic solution of potassium hydroxide (free from carbonate) and sufficient freshly boiled and cooled water to produce 10 ml. The specific rotation, when calculated with reference to the substance dried to constant weight in the dark at 105 °C, shall be, - 122 °C.

The material shall have minimum purity of 97.0 per cent. Maximum limit of metallic impurities shall be:—

Arsenic (as As)	5 ppm
Lead (as Pb)	20 ppm.

10 - PONCEAU 4R

Common Name	Ponceau 4R
Synonyms	CI Food Red 7, L-Rot No.4, Coccine Nouvelle, Cochineal Red A; EEC Serial No.E 124
Colour of the 0.1 Percent (m/v) solution in distilled water	Red
Colour Index Number (1975)	No. 16255
Class	Monoazo
Chemical Name	Trisodium salt of 1-(4-sulpho-1-naphtylazo) naphthol-6, 8-disulphonic acid
Empirical formula	C ₂₀ H ₁₁ N ₂ O ₁₀ S ₃ Na ₂
Molecular Weight	604.5
Solubility	Soluble in water. Sparingly soluble in Ethanol

The material shall conform to the requirements prescribed in Table below:—

TABLE
Requirements for Ponceau 4R

Sl. No.	Characteristic	Requirement
	Total dye content, corrected for Sample dried at 105±1 °C for 2 hours, per cent by mass, Min.	85
2	Loss on drying at 135 °C, percent by mass, Max. and Chlorides and Sulphates expressed as sodium salt, per cent by mass, Max	18
3.	Water insoluble matter, percent by mass, Max.	0.2
4.	Combined ether extracts, percent by mass. Max.	0.2
5.	Subsidiary dyes, percent by mass, Max.	1.0
6.	Dye intermediates, per cent by mass, Max.	0.5
7.	Lead, mg/kg, Max.	10
8.	Arsenic, mg/kg, Max.	3
9.	Heavy metals, mg/kg, Max.	40

It shall be free from mercury, selenium and chromium in any form; aromatic amines, aromatic nitro compounds, aromatic hydrocarbons, and cyanides.;

11-CARMOISINE

Common Name	Carmoisine
Synonyms	Azorubine, C.I. Food Red 3, EEC. Serial No.E 122
Colour of the 0.1 Percent (M/V) solution in distilled water	Red
Colour Index Number (1975)	No.14720
Class	Monoazo
Chemical Name	Disodium salt of 2-(4-sulpho-1-naphthylazo)-1-hydroxy-naphthalene-4-sulphonic acid
Empirical formula	$C_{20}H_{12}N_2O_7S_2Na_2$
Molecular Weight	502.44

General Requirements: The material shall be free from mercury, selenium and chromium in any form, aromatic amines, aromatic nitro compounds, aromatic hydrocarbons and cyanides.

Carmoisine shall also comply with requirements prescribed in Table below:—

TABLE

Requirements for Carmoisine

<i>Sl. No. Characteristic</i>	<i>Requirement</i>
Total dye content, corrected for Sample dried at $105 \pm 1^{\circ}C$ for 2 hours, per cent by mass, Min.	87
2. Loss on drying at $135^{\circ}C$, percent by mass, Max. and Chlorides and Sulphates expressed as sodium salt, per cent by mass, Max.	13
3. Water insoluble matter, percent by mass, Max.	0.2
4. Combined ether extracts, percent by mass. Max.	0.2
5. Subsidiary dyes, percent by mass, Max.	1.0
6. Dye intermediates, per cent by mass, Max.	0.5
7. Lead, mg/kg, Max.	10
8. Arsenic, mg/kg, Max.	3
9. Heavy metals, mg/kg, Max.	40

12-SYNTHETIC FOOD COLOUR - PREPARATION AND

MIXTURES. Colour Preparation

A Preparation containing one or more of the permitted synthetic food colours conforming to the prescribed standard alongwith diluents and/or filler materials and meant to be used for imparting colour to food. It may contain permitted preservatives and stabilizers.

The colour preparation would be either in the form of a liquid or powder. Powder preparations shall be reasonably free from lumps and any visible extraneous/foreign matter. Liquid preparations shall be free from sediments.

