

File No. SS-G0SP01(MISC)/1/2023-Standard-FSSAI  
**Food Safety and Standards Authority of India**  
(A Statutory Authority established under Food Safety and Standards Act, 2006)  
FDA Bhawan, Kotla Road, New Delhi-110 002

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Dated, the 14<sup>th</sup> March, 2024

**Subject: Direction under Section 16(5) of FSS Act regarding compliance w.r.t. Processing Aids under Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011-reg.**

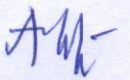
FSSAI has notified a list of processing aids permitted in various food products *vide* gazette notification No. Stds/Processing aids/Notification/FSSAI/2018 dated 09.10.2020 and subsequently amended *vide* notifications F. No. 1-116/Scientific Committee/Notif.27/2010-PSSAI(E) dated 04.03.2021, F.No. STD/FA/A-1.30/No.1/2020-FSSAI(P-I) dated 27.10.2022, F.No. Std/Notifications/35.1/2021 dated 11.01.2023 and F. No. STD/FA/A-1.30/No.1/2020-FSSAI dated 21.02.2023 under FSS (FPS and FA) Regulation, 2011.

2. In addition to above, several processing aids, to be included in the list of processing aids under tables 1-12 of Appendix C of the Food Safety and Standards (Food Products Standards and Food Additives) Regulation, 2011 are being considered by the Working Group (WG) on Processing Aids and Scientific Panel on Food Additives, Flavourings, Processing Aids and Materials in Contact with Food. Many of these processing aids have been recommended by the Scientific Panel and are in the process of draft notification after the approval of Food Authority. Other remaining processing aids are still under consideration of Working Group and Scientific Panel.

3. Considering the fact that notification of all such processing aids is likely to take some time, the Food Authority in its 41st meeting decided to have an active list of Processing Aids for use by food businesses, on provisional basis, till the time appropriate amendments on the same are gazette notified, as required. Accordingly, an active list of processing aids is listed in Annexure.

4. While Food Businesses may use processing aids listed in the Annexure on technological grounds, the Commissioners of Food Safety of all States/UTs and all Central Licensing Authorities are hereby directed not to take any punitive action on FBOs for using the processing aids listed in Annexure that are yet to be notified for enforcement.

5. This issues with the approval of the Competent Authority in exercise of power vested under Section 16(5) of Food Safety and Standards Act, 2006.



(Anil Mehta)

Director

Regulation Division  
FSSAI, New Delhi

To:

1. ED (CS)-with a request to communicate to Food Safety Commissioners of all States/UTs and all Regional Director, FSSAI.
2. Advisor (QA)
3. Director (Import)-with a request to communicate to all Authorized Officers
4. CITO, FSSAI-with a request to upload the direction on the FSSAI website

Copy to:

1. PPS to Chairperson, FSSAI
2. PS to CEO, FSSAI

## Active list of processing aids allowed for use by Food Business Operators

<b>TABLE 1: ANTIFOAMING AGENTS</b>			
<b>S. No.</b>	<b>Name of the processing aid</b>	<b>Product Category</b>	<b>Residual level (mg/kg) (Not more than)</b>
1.	Coconut oil	Juices	GMP
2.	Hydrogenated coconut oil	Confectionary	15
		Vegetable protein	GMP
3.	Polydimethylsiloxane (INS 900a)	Beer, fats & oils, vegetable protein, Juices, Potato processing, alcoholic beverages, Sugar processing	10
4.	Polyethylene glycol (INS 1521)	All foods	GMP
5.	Propylene glycol (INS 1520)	All foods	GMP
6.	Sorbitan monolaurate (INS 493)	All foods	1
7.	Sorbitan monooleate (INS 494)	All foods	1
8.	Vegetable fatty acid esters	Juices	GMP
9.	Polysorbate Sorbitan Monolaurate	Sugar	GMP

<b>TABLE 2: CATALYST</b>			
<b>S. No.</b>	<b>Name of the processing aid</b>	<b>Product Category</b>	<b>Residual Level (mg/kg) Not more than</b>
1	Chromium (excluding chromium VI)	Hydrogenated vegetable oil	0.1
2.	Copper	Hydrogenated vegetable oil	0.1
3.	Molybdenum	Hydrogenated vegetable oil	0.1
4.	Nickel	Polyols	1
		Hardened oil	0.8
		Hydrogenated vegetable oil	1.5
5.	Potassium	Interesterified vegetable oil	1
6.	Potassium ethoxide	Interesterified vegetable oil	1
7.	Sodium	Interesterified vegetable oil	1
8.	Sodium ethoxide	Interesterified vegetable oil	1
9.	Sodium methoxide	Interesterified vegetable oil	1

**TABLE 3: CLARIFYING AGENTS AND FILTRATION AIDS**

<b>S. No.</b>	<b>Name of the processing aid</b>	<b>Product Category</b>	<b>Residual level (mg/kg) (Not more than)</b>
1.	Acid clays of montmorillonite	Fruit or vegetable juices, fruit nectars, syrups and wine, Oils	GMP
2.	Chitosan sourced from <i>Aspergillus niger</i>	Wine, beer, cider, spirits and food grade ethanol	GMP
3.	Chloro methylated aminated styrene-divinyl benzene resin	Sugar	1
4.	Co-extruded polystyrene and polyvinyl polypyrrolidone	Fruit or vegetable juices, fruit nectars, syrups and Alcoholic beverages including low alcoholic and alcohol free counterparts	1
5.	Copper sulphate (INS 519)	Fruit or vegetable juices, fruit nectars, syrups and wine	GMP
6.	Diatomaceous earth	Fruit–or vegetable juices, Alcoholic beverages including low alcoholic and alcohol-free counterparts (as filter powder), non-alcoholic beverages, sharbat, sugar syrups, synthetic syrups, fruit syrups and honey  All foods in general	GMP
7.	Fish collagen, including isinglass	Fruit or vegetable juices, fruit nectars, syrups and Alcoholic beverages including low alcoholic and alcohol-free counterparts	GMP
8.	Kaolin	Fruit or vegetable juices, fruit nectars, syrups and wine	GMP
9.	Magnesium oxide (INS 530)	Fruit or vegetable juices, fruit nectars, syrups and wine	GMP
10.	Perlite	Starch hydrolysis	GMP
11.	Polyvinyl polypyrrolidone (INS 1201)	Fruit or vegetable juices, fruit nectars, syrups and wine	GMP
12.	Shellac, bleached (INS 904)	Fruit or vegetable juices, fruit nectars, syrups and wine	GMP

13.	Synthetic magnesium silicate (INS 553(i))	Edible oils	GMP
14.	Calcium oxide (INS 529)	Sugar processing/ Treatment, Preparation of corn flour	GMP
15.	Phosphoric acid (INS 338)	Sugar Sugar Treatment	GMP
16.	Sulphur Dioxide (INS 220)	Plantation White Sugar, Cube Sugar, Dextrose, Gur, Jaggery, Misri	70
		Khandsari (Sulphur) and Bura	150
		Refined Sugar	40

**TABLE 4: LUBRICANTS, RELEASE AND ANTISTICK AGENTS**

S. No.	Name of the processing aid	Product Category	Residual level (mg/kg) (Not more than)
1.	Acetylated mono- and diglycerides (INS 472a)	All foods	100
2.	Bees wax (INS 901)	All foods	GMP
3.	Calcium carbonate (INS 170 (i) )	All foods	GMP
4.	Calcium and sodium salts of stearic acid	Confectionery	GMP
5.	Carnauba wax (INS 903)	Confectionery	GMP
6.	Coconut Oil	Confectionery, bakery wares, salts, spices, soups, cereal products	GMP
7.	Glycerin/Glycerol (INS 422)	All foods	GMP
8.	Hydrogenated palm kernel oil (HPKO)	Confectionery and bakery wares	GMP
9.	Hydrogenated vegetable oil (HVO)	All foods	GMP
10.	Icing sugar	Confectionery	GMP
11.	Lecithin (INS 322 (i))	All foods	GMP

**TABLE 4: LUBRICANTS, RELEASE AND ANTISTICK AGENTS**

<b>S. No.</b>	<b>Name of the processing aid</b>	<b>Product Category</b>	<b>Residual level (mg/kg) (Not more than)</b>
12.	Liquid paraffin (INS 905 e)	Confectionery	GMP
13.	Magnesium stearate (INS 470(iii))	Confectionery	GMP
14.	Medium chain Triglyceride (MCT) (C6- C12)	Confectionery, bakery wares and fruit Jelly	GMP
15.	Oleic acid	All foods	GMP
16.	Palm oil/Palmolein	Confectionery, bakery wares, Salts, spices, soups and cereal products	GMP
17.	Rice starch	Confectionery	GMP
18.	Sunflower oil	Confectionery, bakery wares, Salts, spices, soups, cereal, cereal products, sauces, salads, protein products, seasonings, fruits & vegetable products, nuts & nut products	GMP
19.	Soybean oil	Confectionery and bakery wares	GMP
20.	Thermally oxidised soya-bean oil (INS 479)	All foods	320
21.	White mineral oil (INS 905e)	All foods	GMP
22.	Cocoa powder	Chocolates	GMP
23.	Cottonseed oil	Fruits and vegetables, seasonings, bakery products, fruits & vegetable products, salt, spices and soups, cereal and cereal products, nut and nut products	GMP
24.	Magnesium hydrogen carbonate (INS 504(ii))	Snacks	GMP
26.	Talc (INS 553(iii))	Confectionery and Gums	GMP
27.	Tricalcium phosphate (INS 341(iii))	Snacks	GMP
28.	Rapeseed Oil	Confectionery including Chewing and Bubble Gum and Bakery	GMP

