

# codex alimentarius commission



FOOD AND AGRICULTURE  
ORGANIZATION  
OF THE UNITED NATIONS

WORLD  
HEALTH  
ORGANIZATION



JOINT OFFICE: Viale delle Terme di Caracalla 00153 ROME Tel: 39 06 57051 www.codexalimentarius.net Email: codex@fao.org Facsimile: 39 06 5705 4593

Agenda Item 9 (b)

CX/FA 07/39/14

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## JOINT FAO/WHO FOOD STANDARDS PROGRAMME

### CODEX COMMITTEE ON FOOD ADDITIVES

#### Thirty-ninth Session

Beijing, China, 24 – 28 April 2007

### INVENTORY OF PROCESSING AIDS (IPA), UPDATED LIST

Prepared by New Zealand

#### BACKGROUND

1. The Codex Committee on Food Additives and Contaminants (CCFAC) at its 36<sup>th</sup> Session recognized that the development of a positive list of processing aids was not a realistic approach at the present time due to a lack of resources. However, the value of the Inventory of Processing Aids (IPA) itself, as a useful reference tool has been recognized and agreed to maintain the IPA for the time being and decided that New Zealand would prepare updated versions of the IPA for consideration at sessions of the Committee.

2. At the 38<sup>th</sup> Session the Committee accepted the offer of the Delegation of New Zealand to prepare a further updated version of IPA which would also include the proposals made at the current meeting for consideration at the next session of the Committee<sup>1</sup>.

3. The IPA includes:

- All substances in the original list in CAC/MISC 3
- Additions to the IPA agreed to by CCFAC up to and including the 38<sup>th</sup> session in April 2006.

#### CHANGES INTRODUCED IN THIS UPDATE

- Converting the main table of the IPA to a *Microsoft Excel* spreadsheet;
- Moving enzymes into a separate section;
- The addition of peroxyacid antimicrobial solutions as an antimicrobial agent (Micro-organism control agents).

#### UPDATING ISSUES FOR FUTURE CONSIDERATION

4. A new category for carriers could be added subject to the Committee reaching a decision on whether carriers are processing aids or food additives.<sup>2</sup>

5. New Zealand seeks the Committee's agreement to continue to provide an annual updates of the IPA based on the decisions relating to processing aids at each CCFAC Session until the Committee is able to progress a standard for processing aids.

<sup>1</sup> ALINORM 06/29/12 paragraphs 75 and 93.

<sup>2</sup> ALINORM 06/29/12 paragraph 95 and Appendix XV.

## INVENTORY OF PROCESSING AIDS (IPA), UPDATED LIST

Prepared by New Zealand (April 2007)

### BACKGROUND

1. The IPA is a collection of information submitted by national authorities<sup>3</sup> to provide a list of those substances whose sole function is of use as a processing aid.
2. At its 21<sup>st</sup> session in 1989, Codex Committee on Food Additives and Contaminants (CCFAC) agreed that the IPA be submitted to the CAC for adoption as a Codex advisory text. It was first published as a Codex advisory text in 1991 and included amendments agreed to at the CCFAC meetings in 1990 and 1991. The 1995 Codex publication (volume 1A, section 5.8) is the same as that published in 1991.
3. On initiation of the list, CCFAC's primary purposes for the IPA were to:
  - a) develop information on substances used as processing aids; and
  - b) determine priorities for the review of processing aids by JECFA.
4. CCFAC agreed that the IPA was not intended to be a positive list of permitted processing aids to be used, for example, by reference in Codex Commodity Standards. Further, CCFAC has not conducted its own risk assessment of the substances on the inventory.
5. CCFAC has been consistent in its decision that the IPA should be for substances that function solely as processing aids. The Codex Secretariat has endorsed this decision. However the IPA does currently contain substances that can also function as direct food additives (i.e. have a functional role in the final food).
6. CCFAC at its 36<sup>th</sup> Session recognized that the development of a positive list of processing aids was not a realistic approach at the present time due to a lack of resources<sup>1</sup>. However, the value of the IPA itself, as a useful reference tool has been recognized and agreed to maintain the IPA for the time being and decided that New Zealand would prepare updated versions of the IPA for consideration at sessions of the Committee.
7. The 38<sup>th</sup> Session of CCFAC accepted the offer of the Delegation of New Zealand to prepare a further updated version of IPA which would also include the proposals made at the current meeting for consideration at the next session of the Committee.

### INTRODUCTION

8. The Inventory of Processing Aids is intended to catalogue substances that are used in food solely as processing aids as defined by the Codex Alimentarius Commission (see Section 2 - Definitions).
9. The Committee notes that the Inventory is not intended to be complete or a "positive list" of permitted aids.
10. The Updated IPA includes:
  - All substances in the original list in CAC/MISC 3
  - Additions to the IPA agreed to by CCFAC up to and including the 38<sup>th</sup> session in April 2006.