Only the following diluents or filler materials shall be permitted to be used in colour preparations conforming to the prescribed standards:—

- Potable water
- Edible common salt
- Sugar
- Dextrose Monohydrate

Liquid glucose
 Sodium sulphate
 Tartaric acid
 Glycerine
 Propylene glycol
 Acetic acid, dilute
 Sorbitol
 Citric acid
 Sodium carbonate and sodium hydrogen carbonate
 Lactose
 Ammonium, sodium and potassium alginates
 Dextrins
 Ethyl acetate
 Starches
 Diethyl ether
 Ethanol
 Glycerol mono, di and tri acetate
 Edible oils and fats
 Isopropyl alcohol
 Bees wax
 Sodium and ammonium hydroxide
 Lactic acid
 Carragenan and gum arabic
 Gelatin
 Pectin

Colour Mixtures

A mixture of two or more permitted synthetic food colour conforming to prescribed standards without diluents and filler material and meant to be used for imparting colour to food.

It may contain permitted preservatives and stabilizers.

General Requirements-For Colour Preparation & Colour Mixture. The total Synthetic dye content, per cent by mass (m/v) in the colour preparation or in the mixture shall be declared on the label of the container. In powder preparations the declared value shall be on moisture free basis and in case of liquid preparations on as in basis. The total dye content shall be within the tolerance limits given below on the declared value:

- | | |
|------------------------|---------------|
| (a) Liquid preparation | +15 per cent |
| | -5 per cent |
| (b) Solid preparations | ±7.5 per cent |

The limits of impurities shall be as prescribed in Table below:—

TABLE

Limits for Impurities

1. Water insoluble matter, per cent by mass, Max. (on dry basis), Max.	1.0
2. Lead, (as Pb), mg/kg, Max.	10
3. Arsenic, (as As) mg/kg, Max.	3.0
4. Heavy metals, mg/kg, Max.	40

It shall be free from mercury, copper and chromium in any form; aromatic amines, aromatic nitro compounds, aromatic hydrocarbons, polycyclic aromatic hydrocarbon, 2-naphthyl aminobenzidine, amino-4-diphenyl (xenylamine) or their derivatives and cyanides.

The total coal tar dye content percent by mass (m/v) in colour preparation or in mixture shall be declared on the label of the container. In powder preparation, the declared value shall be on moisture free basis and in case of liquid preparation on 'as is basis' and the total dye content shall be within ± 15 percent of the declared value. Colour preparation and colour mixture shall also comply with the following requirements namely: -

<i>Sl. No. Characteristics</i>	<i>Requirements</i>
1 Water insoluble matter, percent by mass	Not more than 1.0
2 Arsenic as (As), parts per million	Not more than 3
3 Lead as (Pb) parts per million	Not more than 10

13 BRILLIANT BLUE FCF

Brilliant Blue FCF is hygroscopic in nature and its shade changes with different pH. Suitable precautions should, therefore, be taken in packing the colour.

Colour Brilliant Blue FCF is described below, namely:—

Common Name	Brilliant Blue FCF
Synonyms	C.I. Food Blue FD and C Blue No.1 Blue brilliant FCF
Colour	Blue
Colour Index Number (1975)	No.42900
Class	Triarymethane
Chemical Name	Disodium salt of alpha 4-(N-ethyl-beta sulfobenzylamino)-phenyl] alpha [4-(N-ethyl-3-Sulfonatobenzylimino)cyclohexa-2, 5-dienylidene] toluene-2-sulfonate
Empirical formula	$C_{17}H_{14}N_2O_9S_2$
Molecular Weight	792.86

General requirements: The material shall conform to the requirement prescribed in Table below, namely:—

TABLE FOR BRILLIANT BLUE FCF

<i>Sl. No. Characteristics</i>	<i>Requirements</i>
(i) Total dye content, corrected for Sample dried at $105 \pm 1^\circ C$ for 2 hours, percent by Mass, Minimum	85
(ii) Loss on drying at $135^\circ C$, and Chlorides and Sulphates expressed as sodium salt, per cent by Mass, Maximum	15
(iii) Water insoluble matter, percent by Mass, Maximum	0.2
(iv) Combined ether extracts, percent by Mass, Maximum	0.2
(v) Subsidiary dyes, percent by Mass, Maximum	3
(vi) Dye intermediates, percent by Mass, Max.	
(a) O, sulpho-benzaldehyde, Maximum	1.5
(b) N-N' ethyl-benzyl-aniline-3-sulphonic acid, Maximum	0.3
(c) Leuco base, percent by Mass, Maximum	5
(vii) Heavy metals, (as Pb), mg/kg, Maximum	40
Lead, mg/kg, Maximum	10
Arsenic, mg/kg, Maximum	3
Chromium, mg/kg, Maximum	50

Note:- The material shall be free from aromatic amines, aromatic nitro compounds, aromatic hydrocarbons and cyanides.

14. Fast Green FCF:

Fast Green FCF is hygroscopic in nature and its shade changes with different pH. Suitable precautions should, therefore, be taken in packing the colour.