**TABLE 5: MICROBIAL CONTROL AGENTS, MICROBIAL NUTRIENTS AND MICROBIAL NUTRIENT ADJUNCTS**

<b>MICROBIAL CONTROL AGENT</b>			
<b>S. No.</b>	<b>Name of the processing aid</b>	<b>Product Category</b>	<b>Residual Level (mg/kg) (Not more than)</b>
1.	Dimethyl dicarbonate* (INS 242)	Wine, Fruits and vegetable juices, Water based flavoured drinks	Non-detectable
2.	Lysozyme (INS 1105)	Alcoholic beverages including low alcoholic and alcohol-free counterparts	GMP
3.	Octanoic acid	Meat, fruit and vegetables	GMP
4.	Sodium metasilicate (INS 550 (ii))	Meat and poultry carcasses and cuts	GMP
5.	Sodium chlorite	Meat, fish, fruit and vegetables	GMP
6.	Salmonella phage preparation (S16 and FO1a)	Raw meat and poultry	GMP
6a	Quaternary Ammonium Compound	Sugar Treatment	GMP

*\* Maximum usage level shall not be more than 200 mg/kg for wine, 250 mg/kg for fruits and vegetable juices and its products and 250 mg/kg for water based flavoured drinks. Residue shall be analyzed as per method specified in “Joint FAO/WHO Expert Committee on Food Additives (JECFA) specification of Dimethyl dicarbonate”.*

**MICROBIAL NUTRIENTS AND MICROBIAL NUTRIENT ADJUNCTS (for sustaining microbial growth)**

<b>S. No.</b>	<b>Name of the processing aid</b>	<b>Residual Level (mg/kg) (Not more than)</b>
7.	Adenine	GMP
8.	Adonitol	GMP
9.	Arginine	GMP
10.	Asparagine	GMP
11.	Aspartic acid	GMP
12.	Ammonium sulphate	GMP
13.	Ammonium sulphite	GMP
14.	Benzoic acid	GMP
15.	Biotin	GMP
16.	Calcium pantothenate	GMP
17.	Calcium propionate (INS 282)	GMP
18.	Copper sulphate (INS 519)	GMP
19.	Cysteine	GMP
20.	Cysteine monohydrochloride	GMP
21.	Dextran	GMP

22.	Ferrous sulphate	GMP
23.	Glutamic acid	GMP
24.	Glycine	GMP
25.	Guanine	GMP
26.	Histidine	GMP
27.	Hydroxyethyl starch	GMP
28.	Inosine	GMP
29.	Inositol	GMP
30.	Manganese chloride	GMP
31.	Manganese sulphate	GMP
32.	Niacin	GMP
33.	Nitric acid	GMP
34.	Pantothenic acid	GMP
35.	Peptone	GMP
36.	Phytates	GMP
37.	Polyvinylpyrrolidone (INS 1201)	GMP
38.	Pyridoxine hydrochloride	GMP
39.	Riboflavin (INS 101 (i))	GMP
40.	Sodium formate	GMP
41.	Sodium molybdate	GMP
42.	Sodium tetraborate	GMP
43.	Thiamine	GMP
44.	Threonine	GMP
45.	Trisodium orthophosphate	GMP
46.	Uracil	GMP
47.	Xanthine	GMP
48.	Zinc chloride	GMP
49.	Zinc sulphate	GMP
50.	Potassium Chloride	GMP
51.	Magnesium Sulphate	GMP
52.	Alanine	GMP
53.	Plant Polypeptides	GMP
54.	Urea for Distilled Spirituous Alcoholic Beverages and Aromatized Alcoholic Beverages	GMP
55.	Di-Ammonium Phosphate (DAP) (INS 342(ii)) for Distilled Spirituous Alcoholic Beverages and Aromatized Alcoholic Beverages	440 mg/kg

**TABLE 6: SOLVENT FOR EXTRACTION AND PROCESSING**

<b>S. No.</b>	<b>Name of the processing aid</b>	<b>Product Category</b>	<b>Residual Level (mg/kg) (Not more than)</b>
1.	Acetone		
		Flavouring substances	30
		Spice oleoresins	30
		Vegetable oils	0.1
		Other foods	0.1
		Colours	2
		Food Colours [chlorophylls (INS 140(i)); copper complexes of chlorophylls (INS 141(i)); copper complexes of chlorophyllins (INS 141(ii)); vegetable carotenes ((INS 160a(ii); carotene from <i>Blakeslea trispora</i> INS160a(iii); carotenes from algae INS 160a(iv)); paprika extract, capsanthin, capsorubin (INS 160c); lutein esters (INS 161b(ii))]	50
Food Colours [curcumin (INS 100); annatto, bixin, norbixin (INS 160b (i), (ii))]	30		
2.	Benzyl alcohol	Fatty acids, Flavouring substances, colours	GMP
3.	Butanol	Fatty acids, Flavouring substances	10
		Spice oleoresins	2
		Food Colour [curcumin (INS 100)]	10
4.	Butan-2-ol	Spice oleoresins	2
5.	Carbon dioxide (INS 290)	Flavouring substances	GMP
		Spice oleoresins	GMP
		Food Colours [curcumin (INS 100); chlorophylls (INS 140(i)); copper complexes of chlorophylls (INS 141(i)); copper complexes of chlorophyllins (INS 141(ii)); vegetable carotenes ((INS 160a(ii)); paprika extract, capsanthin, capsorubin (INS 160c); annatto, bixin, norbixin (INS 160(b)); tomato lycopene (INS 160d (ii)); lutein (INS 161b); anthocyanins (INS 163)]	GMP
6.	Cyclohexane	Flavouring substances, vegetable oils	1
7.	Dibutyl ether	Flavouring substances	2
8.	Diethyl ether	Flavouring substances, colors	2



**TABLE 6: SOLVENT FOR EXTRACTION AND PROCESSING**

<b>S. No.</b>	<b>Name of the processing aid</b>	<b>Product Category</b>	<b>Residual Level (mg/kg) (Not more than)</b>
		Spice oleoresins	2
9.	Dimethyl ether	Flavouring substances	2
10.	Ethyl acetate	Flavouring substances	10
		Spice oleoresins	50
		Food Colours [curcumin (INS 100); paprika extract, capsanthin, capsorubin (INS 160c); lycopene preparations (INS 160d (i))]	50
		Food Colours [beta-carotene from Blakeslea trispora INS160a(iii)]	8000
11.	Ethyl alcohol	Spice oleoresins	GMP
		Other Foods	GMP
12.	Ethylene dichloride (1,2 Dichloroethane)	Spice oleoresins	30
13.	Glycerol diacetate	All foods	GMP
14.	Glycerol monoacetate	All foods	GMP
15.	Heptane	Flavouring substances	1
		Vegetable oils	
16.	Hexane	Flavouring substances, vegetable oils	5
		Spice oleoresins	25
		Chocolate and chocolate products	1
		Food Colours [curcumin (INS 100); annatto bixin, norbixin (INS 160b (i), (ii))]	50
		Food Colours [chlorophylls (INS 140(i)); copper complexes of chlorophylls (INS 141(i)); copper complexes of chlorophyllins (INS 141(ii)); vegetable carotenes ((INS 160a(ii)); paprika extract, capsanthin, capsorubin (INS 160c); tomato lycopene (INS 160d (ii)); lutein and lutein esters from Tagetes erecta (INS 161b (i) and (ii))]	25
17.	Isobutane	Flavouring substances	1
		Other foods	0.1

**TABLE 6: SOLVENT FOR EXTRACTION AND PROCESSING**

S. No.	Name of the processing aid	Product Category	Residual Level (mg/kg) (Not more than)
18.	Isopropyl alcohol	Spice oleoresins	50
		Other foods	10
		Food Colours [curcumin (INS 100); chlorophylls (INS 140(i)); chlorophyllins (INS 140(ii)); copper complexes of chlorophylls (INS 141(i)); copper complexes of chlorophyllins (INS 141(ii)); vegetable carotenes ((INS 160a(ii)); paprika extract, capsanthin, capsorubin (INS 160c)]	50
		Food Colours [beta-carotene from Blakeslea trispora INS160a(iii)]	1000
		Food Colours [lycopene preparations (INS 160d (i), (iii))]	10
19.	Methyl alcohol	Spice oleoresins	50
		Food Colours [curcumin (INS 100); vegetable carotenes ((INS 160a(ii)); paprika extract, capsanthin, capsorubin (INS 160c)]	50
20.	Methylene chloride (Dichloromethane)	Decaffeinated tea	2
		Decaffeinated coffee	10
		Flavouring substances	2
		Spice oleoresins	30
		Vegetable oils	0.02
		Food Colours [curcumin (INS 100); chlorophylls (INS 140(i)); chlorophyllins (INS 140(ii)); copper complexes of chlorophylls (INS 141(i)); copper complexes of chlorophyllins (INS 141(ii)); vegetable carotenes ((INS 160a(ii)); annatto, bixin, norbixin (INS 160(b)); paprika extract, capsanthin, capsorubin (INS 160c); lycopene preparations (INS 160d (i), (iii))]	10
21.	Methyl ethyl ketone (butanone)	Fatty acids, Flavouring substances, decaffeination of coffee, tea	2
		Food Colours [chlorophylls (INS 140(i)); copper complexes of chlorophylls (INS 141(i)); copper complexes of chlorophyllins (INS 141(ii)); vegetable carotenes ((INS 160a(ii)); lutein esters (INS 161b(ii))]	50
22.	Methyl tert-butyl ether	Spice oleoresins	2
23.	Propane	Flavouring substances	1
		Edible oils	0.1
24.	Propan-1-ol	Spice oleoresins	1
25.	Toluene	Flavouring substances	1