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<sup>3</sup> ALINORM 89/12A, Appendix VIII.

11. The policy of CCFAC has been to include substances that are used in food solely as processing aids as defined by the Codex Alimentarius Commission. However, more than 50 entries relate to substances that have functions as other food additives. Those substances that can function also as food additives or foods are designated by an asterisk (\*).

12. The Inventory is arranged in tabular format for presentation of information that will be necessary for the Committee to select substances for JECFA evaluation. The following information is provided:

- Category - the functional effect classification.
- Processing Aid - the chemical name or description of the substance used as a processing aid.
- Area of Use - the foods or food processing procedures in which the processing aid is utilised.
- Level of Residues - the level of processing aid remaining in food after processing. The levels should be designated with respect to those:
  - (1) directly measured by analysis or
  - (2) estimated by other means. Values are in mg/kg and values at the detection limit of available analytical procedures are reported as "less than" (<).
- Interaction with Food - describes the degree of chemical interaction with food components. Provides data on levels of interaction products in food.
- JECFA Evaluation - if the processing aid substance has been reviewed or considered by a JECFA, then the number of the JECFA meeting is reported. The reference is to the latest JECFA evaluation, generally in relation to toxicological review. Additionally, the reference pertains to JECFA consideration of a substance and does not necessarily mean that JECFA reviewed the processing aid use(s) of this substance, nor that JECFA assigned an ADI to the substance.
- JECFA specification - the relevant monograph covering the identity and purity of the substance published in the "Compendium of Food Additive Specifications" (Comp) published by FAO in 1992 or any of the several Addendum to this publication. Where the specification provides information on the functional uses of the substance (especially when it may not include processing aid applications) this is indicated.
- ADI-the latest JECFA ADI in mg/kg body weight or other end point of their safety assessment. Abbreviations used in this column are :
  - NS for ADI "not specified"
  - NL for ADI "not limited"
  - DP for decision postponed
  - PTWI for provisional tolerable weekly intake
  - MTDI for maximum tolerable daily intake
- JECFA comments -includes any relevant comments in respect to the ADI or in some cases the specification.
- References - this includes the references from which the original 1989 list was developed (ALINORM 98/12A Appendix VIII) plus a notation when new substances have been added.

**13. Appendix A catalogues substances that are used as processing aids but not included in the main inventory as they have functions also as food additives or foods.**

(Note that substances already covered in the main IPA were formerly listed and annotated as (1.). These have been have been deleted to avoid repetition.)<sup>4</sup>

14. The substances are annotated according to the following system:

2. indicates those materials that are both food additives and processing aids (i.e. the substance functions as a processing aid in one food but may have a different function in another food).
3. indicates those compounds that because of carry-over residues, would seem to usually be considered only as food additives.
4. indicates those materials that might actually have simultaneous function as processing aids and functionality in the finished food.

(Appendix B of the earlier versions of the IPA has been deleted to avoid unnecessary duplication as it reproduces the Microbial Enzyme Preparation Section of the main Inventory.)<sup>5</sup>

15. The Committee recognises that any food additive, even if not included in the inventory or the appendix, may be used as a processing aid and is eligible for addition to the appendix. In some cases, however, the processing aid use of the food additive may require a separate JECFA evaluation.

16. In general the list does not include substances used in the manufacture of food additives (but some substances used as solvents in the manufacture of flavourings and colourings are mentioned in the main list).

**CHANGES TO LAST YEAR'S UPDATE (indicated in bold type)**

These include:

- **Converting the main table of the IPA to a *Microsoft Excel* spreadsheet**
- **Moving enzymes into a separate section**
- **Addition of peroxyacid antimicrobial solutions as a micro-organism control agent**

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<sup>4</sup> CX/FAC 06/38/13.

<sup>5</sup> CX/FAC 06/38/13.