Fast Green FCF is described below, namely:—

Common Name	Fast Green FCF
Synonyms	C.I. Food Green 3, FD and C
Green No.3, Vert Solide FCF	
Class	Triary methane
Colour	Green
Colour Index	(1975) No.42053
Chemical Name	Disodium salt of 4-[4-(N-ethyl-p-sulfobenzylamino)-phenyl-(4-hydroxy-2-sulphonumphenyl)-methylene]-(N-ethyl-N-p-sulphobenzyl 2, 5-cyclohexadienimine).
Empirical Formula	C ₃₇ H ₃₄ O ₁₀ N ₂ S ₂ Na ₂
Molecular Weight	808.86

Requirements The material shall conform to the requirement prescribed in Table below, namely:—

TABLE FOR FAST GREEN FCF

<i>Sl. No. Characteristic</i>	<i>Requirement</i>
Total dye content, corrected for Sample dried at 105±1 °C for 2 hours, percent by mass, Minimum	85
(ii) Loss on drying at 135 °C, and, percent by Mass, Maximum and chlorides and Sulphates expressed as sodium salt, percent by mass, Maximum	13
(iii) Water insoluble matter, percent by Mass, Maximum	0.2
(iv) Combined ether extracts, percent by Mass. Max	0.2
(v) Subsidiary dyes, percent by mass, Maximum	1.0
Organic compound other than colouring matter uncombined intermediates and products of side reactions	
(a) Sum of 2-, 3-, 4-formyl benzene sulphonic acid, sodium salts, percent by Mass, Maximum	0.5
(b) Sum of 3- and 4-[ethyl (4-sulphophenyl) amino methyl benzene sulphonic acid, disodium salts, Percent by Mass, Maximum	0.3
(c) 2-formyl-5-hydroxybenzene sulphonic acid sodium salt, percent by Mass, Maximum	0.5
(d) Leuco base, percent by Mass, Maximum	5.0
(e) Unsulphonated primary aromatic amines (calculated as aniline), percent by Mass, Maximum	0.01
(vii) Lead, mg/kg, Maximum	10
(viii) Arsenic, mg/kg, Maximum	3
(ix) Chromium, mg/kg, Maximum	50
(x) Mercury, mg/kg, Maximum	Absent
(xi) Heavy metals, mg/kg, Maximum	40

Note:- The material shall be free from aromatic nitro compounds, aromatic hydrocarbons and cyanides

15. Aluminium Lake of Sunset Yellow FCF Food Yellow No.5 Aluminium Lake is a fine orange yellow water soluble, odourless powder. It is prepared by precipitating Sunset Yellow FCF (conforming to specification under 10.02 of Appendix C of these Regulations) on to a substratum of Alumina.

Chemical Name - Sunset Yellow FCF Aluminium Lake -6, hydroxy-5 (4-sulfophenylazo)-2 Naphthalenesulphonic acid, Aluminium Lake.

Synonym - CI Pigment Yellow, 104, FD and C Yellow No. 6, Aluminium Lake (USA), Food Yellow No. 5 Aluminium Lake (Japan).

(1) Sunset yellow dye used in preparation of lake colour shall conform to specifications laid down under table 2 of these Regulations.

(2) Pure dye content of Aluminium Lake weight by weight	not less than 17 percent
(3) Substratum of Aluminium oxide	not more than 83 percent.
(4) Aluminium content in the lake weight by weight	not more than 44 percent
(5) Sodium chlorides and sulphates (as sodium salts)	not more than 2.0 percent
(6) Inorganic matter (HCl insoluble)	not more than 0.5 percent
(7) Lead (as Pb)	not more than 10 ppm
(8) Arsenic (as As)	not more than 3 ppm

Alumina used in colour shall conform to following, namely:—

Identity: Alumina (dried as aluminium hydroxide) is a white, odourless, tasteless, amorphous powder consisting essentially of Aluminium hydroxide ($\text{Al}_2\text{O}_3 \times \text{H}_2\text{O}$).

Specifications: Alumina (dried aluminium hydroxide) shall conform to the following specifications, namely:-

- | | |
|---|--|
| (i) Acidity or alkalinity | Agitate 1 gm with 25ml of water and filter.
The filtrate shall be neutral to litmus paper |
| (ii) Lead (as Pb) | not more than 10 parts per million |
| Arsenic (as As) | |
| not more than 1 parts per million | |
| (iv) Mercury (as Hg) | not more than 1 parts per million |
| (v) Aluminium oxide (Al_2O_3) | not less than 50 percent |

Solubility: Lakes are insoluble in most solvents. They are also insoluble in water in pH range from 3.5-9.0 but outside this range and lake substrate tends to dissolve releasing the captive dye.