**TABLE 6: SOLVENT FOR EXTRACTION AND PROCESSING**

S. No.	Name of the processing aid	Product Category	Residual Level (mg/kg) (Not more than)
26.	Water	Spice oleoresins	GMP
27.	Isobutyl acetate	Food Colours [beta-carotene from Blakeslea trispora INS160a(iii); lycopene from Blakeslea trispora INS160d(iii) ]	10000

**TABLE 7: BLEACHING, WASHING, DENUDING AND PEELING AGENTS**

S. No.	Name of the processing aid	Product Category	Residual level (mg/kg) (Not more than)
1.	Ammonium persulphate (INS 923)	Yeast	GMP
2.	Benzoyl peroxide (INS 928)	Fruits and vegetables	40 (as benzoic acid)
3.	Calcium hypochlorite	Fruits and vegetables, flours and starches, water	1 (as available chlorine)
4.	Carbonic acid	Tripe	GMP
5.	Chlorine (INS 925)	Fruits and vegetables, flours and starches	1 (as available chlorine)
6.	Chlorine dioxide	Fruits and vegetables, flours and starches	1 (as available chlorine)
7.	Diammonium hydrogen orthophosphate	Canned fruits and vegetables	GMP
8.	Hydrogen peroxide	Fruits and vegetables, flours and starches, Instant Tea processing	5
9.	Peracetic acid	Fruits and vegetables	GMP
10.	Sodium bisulphite	Root and tuber vegetables (not meant for those intended to be served or sold raw/fresh to consumers)	GMP
11.	Sodium hypochlorite	Fruits and vegetables, flours and starches	1 (as available chlorine)
12.	Sodium gluconate (INS 576)	Tripe	GMP
13.	Sodium laurate	Fruits and vegetables	GMP

<b>TABLE 7: BLEACHING, WASHING, DENUDING AND PEELING AGENTS</b>			
<b>S. No.</b>	<b>Name of the processing aid</b>	<b>Product Category</b>	<b>Residual level (mg/kg) (Not more than)</b>
14.	Sodium/ Potassium metabisulphite	Root and tuber vegetables (not meant for those intended to be served or sold raw/fresh to consumers)	25
15.	Sodium peroxide	Root and tuber vegetables	5
16	Calcium oxide (INS 529) (on dry basis)	Dried Ginger; whole and powder (unbleached or bleached)	20,000
17.	Sulphur Dioxide (INS 220)	Plantation White Sugar, Cube Sugar, Dextrose, Gur, Jaggery, Misri	70
		Khandsari (Sulphur) and Bura	150
		Refined Sugar	40

<b>TABLE 8: FLOCCULATING AGENTS</b>			
<b>S. No.</b>	<b>Name of the processing aid</b>	<b>Product Category</b>	<b>Residual level mg/kg (Not more than)</b>
1.	Citric acid (INS 330)	Unripened cheese – Paneer and Chhana	GMP
2.	Glucono delta lactone (INS 575)		
3.	Lactic acid (INS 270)		
4.	Malic acid (INS 296)		
5.	Sour whey		
6.	Vinegar		
7.	Calcium Hydroxide (INS 524-528)	Water Treatment, Non-Alcoholic Beverages	GMP
8.	Ferrous Sulphate	Water Treatment, Non-Alcoholic Beverages	GMP

<b>TABLE 9: CONTACT FREEZING AND COOLING AGENTS</b>			
<b>S. No.</b>	<b>Name of the processing aid</b>	<b>Product Category</b>	<b>Residual level (mg/kg) (Not more than)</b>
1	Liquid Nitrogen (INS 941)	Dairy-based desserts - Ice cream, All Foods	GMP

TABLE 10: DESICCATING AGENTS			
S. No.	Name of the processing aid	Product Category	Residual level (mg/kg) (Not more than)
1	Corn starch	Icing sugar	GMP

TABLE 11: ENZYMES (for treatment or processing of raw materials, foods, or ingredients)			
S.No.	Name of the Enzyme* [in order of Enzyme Commission (EC) number]	Source*	Residual level (mg/kg) (Not more than)
1.	Glucose oxidase (EC No. 1.1.3.4)	<i>Aspergillusniger</i>	GMP
		<i>Aspergillusoryzae</i>	
2.	Catalase (EC No. 1.11.1.6)	<i>Aspergillusniger</i>	GMP
3.	Glycero-phospholipid cholesterol acyltransferase (EC No. 2.3.1.43)	<i>Bacillus licheniformis</i>	GMP
4.	Transglutaminase (EC No. 2.3.2.13)	<i>Streptomyces mobaraensis</i>	GMP
5.	Lipase triacylglycerol (EC No. 3.1.1.3)	<i>Rhizopusoryzae</i>	GMP
		<i>Fusariumoxysporum</i>	
		<i>Thermomyceslanuginosus</i>	
		<i>Rhizopusniveus</i>	
		<i>Carica papaya</i>	
		<i>Rhizomucormiehei</i>	
		<i>Aspergillusniger</i>	
		<i>Candida rugosa(cylindracea)</i>	
		Pregastric bovine (calf) tissue	
		Pregastric ovine (lamb) tissue	
		<i>Penicilliumroquefortii</i>	
		Porcine pancreas	
<i>Mucorjavanicus (Mucorcircinelloides f. circinelloides)</i>			
Rice bran			
6.	Phospholipase A2 (EC No. 3.1.1.4)	<i>Streptomyces violaceoruber</i>	GMP
		<i>Aspergillusniger</i>	GMP
7.	Lysophospholipase (EC No. 3.1.1.5)	<i>Aspergillusniger</i>	GMP
8.	Pectin esterase (EC No. 3.1.1.11)	<i>Aspergillusniger</i>	GMP
9.	Acylglycerol lipase	<i>Penicilliumcamembertii</i>	GMP

TABLE 11: ENZYMES (for treatment or processing of raw materials, foods, or ingredients)			
S.No.	Name of the Enzyme* [in order of Enzyme Commission (EC) number]	Source*	Residual level (mg/kg) (Not more than)
	(EC No. 3.1.1.23)		
8.	Phospholipase A1 (EC No. 3.1.1.32)	<i>Aspergillusniger</i>	GMP
9.	Phytase (EC No. 3.1.3.8)	<i>Aspergillusniger</i>	GMP
10.	Phosphodiesterase I (EC No. 3.1.4.1)	<i>Leptographiumprocerum</i>	GMP
11.	Phospholipase D (EC No. 3.1.4.4)	<i>Streptomyces cinnamoneus</i>	GMP
12.	Hemicellulase (EC No. 3.2.1)	<i>Aspergillusniger</i> <i>Trichodermareesei/ longibrachiatum</i>	GMP
13.	Alpha amylase (EC No. 3.2.1.1)	<i>Aspergillusoryzae</i> <i>Aspergillusniger</i> <i>Bacillus licheniformis</i> <i>Bacillus amyloliquefaciens</i> <i>Bacillus subtilis</i> <i>Bacillus stearothermophilus</i> Cereal (barley) malt	GMP
14.	Beta amylase (EC No. 3.2.1.2)	Cereal (barley) malt <i>Bacillus amyloliquefaciens</i> <i>Hordeumvulgare (barley)</i> Soybean	GMP
15.	Glucan 1,4- $\alpha$ -glucosidase (or Glucoamylase or acid maltase) (EC No. 3.2.1.3)	<i>Aspergillusniger</i> <i>Aspergillusoryzae</i> <i>Trichodermareesei</i> <i>Rhizopusoryzae</i>	GMP
16.	Cellulase (4- $\beta$ -D-glucan 4- glucanohydrolase) (EC No. 3.2.1.4)	<i>Penicilliumfuniculosum</i> <i>Aspergillusniger</i> <i>Humicolainsolens</i> <i>Rasamsonia (Talaromyces) emersonii</i> <i>Trichodermareesei</i>	GMP
17.	Beta-glucanase (endo-beta glucanase or endo-1,3-beta- glucanase) (EC No. 3.2.1.6)	<i>Aspergillusniger</i> <i>Bacillus amyloliquefaciens</i> <i>Rasamsonia (Talaromyces) emersonii</i> <i>Trichodermareesei</i> <i>Aspergillusaculeatus</i>	GMP

TABLE 11: ENZYMES (for treatment or processing of raw materials, foods, or ingredients)			
S.No.	Name of the Enzyme* [in order of Enzyme Commission (EC) number]	Source*	Residual level (mg/kg) (Not more than)
		<i>Penicilliumfuniculosum</i>	
		<i>Bacillus subtilis</i>	
		<i>Trichodermaharzianum</i>	
		<i>Disporotrichumdimorphosporum</i>	
		<i>Humicolainsolens</i>	
18.	Inulinase (EC No. 3.2.1.7)	<i>Aspergillusniger</i>	GMP
19.	Endo-1,4-beta-xylanase (EC No. 3.2.1.8)	<i>Aspergillusniger</i>	GMP
		<i>Bacillus licheniformis</i>	
		<i>Disporotrichumdimorphosporum</i>	
		<i>Rasamsonia (Talaromyces) emersonii</i>	
		<i>Trichodermareesei(longibrachiatum)</i>	
		<i>Humicolainsolens</i>	
20.	Dextranase (EC No. 3.2.1.11)	<i>Chaetomiumerraticum</i>	GMP
21.	Polygalacturonase (pectinase) (EC No. 3.2.1.15)	<i>Aspergillusniger</i>	GMP
		<i>Aspergillusaculeatus</i>	
22.	Lysozyme (EC No. 3.2.1.17)	<i>Gallus gallus</i> egg	GMP
23.	Alpha-glucosidase (EC No. 3.2.1.20)	<i>Aspergillusniger</i>	GMP
		<i>Trichodermareesei</i>	
24.	Beta-glucosidase (EC No. 3.2.1.21)	<i>Aspergillusniger</i>	GMP
		<i>Kluyveromyceslactis</i>	
		<i>Trichodermareesei/ longibrachiatum</i> CL 847	GMP
25.	Alpha-galactosidase (melibiase) (EC No. 3.2.1.22)	<i>Aspergillusoryzae</i>	GMP
		<i>Aspergillusniger</i>	GMP
		<i>Morterevellavinaea</i>	GMP
		<i>Saccharomyces carlsbergensis</i>	GMP
26.	Beta-galactosidase (lactase) (EC No. 3.2.1.23)	<i>Kluyveromyceslactis</i>	GMP
		<i>Bacillus circulans</i>	
		<i>Saccharomyces sp.</i>	
		<i>Aspergillusniger</i>	
		<i>Aspergillusoryzae</i>	
27.		<i>Saccharomyces cerevisiae</i>	GMP