**INVENTORY OF PROCESSING AIDS (IPA)****Main List (updated for 39 CCFA, April 2007)****IPA CATEGORIES**

Antifoam Agents  
 Boiler water additives  
 Catalysts  
 Clarifying agents/ filtration,aids  
 Contact freezing & cooling agents  
 Desiccating agent/anticaking agents  
 Detergents (wetting agents)  
 Enzyme immobilization agents & supports  
 Flocculating agents  
 Ion exchange resins, membranes, and molecular sieves  
 Lubricants, release and anti stick agents, moulding. Aids  
 Micro-organism control agents  
 Propellant and packaging gases  
 Solvents, extraction & processing  
 Washing and Peeling agents  
 Other processing aids  
 Enzyme preparations (including immobilized enzymes)\*

<b>CATEGORY</b>	<b>Use</b>	<b>Residues (mg/kg) (≤ less than)</b>	<b>Inter- action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
* These substances may also function as a food additive or foods								
<b>Antifoam Agents</b>								
Alkylene oxide adduct	Juice-making							54
*Coconut oil	Juice-making							54
*Dimethylpolysiloxane	Beer			23	Comp/1099 'tentative'	ADI applies only to compounds with relative Mol. mass 200 -	0-1.5	57 Fats and Oils CCFAC 22
	Fats and oils							



<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (<= less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
Polyalkylene oxide, in combination with special fatty alcohols	Juice making							54
Polyethoxylated alcohols, modified	Juice-making							54
Polyglycol copolymer	Juice-making							54
Polyoxyethylene esters of C8-C30 fatty acids	Vegetable protein							31
Polyoxypropylene esters of C8-C30 fatty acids	Vegetable protein							31
Polyoxyethylene esters of C9-C30 oxoalcohols	Vegetable protein							31
Polyoxypropylene esters of C9-C30 oxoalcohols	Vegetable protein							31
Methylglycoside coconut oil ester	Juice making							54
Mixtures of polyoxyethylene and polyoxypropylene esters of C8-C30 fatty acids	Vegetable protein							31
Modified higher alcohol	Juice-making							54
*Mono- and diglycerides of fatty acids from feed fat (E471)	Juice making			17	Comp /987 as emulsifier	Mono and diglycerides differ little from food therefore use NL	use need not be limited	54
*Mono- and diglycerides of fatty acids from feed fat, esterified with acetic acid, lactic acid and citric acid (E472 a, b, c)	Juice making			17	Comp/13	Sum of glycerol esters of fatty acids and acids	NL	54
Polypropylene-polyethylene block polymer	Juice-making							
Sorbitan-fatty acyl esters and polyoxyethylene-20-sorbitan fatty acyl esters -	Juice-making							54
Surface-active esters with neutral carriers	Juice-making							54
Vegetable fatty acid esters	Juice-making							54
Vegetable fatty acyl (hydrophilic)	Juice-making							54

<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
<b><u>Boiler water additives</u></b>								
Acrylamide-sodium acrylate resin	boiler water							
*Ammonium alginate	boiler water			39	Add. 3/15 (1995) as stabiliser/emulsifier	Group ADI for alginic acid and its ammonium, calcium, potassium and sodium salts	NS	CCFAC 22 (1992)
Cobalt sulphate	boiler water							CCFAC 22
1-Hydroethylidene-1,1-diphosphoric acid and its sodium and potassium salts	boiler water							CCFAC 22
Lignosulfonic acid	boiler water							CCFAC 22
Magnesium sulfate	boiler water			29	Not prepared	Intake limited by laxative action	NS	CCFAC 22
Monobutyl ethers of polyethylene-polypropylene glycol produced by random condensation of a 1:1 mixture by wt. Of ethylene oxide and propylene oxide with butanol	boiler water							CCFAC 22
*Pentasodium triphosphate	boiler water			26	Comp/1065 evaluated as texturiser	Expressed as P from all sources	MTDI 70	CCFAC 22
Poly (acrylic acid co-hypophosphite), Na salt	boiler water							CCFAC 22
*Polyethylene glycols	boiler water			23	Comp/1105	Evaluated as Carrier solvent and Excipient	0-10	CCFAC 22
Polymaleic acid and/or its sodium salt	boiler water							CCFAC 22
Polyoxypropylene glycol	boiler water							CCFAC 22
*Potassium alginate	boiler water			39	Add. 3/145 (1995) Specification for stabiliser, thickener, emulsifier	Group ADI for alginic salts	NS	CCFAC 22
*Potassium carbonate	boiler water			29	Comp /1153		NS	CCFAC 22