<b>TABLE 11: ENZYMES (for treatment or processing of raw materials, foods, or ingredients)</b>			
<b>S.No.</b>	<b>Name of the Enzyme* [in order of Enzyme Commission (EC) number]</b>	<b>Source*</b>	<b>Residual level (mg/kg) (Not more than)</b>
	Beta- fructofuranosidase (invertase or saccharase) (EC No. 3.2.1.26)	<i>Kluyveromycesfragilis</i>	
		<i>Saccharomyces carlsbergensis</i>	
		<i>Saccharomyces cerevisiae</i>	
28.	Trehalase (EC No. 3.2.1.28)	<i>Trichodermareesei</i>	GMP
29.	Endo-1,3-β-xylanase (EC No. 3.2.1.32)	<i>Humicolainsolens</i>	GMP
30.	Pullunase (EC 3.2.1.41)	<i>Bacillus acidopullulyticus</i>	GMP
		<i>Bacillus brevis</i>	
		<i>Bacillus circulans</i>	
		<i>Bacillus naganoensis</i>	
		<i>Klebsiella aerogenes</i>	
31.	Alpha Arabinofuronosidase (EC No. 3.2.1.55)	<i>Aspergillusniger</i>	GMP
32.	Glucan1,3- betaglucosidase (EC No. 3.2.1.58)	<i>Trichodermaharzianum</i>	GMP
33.	Mannanase (Mannan endo- 1,4-beta- mannosidase) (EC No. 3.2.1.78)	<i>Trichodermareesei</i>	GMP
		<i>Aspergillusniger</i>	GMP
34.	Protease (Bacteria) (EC No. 3.4)	<i>Bacillus amyloliquefaciens</i>	GMP
		<i>Bacillus licheniformis</i>	
		<i>Bacillus subtilis</i>	
		<i>Geobacillus caldoproteolyticus</i>	
35.	Protease (Fungi) (EC No. 3.4)	<i>Aspergillusniger</i>	GMP
		<i>Aspergillusoryzae</i>	
36.	Aminopeptidase (EC No. 3.4.11.1)	<i>Aspergillusoryzae</i>	GMP
37.	Serine protease (subtilisin) (EC No. 3.4.21.62)	<i>Bacillus licheniformis</i>	GMP
37a	Oryzin (EC No. 3.4.21.63)	<i>Aspergillus melleus</i>	GMP
38.	PIII-type proteinase (Lactocepin) (EC No. 3.4.21.96)	<i>Lactococcuslactis subsp. cremoris (strain SK11)</i>	GMP
39.	Papain (EC No 3.4.22.2)	<i>Carica papaya</i>	GMP
40.	Ficin (EC No. 3.4.22.3)	Figs	GMP
41.	Bromelain (EC No 3.4.22.33)	<i>Ananascomosus/bracteatus</i>	GMP
42.	Chymosin (EC No. 3.4.23.4)	<i>Kluyveromyceslactis</i>	GMP



<b>TABLE 11: ENZYMES (for treatment or processing of raw materials, foods, or ingredients)</b>			
<b>S.No.</b>	<b>Name of the Enzyme* [in order of Enzyme Commission (EC) number]</b>	<b>Source*</b>	<b>Residual level (mg/kg) (Not more than)</b>
42a	Aspergillopepsin I (EC No. 3.4.23.18)	<i>Aspergillus niger</i>	GMP
		<i>Aspergillus oryzae</i>	
42b	Aspergillopepsin II (EC No. 3.4.23.19)	<i>Aspergillus niger</i>	GMP
43.	Endo(thia)peptidase (EC No. 3.4.23.22)	<i>Cryphonectria (Endothia) parasitica</i>	GMP
44.	Mucorpepsin (Aspartic proteinase)  (EC No. 3.4.23.23)	<i>Rhizomucormiehei</i>	GMP
44a	Thermolysin (EC No. 3.4.24.27)	<i>Bacillus stearothermophilus</i>	GMP
		<i>Geobacillus caldoproteolyticus</i>	GMP
45.	Metalloproteinase (Bacillolysin) Metalloendopeptidase (EC No. 3.4.24.28)	<i>Bacillus amyloliquefaciens</i>	GMP
		<i>Bacillus subtilis</i>	
45a	Glutaminase (EC No. 3.5.1.2)	<i>Bacillus amyloliquefaciens</i>	GMP
45b	Protein glutaminase (EC No. 3.5.1.44)	<i>Chryseobacterium proteolyticum</i>	GMP
46.	AMP deaminase (EC No. 3.5.4.6)	<i>Aspergillusmelleus</i>	GMP
		<i>Streptomyces murinus</i>	
47.	Pectin lyase (EC No. 4.2.2.10)	<i>Aspergillusniger</i>	GMP
48.	Glucose isomerase (or xylose isomerase) (EC No. 5.3.1.5)	<i>Streptomyces rubiginosus</i>	GMP
		<i>Streptomyces murinus</i>	GMP
		<i>Streptomyces olivaceus</i>	
		<i>Streptomyces olivochromogenes</i>	
		<i>Microbacteriumarborescens</i>	
		<i>Actinoplanesmissouriensis</i>	

\*All enzymes are from non-genetically modified sources

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
1.	<b>Glucose oxidase</b>  (EC No. 1.1.3.4)	<i>Aspergillus oryzae</i>	<i>Aspergillus niger</i>	Dough stabilizer	Baking and other cereal-based processes (bread, pasta, noodles, snacks)	GMP
		<i>Aspergillus niger</i>	<i>Penicillium chrysogenum</i>	Dough stabilizer, food preservative, color stabilizer and for reduced alcohol wine production	Bakery products and other cereal based products (e.g. pasta, noodles, snacks), Egg processing, fruit and vegetable processing, Production of beer and other cereal based beverages	GMP
		<i>Aspergillus niger</i>	<i>Aspergillus niger</i>	For conversion of glucose to gluconic acid in presence of dissolved oxygen	In food processing to remove glucose and oxygen and in bakery application	GMP
2.	<b>Hexose oxidase</b>  (EC No. 1.1.3.5)	<i>Hansenula polymorpha</i>	<i>Chondrus crispus</i>	To catalyze the oxidation of C6 sugars into their corresponding lactones and hydrogen peroxide	In food processing of wide range of products for dough-strengthening, oxygen scavenging, curd formation and to reduce the occurrence of excessive maillard reactions	GMP
3.	<b>Catalase</b>  (EC No. 1.11.1.6)	<i>Aspergillus niger</i>	<i>Aspergillus niger</i>	Catalyzes the decomposition of hydrogen peroxide to water and oxygen	In food processing for enzymatic production of gluconic acid, removal of hydrogen peroxide or generation of oxygen in	GMP

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
					foods and beverages	
		<i>Trichoderma reesei</i>	<i>Aspergillus niger</i>	Catalyzes the decomposition of hydrogen peroxide to water and oxygen	For egg processing	GMP
4.	<b>Peroxidase</b>  (EC No. 1.11.1.7)	<i>Aspergillus niger</i>	<i>Marasmius scorodinus</i>	Preservation of raw milk, yoghurt and cheese	Dairy processing (whey processing) and Production of bakery products	GMP
5.	<b>Phosphatidylethanolsterol O-acyltransferase</b>  (EC No. 2.3.1.43)	<i>Bacillus licheniformis</i>	<i>Aeromonas salmonicida</i>	Modification of phospholipids to lysophospholipids and cholesterol ester	Baking, dairy, egg processing, fats and oils Processing, meat processing	GMP
6.	<b>1,4-alpha-glucan branching</b>  (EC No. 2.4.1.18)	<i>Bacillus subtilis</i>	<i>Rhodothermus obamensis</i>	Converts amylose into amylopectin	Starch processing	
7.	<b>4-<math>\alpha</math>-glucanotransferase (amylomaltase)</b>  (EC No. 2.4.1.25)	<i>Bacillus amyloliquefaciens</i>	<i>Thermus thermophilus</i>	Modification of the structural properties of starch to mimic fat.	Starch processing	GMP
8.	<b>Triacylglycerol Lipase</b>  (EC No. 3.1.1.3)	<i>Aspergillus niger</i>	<i>Fusarium culmorum</i>	Improvement of texture of fat in bakery products, flavour modification, interesterification of fats, degumming of oils and fats	Production of bakery products dairy processing oils and fats processing	GMP
		<i>Kluyveromyces lactis</i>	Calf, goat, lamb	Improvement of texture of bakery products, flavour modification,	Production of bakery products dairy processing	GMP