<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
					As alkali			
*Potassium tripolyphosphate	boiler water			26	Comp/ 1061	Expressed as P from all sources specification as texturiser	MTDI 70	CCFAC 22
*Sodium acetate	boiler water			29	Comp/1305		NS	CCFAC 22
*Sodium alginate	boiler water			39	Add. 3/171 (1995) specification for stabiliser and emulsifier	Group ADI for alginates	NS	CCFAC 22
Sodium aluminate	boiler water							CCFAC 22
*Sodium carbonate	boiler water			29	Comp/1323 (as alkali)		NS	CCFAC 22
*Sodium carboxymethyl cellulose	boiler water			35	Comp/1325	Group ADI for modified celluloses	NS	CCFAC 22
Sodium glucoheptonate	boiler water							CCFAC 22
*Sodium hexametaphosphate	boiler water			26	Comp/ 1379 (as emulsifier, textu-riser, sequestrant	Expressed as P from all sources	MTDI 70	CCFAC 22
Sodium humate	boiler water							CCFAC 22
*Sodium hydroxide	boiler water			9	Comp/1361		NL	CCFAC 22
Sodium lignosulfonate	boiler water							CCFAC 22
*Sodium metasilicate	boiler water							CCFAC 22
*Sodium nitrate	boiler water			44	Add.3/173 as anti-microbial and colour tentative	Expressed as nitrate ion;ADI does not apply to infants below the age of 3 months	0-3.7	CCFAC 22
*Sodium phosphate (mono-, di-, tri-)	boiler water			26	Comp/1559	Expressed as P from all sources	MTDI 70	CCFAC 22
Sodium polyacrylate	boiler water							
*Sodium polyphosphates	boiler water				See sodium hexa-meta phosphate			CCFAC 22



<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
Manganese	Hydrogenated food oils	<0.4						1, 22
Magnesium oxide	anticaking agent and neutralising agent			9	Comp /889 (as anticaking and neutralising agent)	Evaluated as acid/base	NL	14
Molybdenum	Hydrogenated food oils	< 0.1						1, 22
Nickel	Polyols	< 1						1, 36, 55
	Hardened oil manufacturing	< 0.8						6
	Hydrogenated food oils	0.2 to 1						22
Palladium	Hydrogenated food oils	< 0.1						1, 22
Platinum	Hydrogenated food oils	< 0.1						1, 22
Potassium metal	Interesterified food oils	< 1						1, 5, 22
Potassium methylate (methoxide)	Interesterified food oils	< 1						22
Potassium ethylate (ethoxide)	Interesterified food oils	< 1						1,22
Silver	Hydrogenated food oils	< 0.1		21	Not prepared	No info on use in/on foods insufficient data to evaluate		5,22
Sodium amide	Interesterified food oils	< 1						1,22
Sodium ethylene (sodium ethylate)	Interesterified food oils	< 1						1, 22, 57

<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
Sodium metal	Interesterified food oils	< 1						1,22
Sodium methylate (methoxide)		<1						
Trifluomethane sulfonic acid	Cocoa butter substitute	< 0.01	None					38
Various metal oxides	hydrogenated	< 0.1						5,22
	food oils							
Zirconium								16
<b>Clarifying agents/ filtration, aids</b>								
Absorbent clays (bleaching, natural or activated earths)	Starch hydrolysis							61
	Sugars Edible vegetable oil							
Active carbon	Sugars			31	Comp /21 (1990)	Evaluated as a clarifying agent	NL	32,55 Oils CCFAC 25/ (Malaysia) (1993)
	Oils							
*Albumin								1
Asbestos				22	-	Evaluated as contaminant. Concerns of carcinogen characteristics	No tolerable intake est.	6, 17,25
Bentonite	Starch hydrolysis			20	Not prepared	No info on use or impurities for JECFA to evaluate	No ADI allocated	1, 6, 37,39,49
*Calcium oxide	Sugar			9	Comp /317	Evaluated as Alkali, dough conditioner and yeast food		6, 15
Chitin/ Chitosan								CCFAC 22
Chloromethylated aminated styrene-divinylbenzene resin	Sugar processing	<1	None					58

<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
Diatomaceous earth	Fruit juices Starch hydrolysis general use			21	Comp /487	Evaluated as filter aid	DP	2,6,37,49
Divinylbenzene-ethylvinylbenzene copolymer	Aqueous foods (excluding carbonated beverages)	0.00002 (ex-tractives from copolymer)	None					58
Fuller's earth	Starch hydrolysis, Oils							Oils CCFAC 25 (Malaysia) (1993)
Ion exchange resins (see ION EXCHANGE RESINS)								
*Isinglass (Agar)					Add. 3/1 (1995)	Evaluated as thickening agent and stabiliser (1973)	NL	1
Kaolin								
Magnesium acetate				29	Not prepared	No info about manufacture or use	Not allocated	1, 32
Perlite	Starch hydrolysis							6, 37, 49
Polymaleic acid and sodium polymaleate	Sugar processing	< 5	None					58
*Tannin (to be specified) Tannic Acid				35	Add 1/117 (1992)	For use as filtering agent where the application of a GMP ensures that is removed from food after use.	NS	1, 6
*Vegetable carbon (activated)	Starch hydrolysis			31	Comp /1579	Evaluated as colour Also known as Carbon black	Not allocated	1, 6 23, 37 49,