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
				interesterification of fats, degumming of oils and fats	oils and fats processing	
		<i>Hansenula polymorpha</i>	<i>Fusarium heterosporum</i>	Improvement of texture of bakery products, modifying egg yolk for use in cake preparation and degumming of oils and fats	Production of Bakery products, egg processing, fats and oils processing	GMP
		<i>Aspergillus niger</i>	<i>Candida antarctica</i>	Degumming of oils and fats	Oils and Fats processing	GMP
		<i>Aspergillus oryzae</i>	<i>Humicola lanuginosa and Fusarium oxysporum</i>	Improvement of texture of bakery products, flavour modification, modifying egg yolk for use in cake preparation and interesterification of fats, degumming of oils and fats	Bakery and other cereal-based products (bread, pasta, noodles, snacks), brewing and other cereal-based beverages, egg processing oils and fats processing	GMP
		<i>Aspergillus oryzae</i>	<i>Fusarium oxysporum</i>	Improvement of texture of bakery products, flavour modification, modifying egg yolk for use in cake preparation and interesterification of fats, degumming of oils and fats	Bakery and other cereal-based products (bread, pasta, noodles, snacks)  Egg processing, brewing and other cereal-based beverages	GMP
		<i>Aspergillus oryzae</i>	<i>Thermomyces lanuginosus</i>	Improvement of texture of bakery products, flavour modification, modifying egg yolk for use in cake preparation, interesterification of fats,	Bakery and other cereal-based products (bread, pasta, noodles, snacks), brewing and other cereal-based beverages egg processing	GMP

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
				degumming of oils and fats	oils and fats processing	
		<i>Aspergillus oryzae</i>	<i>Rhizomucor miehei</i>	Interesterification of fats, degumming of oils and fats	oils and fats processing	GMP
		<i>Trichoderma reesei</i>	<i>Aspergillus niger</i>	As a processing aid in food manufacturing to catalyze the hydrolysis of ester bonds in triglycerides primarily in 1 and 3 positions of fatty acids in triglycerides with release of fatty acids and glycerol	For use in baking and brewing process, in the manufacture of cereal beverage, in pasta production, and in potable alcohol production	GMP
9.	<b>Phospholipase A2</b>  (EC No. 3.1.1.4)	<i>Aspergillus niger</i>	Porcine pancreas	Oil degumming	Production of bakery products , egg processing, oils and fats processing	GMP
10.	<b>Lysophospholipase</b>  (EC No. 3.1.1.5)	<i>Aspergillus niger</i>	<i>Aspergillus niger</i>	Dough stabilizer, Improvement of texture of bakery products, enhance filtration rate of syrups, De-gumming of oils and fats	Bakery and other cereal-based products(bread , pasta, noodles, snacks) starch based products oils and fats processing	GMP
11.	<b>Pectin esterase</b>  (EC No. 3.1.1.11)	<i>Aspergillus niger</i>	<i>Aspergillus niger</i>	Juice extraction, concentration and clarification of fruit juices, gelation of fruit, and to modify texture and rheology of fruit and vegetable-based products	Fruit and vegetable products, flavouring production	GMP
		<i>Aspergillus oryzae</i>	<i>Aspergillus aculeatus</i>	Juice extraction, concentration and clarification of fruit juices, gelation of fruit,	Fruit and vegetable products	GMP

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
				and to modify texture and rheology of fruit and vegetable-based products		
12.	<b>Phospholipase A1</b>  (EC No. 3.1.1.32)	<i>Aspergillus oryzae</i>	<i>Fusarium venenatum</i>	To modify the functionality of dairy products and its ingredients	Milk and dairy based products	GMP
		<i>Aspergillus niger</i>	<i>Aspergillus niger</i>	De-gumming of oils and fats	Oils and fats processing	GMP
		<i>Aspergillus niger</i>	<i>Talaromyces leycettanus</i>	De-gumming of oils and fats	Oils and Fats processing	GMP
13.	<b>3-phytase</b>  (EC No. 3.1.3.8)	<i>Aspergillus niger</i>	<i>Aspergillus niger</i> ( <i>A. niger</i> also include <i>A. tubingensis</i> )	Phytate reduction in cereals and legumes	Bakery products and other cereal and legume based products (e.g. pasta, noodles, snacks), soy sauce	GMP
14.	<b>Phytase</b>  (EC No. 3.1.3.26)	<i>Trichoderma reesei</i>	<i>Buttiauxella</i> sp.	Hydrolysis of <a href="#">phytic acid</a>	In potable alcohol production and in animal feed	GMP
15.	<b>Phospholipase C</b>  (EC No. 3.1.4.3)	<i>Pichia pastoris</i> (now renamed as <i>Komagataellaphaffii</i> )	Soil	De-gumming of oils and fats	Oils and fats processing	GMP
		<i>Bacillus licheniformis</i>	<i>Bacillus thuringiensis</i>	De-gumming of oils and fats	Oils and fats processing	GMP.
16.	<b>Phosphoinositide phospholipase C</b>  (EC No. 3.1.4.11)	<i>Pseudomonas fluorescens</i>	Soil	De-gumming of oils and fats	Oils and fats processing	GMP
		<i>Bacillus licheniformis</i>	<i>Pseudomonas</i> sp-62186	De-gumming of oils and fats	Oils and Fats processing	GMP
17.	<b>Alpha – amylase</b>  (EC No. 3.2.1.1)	<i>Bacillus subtilis</i>	<i>Alicyclobacillus pohliae</i>	Antistaling agent in combination with lipase	Bakery products	GMP
		<i>Bacillus licheniformis</i>	<i>Bacillus licheniformis</i>	Liquefaction and thinning of starch, fermentation, Starch processing into	Brewing, Potable alcohol production, Grain or Carbohydrate,	GMP

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
				dextrins and of oligosaccharides . High DE-maltodextrin production	non-alcoholic Beverages, and bakery products, processing of starch for other purposes	
		<i>Bacillus licheniformis</i>	<i>Geobacillus stearothermophilus</i>	Liquefaction and thinning of starch, fermentation, starch processing into dextrins and oligosaccharides and high DE-maltodextrin.	Processing of starch for baking, brewing and fermentation	GMP
		<i>Bacillus licheniformis</i>	<i>Cytophaga sp.</i>	Liquefaction and thinning of starch, fermentation	Processing of starch for baking and brewing processes	GMP
		<i>Pseudomonas fluorescens</i>	<i>Thermococcales</i>	Starch processing into dextrins and oligosaccharides and high DE-maltodextrin	Processing of starch for baking, brewing and fermentation	GMP
		<i>Aspergillus niger</i>	<i>Rhizomucor pusillus</i>	Starch processing into dextrins and oligosaccharides and high DE-maltodextrin	Processing of starch for baking, brewing and fermentation and other processes	GMP
		<i>Trichoderma reesei</i>	<i>Aspergillus clavatus</i>	Starch processing into dextrins and of oligosaccharides . High DE-maltodextrin production	In Carbohydrate or starch processing, brewing and potable alcohol production	GMP
		<i>Trichoderma reesei</i>	<i>Aspergillus kawachii</i>	Starch processing into dextrins and of oligosaccharides . High DE-maltodextrin production	In Carbohydrate or starch processing, brewing and potable alcohol production	GMP
		<i>Bacillus amyloliquefaciens</i>	<i>Bacillus amyloliquefaciens</i>	As processing aid in food manufacturing	Carbohydrate or grain processing, potable alcohol	GMP

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
				to hydrolyze polysaccharides	production, brewing, cereal processes, non-alcoholic beverages	
		<i>Trichoderma reesei</i>	<i>Aspergillus terreus</i>	Starch processing into dextrins and of oligosaccharides . High DE-maltodextrin production	Brewing, Potable alcohol production, grain or carbohydrate, non-alcoholic beverages, cereal processes	GMP
18.	<b>Beta-amylase</b>  (EC No. 3.2.1.2)	<i>Bacillus licheniformis</i>	<i>Bacillus flexus</i>	Starch processing into maltose	Starch processing for maltose-based syrups	GMP
19.	<b>Glucoamylase</b> (Glucan 1,4- alpha-glucosidase or Acid maltase or Amyloglucosidase)  (EC No. 3.2.1.3)	<i>Trichoderma reesei</i>	<i>Trichoderma reesei</i>	Processing of polysaccharides and oligosaccharides for improved fermentation and liquefaction	Brewing, fermentation and starch liquifaction and saccharifaction	GMP
		<i>Aspergillus niger</i>	<i>Gloeophyllum trabeum</i>	Processing of polysaccharides and oligosaccharides for improved brewing fermentation, clarification and starch liquefaction , starch liquefaction and Saccharification	Brewing, fermentation and starch liquifaction and saccharifaction	GMP
		<i>Aspergillus niger</i>	<i>Aspergillus niger</i>	Processing of polysaccharides and oligosaccharides for improved brewing fermentation, clarification and starch liquefaction	Brewing, fermentation and starch liquifaction and saccharification	GMP
		<i>Aspergillus niger</i>	<i>Talaromyces emersonii</i>	Processing of polysaccharides and	Brewing, fermentation and starch	GMP