<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
Vegetable carbon (unactivated)								6
<b>Contact freezing &amp; cooling agents</b>								
*Dichlorofluormethane	frozen food	100						1
								57
Freon (to be specified)								1
*Nitrogen				24	Add 7/65 1999	Packaging Gas, Cryogenic freezant	Not neces- sary, inert	1
<b>Desiccating agent/anticaking agents</b>								
Aluminum stearate				29	Comp / 1283	Evaluated as anion and cation	PTWI for Al 7 mg/kg/bw NS for stearates	61
Calcium phosphate (tricalcium phosphate)				26	Comp /1525	Expressed as P from all sources	MTDI 70	28
Calcium Stearate				29	Comp /1525		NS	61
Magnesium stearate				28	Comp /1525		NS	61
Octadecyl ammonium acetate (in ammonium chloride)								28
Potassium aluminum silicate								
Sodium calcium silicoaluminate				29	Comp /265	Anticaking agent	NS	61
<b>Detergents (wetting agents)</b>								
*Dioctyl sodium sulfosuccinate	Fruit drinks	<10		24	Comp /521	Evaluated as emulsifier or wetting agent	0-0.1	26
Magnesium Sulphate	Fats and oils							CCFAC 25/ Malaysia (1993)
Methyl glucoside of coconut oil ester	Molasses	320						26
Quaternary ammonium compounds								
Sodium lauryl sulphate	Food fats and oils	< 1						221 39







<b>CATEGORY</b> * These substances may also function as a food additive or foods	Use	Residues (mg/kg) (≤ less than)	Inter-action with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
Cross-linked polystyrene, first chloremethylated then aminated with trimethylamine, dimethylamine, diethylenetriamine or dimethylethanolamine.								3
Diethylenetriamine, triethylenetetramine, tetraethylenapentamine cross-linked with epichlorohydrin								3
Epichlorohydrin cross-linked with ammonia.								3
Epichlorohydrin cross-linked with ammonia and then quaternized with methyl chloride to contain not more than 18 percent strong base capacity by weight of total exchange capacity	Water used in food processing	None						58
Methacrylic acid-divinylbenzene copolymer.								3
Methacrylic acid-divinylbenzene copolymer with RCOO active groups.								6
Methyl acrylate-divinylbenzene copolymer containing not less than 2 percent by weight of divinylbenzene, aminolyzed with dimethylaminopropylamine.								3
Methyl acrylate-divinylbenzene copolymer containing not less than 3.5 percent by weight of divinyl benzene, aminolyzed with dimethylaminopropylamine								3

<b>CATEGORY</b> * These substances may also function as a food additive or foods	Use	Residues (mg/kg) (≤ less than)	Inter-action with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
Methyl acrylate-divinylbenzenediethylene glycol divinyl either terpolymer containing not less than 3.5 percent by weight of divinylbenzene and not more than 0.6. percent by weight of diethylene glycol divinyl ether, aminolyzed with dimethyl-aminopropylamine.								3
Methyl acrylate-divinylbenzene-diethylene glycol divinyl ether terpolymer containing not less than 7 percent by weight of divinylbenzene and not more than 2.3 percent by weight of diethylene glycol divinyl ether, aminolyzed with dimethylaminopropyl-amine and quaternized with methyl chloride.	Sugar processing	0.015 (extractives from resin)	None					58
Polystyrene- divinylbenzene reticulum with trimethylammonium groups.	Sugar, distilled liquors	Migrants from resin <1						17
Reaction resin of formaldehyde, acetone and tetraethylpentamine								3
Styrene-divinylbenzene cross-linked copolymer, first chlormethylated then animated with dimethylamine and oxidized with hydrogen peroxide whereby the resin contains not mor6 than 15 percent by weight of vinyl N,N-dimethyl-benzylamine-N-oxide,and not more than 6.5 percent by weight of nitrogen.								3

<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (<= less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
Sulfite-modified cross-linked phenol-formaldehyde, with modification resulting in sulfonic acid groups on side chains								3
Sulfonated anthracite coal meeting the requirements of American society for Testing and Materials D388-38, Class 1, Group 2								
Sulfonated copolymer of styrene and divinylbenzene.								3
Sulfonated terpolymers of styrene, divinylbenzene and acrylonitrile. or methyl acrylate.								3
Sulfonated tetrapolymer of styrene, divinylbenzene, acrylonitrile and methyl acrylate derived from a mixture of monomers containing not more than a total of 2 percent by weight of acrylonitrile and methyl acrylate.								3
Counter ions for resins								3, 36
Aluminum								
Bicarbonate								
Calcium								
Carbonate								
Chloride								
Hydronium								
Hydroxyl								
Magnesium								
Potassium								
Sodium								
Strontium								

<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (<= less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
Sulfate								
Membranes: Polyethylene - polystyrene base modified by reaction with chloramethyl ether and subsequent amination with trimethylamine, diethylenetriamine or dimethylethanolamine.								46

<p><b>CATEGORY</b></p> <p>* These substances may also function as a food additive or foods</p>	<p><b>Use</b></p>	<p><b>Residues (mg/kg)</b> (≤ less than)</p>	<p><b>Inter-action with food</b></p>	<p><b>JECFA Eval.</b></p>	<p><b>Specifications</b></p>	<p><b>JECFA comments</b></p>	<p><b>ADI mg/kg/bw</b></p>	<p><b>References</b></p>
<p>Polymers and copolymers containing the following components: cellulose (such as cellulose diacetate, cellulose triacetate, cellulose ethers, cellulose), Polysulfone - sulfonated polyethersulfone, Polyethersulfone - sulfonated polyethersulfone, Fluoropolymers (such as polyvinylidene fluoride, chlorotrifluoroethylene-vinylidene fluoride copolymer, polytetrafluoroethylene), Polysulfonamides, aliphatic/aromatic polyamide and copolyamides (such as poly-piperazine amides, m-phenylenediamine trimesamide polymer), Polyesters (such as polyethyleneterephthalate), Polyolefins (such as polypropylene, polyethylene), Polyamide-imide polymers, Polyimides, Polyacrylonitriles, Polyvinylpyrrolidone, Polystyrene-sulfonated polystyrene, chitin/chitosan and derivatives, polyureas - polyurethanes, Polyethers, and Polyamines.</p>								

<b>CATEGORY</b> * These substances may also function as a food additive or foods	Use	Residues (mg/kg) (≤ less than)	Inter-action with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
Polymers and copolymers containing the following components: cellulose (such as cellulose diacetate, cellulose triacetate, cellulose ethers, cellulose), Polysulfone - sulfonated polyethersulfone, Polyethersulfone - sulfonated polyethersulfone, Fluoropolymers (such as polyvinylidene fluoride, chlorotrifluoroethylene-vinylidene fluoride copolymer, polytetra-fluoroethylene), Polysulfonamides, aliphatic/aromatic polyamide and copolyamides (such as poly-piperazine amides, m-phenylene-diamine trimesamide polymer), Polyesters (such as polyethyleneterephthalate), Polyolefins (such as polypropylene, polyethylene), Polyamide-imide polymers, Polyimides, Polyacrylonitriles, Polyvinylpyrrolidone, Polystyrene-sulfonated polystyrene, chitin/chitosan and derivatives, polyureas - polyurethanes, Polyethers, and Polyamines.				29	Comp /265	Anticaking agent	NS	28
Sodium aluminum silicate				29	Comp /1315	Anticaking agent.	NS	28
<b>Lubricants, release and anti stick agents, moulding. Aids</b>								
Bentonite	Confectionery			20	Not prepared	Anticaking agent .No significant uses known, no data on impurities	No ADI allocated	2

<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
*Dimethylpolysiloxane				23	Comp/ 1099 tentative	ADI only applies to compounds with a relative Mr in the range of 200 - 300	0-1.5	16
Kaolin (Aluminum Silicate)	Confectionery			29	Comp/61	As anticaking agent	NS	2
<b>Micro-organism control agents</b>								
*Chlorine dioxide #	Flour			7	Comp /423	Flour treatment agent conditional, 30-75; acceptable level of treatment for flours to be consumed by man		57
*Dimethyl dicarbonate	Wine	None		37	Comp /515	Acceptable for use as a cold sterilization agent in beverages when used according to good manufacturing practice up to a maximum concentration of 250mg/l	acceptable	58
Formaldehyde #	sugar							56
(# The WG at 21CCFAC recommended chlorine dioxide and formaldehyde not be included. CCFAC agreed with the WG but it appears they were included in the published IPA)								
Hydrogen peroxide	Sugar, fruit and vegetable juices			24	Comp/763	May be used for milk only where better methods of milk preservation are not available		14,24
Hypochlorite	Food oils							22
Iodophors	Food oils							22
Peracetic acid								
<b>Peroxyacid antimicrobial solutions</b>								
Quaternary ammonium compounds	Food oils							22
Salts of sulfurous acid	Corn milling Starch hydrolysis	< 100						32,37,57