**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
				oligosaccharides for improved brewing fermentation, clarification and starch liquefaction	liquefaction and saccharification processes	
		<i>Aspergillus niger</i>	<i>Trametes cingulata</i>	Processing of polysaccharides and oligosaccharides for improved brewing fermentation, clarification and starch liquefaction and Saccharification	Brewing, fermentation and starch liquefaction and saccharification processes	GMP
		<i>Aspergillus niger</i>	<i>Penicillium oxalicum</i>	Processing of polysaccharides and oligosaccharides for improved brewing fermentation, clarification and starch liquefaction and Saccharification	Brewing, fermentation and starch liquefaction and saccharification	GMP
		<i>Trichoderma reesei</i>	<i>Aspergillus fumigatus</i>	Processing of polysaccharides and oligosaccharides for improved fermentation and liquefaction	For carbohydrate or grain processing, brewing and potable alcohol production	GMP
		<i>Trichoderma reesei</i>	<i>Fusarium verticillioides</i>	Processing of polysaccharides and oligosaccharides for improved fermentation and liquefaction	For carbohydrate or grain processing, brewing and potable alcohol production	GMP
20.	<b>Cellulase</b> <b>(EC No. 3.2.1.4)</b>	<i>Trichoderma reesei</i>	<i>Aspergillus fumigatus</i>	Hydrolysis of amorphous cellulose	Brewing	GMP
		<i>Trichoderma reesei</i>	<i>Penicillium emersonii</i>	Hydrolysis of amorphous cellulose. Saccharification	Brewing	GMP
		<i>Trichoderma reesei</i>	<i>Trichoderma reesei</i>	As processing aid in food manufacturing	For carbohydrate processing,	GMP

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
				or breakdown of cellulose	potable alcohol production, maceration in fruit and vegetable processing, brewing and wine production and in food processing of other wide range of products like coffee	
21.	<b>Beta-glucanase (endo-beta glucanase or endo-1,3-beta glucanase)</b>  (EC No. 3.2.1.6)	<i>Bacillus subtilis</i>	<i>Bacillus subtilis</i>	Hydrolysis of beta-glucans, to improve the brewing properties of beer	Brewing processes	GMP
22.	<b>Xylanase (Endo-1,4-beta-xylanase)</b>  (EC No. 3.2.1.8)	<i>Aspergillus niger</i>	<i>Aspergillus niger</i>	Hydrolysis of plant carbohydrates to improve quality of bakery products (firmness, stiffness, consistency and others)	Bakery and other cereal based products	GMP
		<i>Aspergillus oryzae</i>	<i>Humicola lanuginosus</i>	Dough stabilizer, enhancing loaf volume, enhance crumb structure and bloom	Bakery products	GMP
		<i>Bacillus subtilis</i>	<i>Bacillus subtilis</i>	Dough stabilizer, enhancing loaf volume, enhance crumb structure and bloom and loaf softening, hydrolysis of plant carbohydrates to	Bakery products, carbohydrate or starch processing, Brewing, Potable alcohol production, non-alcoholic	GMP

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
				improve quality of bakery products (firmness, stiffness, consistency and others)	beverages processing	
		<i>Trichoderma reesei</i>	<i>Talaromyces leycettanus</i>	To improve filtration in brewing, Starch liquefaction and enhance oil extraction from grain	Baking and Brewing and oil extraction -	GMP
		<i>Aspergillus niger</i>	<i>Rasamsonia emersonii</i>	Dough stabilizer, enhancing loaf volume, crumb structure, bloom and loaf softening, improving filtration in brewing, starch liquefaction	Bakery products production of beer and other cereal based beverages	GMP
		<i>Trichoderma reesei</i>	<i>Aspergillus niger</i>	Dough stabilizer, enhancing loaf volume, crumb structure, bloom and loaf softening, to improve filtration in brewing, starch liquefaction	Brewing and baking products, potable alcohol production, non-alcoholic beverages	GMP
		<i>Aspergillus oryzae</i>	<i>Aspergillus aculeatus</i>	Dough stabilizer, enhance loaf volume, crumb structure, bloom and loaf softening, to improve filtration in brewing, starch liquefaction	Baking brewing and other cereal-based beverages and starch processing	GMP
		<i>Bacillus licheniformis</i>	<i>Bacillus licheniformis</i>	Dough stabilizer, enhancer of loaf volume, enhance crumb structure, bloom and loaf	Baking and brewing processes grain treatment	GMP

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
				softening, starch liquefaction		
		<i>Trichoderma reesei</i>	<i>Fusarium verticillioides</i>	Hydrolysis of plant carbohydrates to improve quality of bakery products (firmness, stiffness, consistency and others)	As processing aid in carbohydrate or starch processing and potable alcohol production	GMP
23.	<b>Endo-Polygalacturonase (Pectinase)</b>  (EC No 3.2.1.15)	<i>Aspergillus niger</i>	<i>Aspergillus niger</i>	Extraction and clarification of juice from fruits and vegetables, extraction of flavors	Fruit and vegetable processing, flavouring production	GMP
24.	<b>Alpha-glucosidase</b> (EC No 3.2.1.20)	<i>Trichoderma reesei</i>	<i>Aspergillus niger</i>	Aids in fermentation, hydrolysis of terminal, non-reducing (1 ~4)-linked alpha-D-glucose residues with release of alpha-D-glucose	Brewing and starch processing	GMP
25.	<b>Lactase (Beta-galactosidase)</b>  (EC No 3.2.1.23)	<i>Kluyveromyces lactis</i>	<i>Kluyveromyces lactis</i>	Hydrolysis of lactose content of in whey or milk	Dairy products and processing	GMP
		<i>Bacillus subtilis</i>	<i>Bifidobacterium bifidum</i>	Hydrolysis of lactose content of whey or milk	Dairy products and production of GOS (galactooligosaccharide)	GMP
		<i>Aspergillus niger</i>	<i>Aspergillus oryzae</i>	Hydrolysis of lactose content of whey or milk	Dairy products and processing	GMP
		<i>Bacillus licheniformis</i>	<i>Bifidobacterium bifidum</i>	Hydrolysis of lactose content of whey or milk	Dairy products and processing	GMP
		<i>Bacillus subtilis</i>	<i>Lactobacillus delbrueckii subsp. bulgaricus</i>	Hydrolysis of lactose content of in whey or milk	In dairy processing, GOS (galactooligosaccharide) production and production of low lactose products	GMP

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
		<i>Aspergillus oryzae</i>	<i>Aspergillus oryzae</i>	Hydrolysis of lactose content of in whey or milk	In dairy processing, GOS (galactooligosaccharide) production and production of low lactose products	GMP
26.	<b>Trehalase</b>  (EC No 3.2.1.28)	<i>Trichoderma reesei</i>	<i>Trichoderma reesei</i>	Starch processing for fermentation	Brewing process	GMP
		<i>Aspergillus niger</i>	<i>Myceliophthora sep edonium</i>	Starch processing for fermentation	Brewing process	GMP
27.	<b>Pullulanase</b>  (EC No 3.2.1.41)	<i>Bacillus licheniformis</i>	<i>Bacillus deramificans</i>	Hydrolysis of pullulan in starch processing, as processing aid in efficient starch hydrolysis and saccharification	Brewing processes and production of sweeteners, manufacture of starch or carbohydrate processing	GMP
		<i>Bacillus subtilis</i>	<i>Bacillus acidopullulyticus</i>	Hydrolysis of pullulan in starch processing	Brewing processes and manufacture of sweeteners	GMP
		<i>Bacillus subtilis</i>	<i>Bacillus deramificans</i>	Hydrolysis of pullulan in grain processing	Brewing and starch processing	GMP
28.	<b>Alpha arabinofuranosidase</b>  (EC No. 3.2.1.55)	<i>Trichoderma reesei</i>	<i>Talaromyces pinophilus</i>	Separation of soluble and starch or gluten fractions	Potable alcohol production	GMP
29.	<b>Maltotetraohydrolase or glucan 1,4-alpha-maltotetraohydrolase</b>  (EC No. 3.2.1.60)	<i>Bacillus licheniformis</i>	<i>Pseudomonas stutzeri (saccharophila)</i>	Dough stabilizer, anti-staling agent in baking, antiretrogradation agent to enhance the quality attributes of bakery products	Baking, carbohydrate or grain processing	GMP
30.	<b>Mannan endo-1,4-beta-mannosidase (β-</b>	<i>Aspergillus niger</i>	<i>Talaromyces leycettanus</i>	Hydrolysis of mannan to inhibit gel formation during freeze-drying of	Coffee processing	GMP.

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
	mannanase ) (EC No. 3.2.1.78)			the instant coffee		
31.	Glucan 1,4-alpha-maltohydrolase (Maltogenic alpha-amylase ) (EC No 3.2.1.133)	<i>Bacillus subtilis</i>	<i>Geobacillus stearothermophilus</i>	Anti-staling agent to prevent retrodegradation of starch in baking, industry. Production of tailor-made sweetener syrups with low viscosity, high maltose contents	Bakery products and sweetener syrups	GMP
		<i>Bacillus licheniformis</i>	<i>Geobacillus stearothermophilus</i>	Anti-staling agent to prevent retro-degradation of starch in baking, industry. Production of tailor-made sweetener syrups with low viscosity, high maltose contents	As processing aid in bakery, starch processing, brewing and potable alcohol	GMP
32.	Carboxypeptidase (EC No. 3.4.16.5)	<i>Aspergillus niger</i>	<i>Aspergillus niger</i>	Used to accelerate the development of flavors and the de-bittering during the ripening process of cheese. debitteringagent in cheese manufacture.	Cheese, enzyme modified cheese, cheese powders and fermented meat	GMP
33.	Chymotrypsin (EC No. 3.4.21.1)	<i>Bacillus licheniformis</i>	<i>Nocardio psisprasina</i>	Increased digestibility of protein and reduce allergenicity	Protein hydrolysis, yeast processing	GMP.
34.	Serine protease with trypsin specificity Or (Trypsin) (EC No. 3.4.21.4)	<i>Fusarium venenatum</i>	<i>Fusarium oxysporum</i>	Increased digestibility of protein and reduce allergenicity	Dairy processing protein hydrolysis	GMP