<b>CATEGORY</b> * These substances may also function as a food additive or foods	Use	Residues (mg/kg) (≤ less than)	Inter-action with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
Lactoperoxidase system (lactoperoxidase, glucose oxidase, thiocyanate salt)								47
<b>Propellant and packaging gases</b>								
*Air								45
Argon								45
*Carbon dioxide								56
Chloropentafluoroethane								1
Combustion product gas a variable mixture of gases produced by controlled combustion of butane, propane, or natural gas. The principle components are nitrogen and carbon dioxide,, with lesser amounts of hydrogen, oxygen, carbon monoxide (not to exceed 4.5%), any traces of other inert gases.								3,58
*Dichlorodifluoromethane (F 12)								56
*Helium								1
Hydrogen								
Isobutane	Propellant in vegetable oil pan spray (for professional use only)							CCFAC 37
*Nitrous oxide				29	Comp/ 1009	The food use of nitrous oxide as a propellant is acceptable	Use acceptable	1, 6
*Nitrogen				26	Add 7/ 65 (1999)	Packaging gas; Cryogenic Freezant	Food uses acceptable	1.3,6
Octafluorocyclobutane								1
Propane				23	Not prepared	Evaluated as propellant; extraction solvent	NS	1



<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
Trichlorofluoromethane (F 11)								43.6
<b>Solvents, extraction &amp; processing.</b>								
Acetone (Dimethyl ketone)	Flavourings, colours, food oils	< 30, 2, & 0.1		14	Comp/15	Extraction solvent	Limited by GMP	1, 3, 4,17, 22, 14
Amyl acetate	Flavourings, colours			23		As carrier solvent, flavour Included in ADI for amyl butyrate expressed as isoamyl alcohol	0-3.7	2,59
Benzyl alcohol	Flavourings, colours, fatty acids			23		As carrier solvent, flavouring. ADI for total benzoate from all sources	0-5	2,59
*Butane	Flavourings, food oils	<1, 0.1		23	Not prepared	Propellant	Not allocated	1, 4, 17,22,19
Butane-1,3-diol	Flavorings	0-4		23	Comp/ 241	As carrier solvent	0-4	3
Butan-1-ol	Fatty acids	<1000		28	Comp /237	Evaluated as extraction solvent, flavouring agent	Not allocated	2,4,19
	flavourings, colours							
Butan-2-ol	Flavorings	1		23	Comp /239	Extraction solvent, flavour	Not allocated	56
*Butyl acetate				11	Comp/243	Evaluation as flavouring agent not possible on data available.	Not allocated	56
*Carbon dioxide				29	Comp /369 tentative for gas	Carbonating agent, packing gas, preservative, freezing agent, extraction solvent		56
Cyclohexane	Flavourings, food oils	< 1		23	FNP 12- JECFA 23/30; Comp/471	Extraction solvent	Not allocated	4.17.19
Dibutyl ether	Flavourings	<2						4,19
1,2 Dichloroethane	Decaf. Coffee	< 5		39	Not prepared	Evidence of genotoxicity and	Not	1,

<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
						carcinogenicity; should not be used in food	allocated	17
Dichlorodifluoromethane	Flavourings, colour	< 1		19	Not prepared	Propellant; Liquid Freezant	0-1.5	2,4,19,59,
Dichloromethane (methylene chloride)	Flavourings, decaf. Coffee, food oils	< 2,5,10		39	Add/1/43 (1993)	Should be limited to current uses (extraction solvent)		2,4,17,22,19
Dichlorotetrafluoroethane	Flavourings	<1						4,19
Diethyl citrate	Flavourings, colours							2
Diethyl ether	Flavourings, colours	<2		23	Comp/499	Extraction solvent	Not allocated	2,4,19
Di- iso propoylketone								2
*Ethanol	Vegetable protein			14	Comp/583	Specification for extraction and carrier solvent	Limited by GMP	56
*Ethyl acetate				11	Comp/581	Unconditional acceptance as flavour	0-25	56
Ethylmethylketone (butanone)	Fatty acids, fla-vourings, colour-ings. Decaffeina- tion of coffee, tea	< 2		25	Comp /615	Extraction solvent, flavouring agent	No ADI allocated	2, 4, 19
Glycerol tributyrat	Flavourings, colours							2
Glycerol tripropionate	Flavourings, colours							2,59
Heptane	Flavourings, food oils	< 1		14	Comp/743	Extraction solvent	Limited by GMP	1, 4, 6,22
Hexane	Flavourings.	< 0.1		14	Comp/ 751	Extraction solvent	Limited by	1,3,4,