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
35.	<b>Acid prolyendo peptidase</b>  (EC No. 3.4.21.26)	<i>Aspergillus niger</i>	<i>Aspergillus niger</i>	Degradation of cereal storage proteins to smaller peptides for optimal fermentation beer stability, prevention of chill haze without loss of foam properties	Beer and other cereal based beverages	GMP
36.	<b>Serine protease (Subtilisin)</b>  (EC No. 3.4.21.62)	<i>Bacillus subtilis</i>	<i>Bacillus amyloliquefaciens</i>	Facilitates protein hydrolysis during processing	Protein processing	GMP
		<i>Bacillus licheniformis</i>	<i>Pyrococcus furiosus</i>	Hydrolysis of proteins	Protein hydrolysis and protein hydrolysates	GMP
		<i>Bacillus subtilis</i>	<i>Bacillus lentus</i>	To catalyze protein hydrolysis	As processing aid in plant protein processing, fish and seafood protein processing, yeast processing, animal protein processing, xanthan gum processing, and microalgae processing	GMP.
37.	<b>Chymosin</b>  (EC No. 3.4.23.4)	<i>Trichoderma reesei</i>	<i>Bos taurus (bovine)</i>	Milk Coagulant, processing aid in cheese manufacturing. Chymosin helps in coagulating milk by hydrolyzing milk protein	Milk or dairy processing, production of cheese, whey and lactose	GMP
		<i>Kluyveromyces lactis</i>	<i>Bovine pro-chymosin</i>	Milk Coagulant	Milk processing	GMP
38.	<b>Aspergillo pepsin I, aspartic protease)</b>	<i>Trichoderma reesei</i>	<i>Trichoderma reesei</i>	Catalyses hydrolysis of proteins with broad specificity	Processing of proteins, clarification of fruit and vegetable juices and	GMP

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
	(EC No. 3.4.23.18)				alcoholic drinks, modification of wheat gluten in bakery products	
39.	<b>Mucorpepsin (Mucor rennin)</b>  (EC No. 3.4.23.23)	<i>Aspergillus oryzae</i>	<i>Rhizomucor miehei</i>	Milk coagulation in cheese making.	Dairy processing	GMP
40.	<b>Bacillolysin (Bacillus metalloendopeptidase)</b>  (EC No. 3.4.24.28)	<i>Bacillus amyloliquefaciens</i>	<i>Bacillus amyloliquefaciens</i>	Protein processing into peptides and hydrolysate	Production of bakery products and other cereal based products (e.g. pasta, noodles, snacks), production of beer and other cereal based beverages, dairy processing, flavouring production, production of cereal based distilled alcoholic beverages, protein processing and yeast processing	GMP
		<i>Bacillus subtilis</i>	<i>Bacillus amyloliquefaciens</i>	Protein processing into peptides and hydrolysate	Production of bakery products and other cereal based products (e.g. pasta, noodles, snacks), production of beer and other cereal based beverages, dairy processing, flavouring production,	GMP



**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
					production of cereal based distilled alcoholic beverages, protein processing and yeast processing	
41.	Asparaginase  (EC No 3.5.1.1)	<i>Aspergillus niger</i>	<i>Aspergillus niger</i>	Reduce acrylamide levels	Production of bakery products and other cereal based products (e.g. pasta, noodles, snacks) potato processing and coffee processing	GMP
		<i>Aspergillus oryzae</i>	<i>Aspergillus oryzae</i>	Reduce acrylamide levels	Baking and other cereal-based processes (bread, pasta, noodles, snacks) coffee processing and potato processing	GMP
		<i>Bacillus subtilis</i>	<i>Pyrococcus furiosus</i>	Reduce acrylamide levels	Baking and other cereal-based processes (bread, pasta, noodles, snacks) coffee and cocoa processing fruit and vegetable processing	GMP
42.	Glutaminase  (EC No. 3.5.1.2)	<i>Bacillus licheniformis</i>	<i>Bacillus licheniformis</i>	In controlling the taste and flavor of fermented foods containing ingredients such as; casein, whey protein,	Dairy processing egg processing protein processing yeast processing	GMP

**TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)**

S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
				soy and wheat protein		
43.	<b>Acetolactate decarboxylase (Alpha-acetolactate decarboxylase)</b>  <b>(EC No. 4.1.1.5)</b>	<i>Bacillus licheniformis</i>	<i>Bacillus brevis</i>	In brewing beverage processes and beverage alcohol (distilling) processes 1) Reduces formation of diacetyl during fermentation and thereby a reduction of the off-flavours 2) Enhances maturation process and thereby reduces production time.	Brewing and other production of cereal based alcoholic beverages	GMP
		<i>Bacillus subtilis</i>	<i>Brevibacillus brevis</i>	Butanoate metabolism and C-5 branched dibasic acid metabolism	In brewing and potable alcohol production	GMP
44.	<b>Pectin lyase</b>  <b>(EC No. 4.2.2.10)</b>	<i>Aspergillus niger</i>	<i>Aspergillus niger</i>	Enhances juice extraction from vegetables and fruits and for juice clarification	Fruit and vegetable processing, production of wine, flavouring production and coffee processing	GMP
45.	<b>Glucose isomerase</b>  <b>(EC No. 5.3.1.5)</b>	<i>Streptomyces rubiginosus</i>	<i>Streptomyces rubiginosus</i>	Reversible isomerization of glucose to fructose	Production of high fructose corn syrup	GMP
46.	<b>Aqualysin 1 (Caldolysin)</b>  <b>EC 3.4.21.111</b>	<i>Bacillus subtilis</i>	<i>Thermus aquaticus.</i>	reducing mechanical dough strength development for unusually strong or tough gluten, lower the viscosity and increase the extensibility of the dough,	Bakery products	GMP

TABLE 11 A: Enzymes derived from Genetically Modified Microorganisms (GMM)						
S.No	Enzyme Name	Production Organism	Donor Organism or Source	Functional and technological purpose	Indicative food uses	Residual level (mg/kg) (Not more than)
				prevention or retardation of staling during the baking process of bakery products at mid-high temperature during the baking process.		
47.	<b>Endo-1,4-<math>\beta</math>-xylanase (Xylanase)</b> EC 3.2.1.8	<i>Bacillus subtilis</i>	<i>Pseudoalteromonas haloplanktis</i>	Facilitate the handling of dough, Improve dough's structure	Bakery products	GMP
48.	<b>Alpha-galactosidase (Alpha-D-galactoside galactohydrolase)</b> EC.3.2.1.22	<i>Saccharomyces cerevisiae</i>	<i>Seeds of Cyamopsis tetragonoloba (guar).</i>	Enzyme modification of guar gum	All categories of Beverages and Food in which guar is permitted.	GMP

TABLE 12: GENERALLY PERMITTED PROCESSING AIDS				
S No.	Name of the processing aid	Functional/ Technological Purpose	Product Category	Residue Level (mg/kg) (Not more than)
1.	Activated carbon	Adsorbent, decolourizing agent	Sugars, oils and fats, juices, alcoholic beverages, Alcoholic Beverages, Non-alcoholic beverages, Sugar syrup treatment	GMP

**TABLE 12: GENERALLY PERMITTED PROCESSING AIDS**

<b>S No.</b>	<b>Name of the processing aid</b>	<b>Functional/ Technological Purpose</b>	<b>Product Category</b>	<b>Residue Level (mg/kg) (Not more than)</b>
2.	Ammonium carbonate (INS 503(i))	pH control agent	Cocoa mixes (powders) and cocoa mass/cake	GMP
3.	Ammonium hydroxide (INS 527)	Acidity regulator	All foods	GMP
4.	Ammonium sulphate	Decalcification agent	Edible casings	GMP
5.	Amino acids	Microbial nutrient	Alcoholic beverages	GMP
6.	Alum (Aluminiumsulphate or Potassium aluminiumsulphate)	Coagulant	including low alcoholic and alcohol free counterparts	GMP
7.	Argon (INS 938)	Propellant and packaging gas	All foods	GMP
8.	Beta-cyclodextrin (INS 459)	Encapsulating and thickening agent	Butter	GMP
9.	Biotin	Microbial nutrient	All foods	GMP
10.	Bone phosphate (INS 542)	Emulsifier, moisture retention agent	All foods except milk and milk products	GMP
		Sequestrant	All foods	GMP
11.	Calcium carbonate (INS 170 (i) )	Polishing agent	All foods	GMP
12.	Calcium chloride	Buffering agent  Flocculating agent	Alcoholic beverages including low alcoholic and alcohol free counterparts, Non-Alcoholic Beverages, Water Treatment, Instant Tea processing.	GMP
		Stabilizer	Extruded foods	GMP
13.	Calcium sulfate	Buffering agent	Alcoholic beverages	GMP

**TABLE 12: GENERALLY PERMITTED PROCESSING AIDS**

<b>S No.</b>	<b>Name of the processing aid</b>	<b>Functional/ Technological Purpose</b>	<b>Product Category</b>	<b>Residue Level (mg/kg) (Not more than)</b>
			including low alcoholic and alcohol free counterparts	
14.	Calcium and sodium salts of stearic acid	Polishing agent	Confectionery	GMP
15.	Carbon dioxide (INS 290)	Gassing/aerating agent	All foods	GMP
		Packaging and propelling Gas / aerating agent	All Foods	GMP
		pH Control agent	Water Treatment, Non-Alcoholic Beverages	GMP
16.	Citric acid (INS 330)	Sequestrant	Oils & fats, Instant Tea processing	GMP
		pH standardization	All Foods	GMP
		Catalyst in inversion of sugar	Sugar Syrups	GMP
17.	Chlorine dioxide	Water treatment	Alcoholic beverages including low alcoholic and alcohol free counterparts	1 (as available chlorine)
18.	Ethyl acetate	Cell disruption of yeast	Yeast	GMP
19.	Ethyl Alcohol	Carrier solvent ,flavouring agent	All foods	GMP
20.	Ethylene diamine tetra acetic acid	Metal sequestrant	Edible fats and oils and related products	GMP
21.	Furcellaran (INS 407)	Thickener, gelling agent, stabilizer, emulsifier	All foods	GMP
22.	Gibberellic acid	Malting, grain processing steps for fermentation (alcoholic beverages)	Cereals	GMP

**TABLE 12: GENERALLY PERMITTED PROCESSING AIDS**

<b>S No.</b>	<b>Name of the processing aid</b>	<b>Functional/ Technological Purpose</b>	<b>Product Category</b>	<b>Residue Level (mg/kg) (Not more than)</b>
23.	Glucono delta lactone (GDL) (INS 575)	Raising agent, sequestrant	Unripened cheese – Paneer and Chhana	GMP
24.	Glycerin/ Glycerol (INS 422)	Polishing agent	All foods	GMP
25.	Hydrochloric acid (INS 507)	Protein hydrolysing agent	Protein products	GMP
26.	Hydrogenated glucose syrups (INS 965 (ii))	Sweetener, humectant, texturizer, stabilizer, bulking agent	All foods	GMP
27.	HVO (Hydrogenated vegetable oil)	Lubricant for conveyor belts for countline products	All foods	GMP
28.	Icing sugar	Polishing agent	Confectionery	GMP
29.	Indole acetic acid	Malting	Cereals	GMP
30.	Isopropyl alcohol	Glazing agent	All foods	GMP
31.	L-Cysteine (or HCl salt)	Dough conditioner	Flour products	75
32.	Lactic acid	Acidity regulator	Alcoholic beverages including low alcoholic and alcohol free counterparts, Seasonings	GMP
33.	Liquified anhydrous ammonia	Bacterial nutrient	All foods	GMP
34.	Liquid paraffin (INS 905 e)	Polishing agent	Confectionery	GMP
35.	Magnesium hydroxide (INS 528)	pH control agent	All foods	GMP
36.	Magnesium stearate (INS 470(iii))	Polishing agent	Confectionery	GMP

**TABLE 12: GENERALLY PERMITTED PROCESSING AIDS**

<b>S No.</b>	<b>Name of the processing aid</b>	<b>Functional/ Technological Purpose</b>	<b>Product Category</b>	<b>Residue Level (mg/kg) (Not more than)</b>
37.	Mono and diglycerides of fatty acids (INS 471 )	Emulsifier in extrusion	Extruded foods	GMP
38.	Nicotinamide	Microbial nutrient	All foods	GMP
39.	Nitrogen gas (INS 941)	Foaming agent	All foods	GMP
40.	Oak dust/chips	Ageing agent	Alcoholic beverages including low alcoholic and alcohol free counterparts	GMP
41.	Oxygen (INS 948)	Propellant	All foods	GMP
		Aerating agent	Alcoholic beverages including low alcoholic and alcohol free counterparts	GMP
42.	Paraffin	Coating agent	Cheese and cheese products	GMP
43.	Phospholipids (INS 322 (i))	Emulsifier, antioxidant	All foods	GMP
44.	Phosphoric acid (INS 338)	Acidulant, sequestrant, synergist for antioxidants	All foods	GMP
		Buffering agent	Alcoholic beverages including low alcoholic and alcohol free counterparts	GMP
45.	Polyethylene glycols (INS 1521)	Carrier solvent, excipient	All foods	GMP
46.	Polyglycerol esters of interesterifiedricinoleic acid (INS 476)	Emulsifier	All foods	GMP

**TABLE 12: GENERALLY PERMITTED PROCESSING AIDS**

<b>S No.</b>	<b>Name of the processing aid</b>	<b>Functional/ Technological Purpose</b>	<b>Product Category</b>	<b>Residue Level (mg/kg) (Not more than)</b>
47.	Polyoxyethylene 40 stearate (INS 431)	Emulsifier	All foods	GMP
48.	Polyvinyl acetate	Preparation of waxes	Cheese and cheese products	GMP
49.	Potassium carbonate (INS 501(i))	pH control agent	Cocoa mixes (powders) and cocoa mass/cake	GMP
50.	Potassium dihydrogen phosphate (INS 340)	pH control agent	All foods	GMP
51.	Potassium hydroxide (INS 525)	pH control agent	All foods	GMP
52.	Potassium metabisulphite (INS 224)	Antioxidant	Alcoholic beverages including low alcoholic and alcohol free counterparts	Maximum usage level shall not be more than 50 mg/kg
53.	Propylene glycol alginate (INS 405)	Stabilizer, thickener, emulsifier	All foods	GMP
		Foam stabilizer	Alcoholic beverages including low alcoholic and alcohol free counterparts	GMP
54.	Rice starch	Polishing agent	Confectionery	GMP
55.	Salt (NaCl)	Ion exchange	Alcoholic beverages including low alcoholic and alcohol free counterparts	GMP
		Texturising agents	Unripened Cheese-Paneer; Water treatment	GMP
56.	Silica	Anticaking agent	All foods	GMP



**TABLE 12: GENERALLY PERMITTED PROCESSING AIDS**

<b>S No.</b>	<b>Name of the processing aid</b>	<b>Functional/ Technological Purpose</b>	<b>Product Category</b>	<b>Residue Level (mg/kg) (Not more than)</b>
	(INS 551)	Soap absorbing agent	Edible vegetable oils	GMP
		Free flowing agent	All foods	GMP
57.	Sodium acid pyrophosphate (SAPP)	Prevention of darkening of frozen uncooked French fries	Frozen vegetables	GMP
58.	Sodium bicarbonate (INS 500 (ii))	pH control agent	All foods	GMP
59.	Sodium calcium polyphosphate silicate (INS 452 (i))	Stabilizer, leavening agent, emulsifier, nutrient	All foods	GMP
60.	Sodium carbonate (INS 500(i))	pH control agent	All foods	GMP
61.	Sodium dihydrogen phosphate (INS 339)	pH control agent	All foods	GMP
62.	Sodium Hydroxide (INS 524)	pH control agent	All foods	GMP
63.	Sodium Hypochlorite	Water treatment	Alcoholic beverages including low alcoholic and alcohol free counterparts	1 (as available chlorine)
		Disinfectant	Water treatment, All foods	1 (as available chlorine)
64.	Sodium metabisulphite (INS 223)	Dough conditioner	Flour products	60
		Softening agent	Corn kernel	60
		Reducing agent	Alcoholic beverages including low alcoholic and alcohol free counterparts	GMP

**TABLE 12: GENERALLY PERMITTED PROCESSING AIDS**

<b>S No.</b>	<b>Name of the processing aid</b>	<b>Functional/ Technological Purpose</b>	<b>Product Category</b>	<b>Residue Level (mg/kg) (Not more than)</b>
		pH control agent	Water Treatment, Non-Alcoholic Beverages	
65.	Sodium silicate (INS 550 (i))	Anticaking agent	All foods	GMP
66.	Sodium sulphite	Dough conditioner	Flour products	60
67.	Sulphuric Acid (INS 513)	pH control agent	All foods	GMP
68.	Sulphurous acid	Softening agent	Corn kernel	GMP
69.	Sulphur dioxide (INS 220)	Control of nitrosodimethylamine in malting	Malting	750
70.	Tannic Acid (INS 181)	Clarifying agent, flavouring agent, flavour adjunct	Juices	GMP
71.	Vitamin B12	Microbial nutrient	All foods	
72.	Vitamin C	Microbial nutrient	All foods	
73.	Yeast	Fermenting Agent	All foods	GMP
74.	Zinc sulphate	Mineral Salt	Alcoholic beverages including low alcoholic and alcohol free counterparts	GMP
75.	Calcium hypochlorite	Disinfectant	Water treatment	1 (as available chlorine)
76.	Nitrogen (INS 941)	Packaging gas, Creating inert atmosphere	All foods	GMP
77.	Hydrochloric acid (INS 507)	pH control agent	Water Treatment, Non-alcoholic beverages	GMP
78.	Ammonium bicarbonate (INS 503(ii))	Raising agent	Flour Mix and its products	GMP

**TABLE 12: GENERALLY PERMITTED PROCESSING AIDS**

<b>S No.</b>	<b>Name of the processing aid</b>	<b>Functional/ Technological Purpose</b>	<b>Product Category</b>	<b>Residue Level (mg/kg) (Not more than)</b>
79.	Disodium ortho phosphate (INS 339(ii))	Raising agent	Flour Mix and its products; Malt based beverages	GMP
80.	Trisodium Citrate; Sodium Citrate (INS 331(iii))	pH control agent	Flavourings, All Foods	GMP
81.	Ammonium Chloride	pH control agent	Flavourings	GMP
82.	Polyoxyethylene (20) monooleate (INS 433)	Emulsifier	Flavourings	GMP
83.	Triacetin (INS 1518)	Binding agent	Flavourings	GMP
84.	Corn Steep Liquor	Antistick agent	All foods	GMP
85.	Calcium Magnesium Carbonate	To remove hardness	Water treatment	GMP
86.	Cellulose (INS 460)	Extraction manufacturing process	Removal of insoluble waxes from liquid product during filtration	GMP
87.	Vegetable fatty acid esters		Sugar treatment	GMP