<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
	food oils,				temporary	JECFA 65 recommended a re-evaluation of hexanes as there was insufficient information to change current specifications	GMP	
	Chocolate and chocolate products	1						CCFAC 37
*Isobutane	Flavourings	<1						4,19
Isoparaffinic petroleum hydrocarbons	Citric acid							3
Isopropyl myristate	Flavourings colours			23	Comp/817	Carrier solvent, No evaluation possible	Not allocated	2
Methylene chloride (dichloromethane)	Food oils	< 0.02		28	see above in dichloromethane			1,22
Methyl acetate	Coffee	20						56
	Decaffeination flavoring							
	Sugar refining							
		1						
Methyl propanol-I	Flavorings	1						56
Nitrous oxide				29	Comp/ 1009	evaluated as propellant	Use acceptable	45
n-Octyl alcohol	Citric acid							3
Pentane	Flavourings, food oils	< 1						1,4, 22
Petroleum ether (light petroleum)	Flavourings, food oils	< 1		25	Comp/843	Extraction solvent	NS	1,4,6,22,19
*Propane	Flavourings,	< 1, 0.1		23	Not prepared	Propellant; Extraction solvent	NS	4, 17,22,19



<b>CATEGORY</b> * These substances may also function as a food additive or foods	Use	Residues (mg/kg) (≤ less than)	Inter- action with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
A mixture of alkene oxide adducts of alkyl alcohol and phosphate esters of alkylene oxide adducts of alkyl alcohols consisting of alpha-alkyl(C12-C18)-omega-hydroxy-poly(oxy-ethylene) (7.5-8.5moles) poly(oxypropylene) block copolymer having an average molecular weight of 810, alpha-alkyl- (C12-C18)-omega-hydroxy-poly(oxyethylene) (3.3-3.7 moles) polymer having an average molecular weight of 380, and subsequently esterified with 1.25 moles phosphoric anhydride; and alpha-alkyl (omega-hydroxy-poly(oxyethylene) (11.9-12.9 moles)/poly(oxypropylene) copolymer having an average molecular weight of 810 and sub-sequently esterified with 1.25 moles phosphoric anhydride	Fruits and vegetables	< 0.001 up to 0.01	None					3, 54
Alkylene oxide adducts of alkyl alcohols and fatty acids	Sugar beets	No Information Available						6,51,54
Aliphatic acid mixture consisting of valeric, caproic, enanthic, caprylic, and pelargonic acids	Fruits and vegetables	0.04-0-11	None					3,54
Alpha-alkyl-omega-hydroxy-poly (oxyethylene)	Sugar beets	0.001in sugar beets, 0 in sugar		None				3,51,54
Ammonium chloride, quaternary	Sugar beets							53
Ammonium orthophosphate	Fruits and vegetables							53

<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
*Calcium chloride	Fruits and vegetables			29	Comp/277		NS	53
*Calcium hydroxide	Sugar beets			9	Comp /301	Specification for neutralizing agent; buffer; firming agent	NL	53
*Calcium oxide	Sugar beets			9	Comp/17	Specification for Alkali, dough conditioner, yeast food	NL	53
Carbamate	Sugar beets							53
Dialkanolamine	sugar beets	0.001 in sugar beets, 0 in sugar	None					3,54
Diammonium orthophosphate	Fruits and vegetables for canning							56
Diammonium orthophosphate, (5% aqueous solution)	Fruits and vegetables for canning							52
Dithiocarbamate	Sugar beets							53
Ethylene dichloride	Sugar beets	0.00001 in sugar beets, 0 in sugar	None	23				3,54
Ethylene glycol monobutyl ether	Sugar beets	0.00003 in sugar beets, 0 in sugar	None					3,54
Hydrogen peroxide		No Information - Available		24	Comp/ 763	As preservative sterilising agent	Not allocated	54
Linear undecylbenzenesulfonic acid	Sugar beets	0.001 in sugar beets 0 in sugar	None					3,54

<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (<= less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
Monoethanolamine	Fruits and vegetables, sugar beets	100						3,52
Monoethanolamine	Sugar beets	0.0001 in sugar beets, 0 in sugar	None					54
Monoethanolamine (8%)	Fruits and vegetables for canning							56
Organophosphates	Sugar beets							53
Peroxyacid antimicrobial solutions containing 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP) <i>Containing HEDP and three or more of the following components:</i> <i>peroxacetic acid, acetic acid, hydrogen peroxide, octanoic acid and peroxyoctanoic acid.</i> Acetic acid 1-Hydroxyethylidene-1,1-diphosphonic acid (HEDP) Hydrogen peroxide Octanoic acid (as food additive)				63	Revised   New  Revised  New	The peroxy compounds in these solutions (hydrogen peroxide, peroxyacetic acid and peroxy-octanoic acid) would break down into acetic acid and octa-noic acid, and small residual quantities of these acids on foods at the time of consumption would not pose a safety concern. HEDP does not pose a safety concern at the levels of residue that are expected to remain on foods at the time consumption.		
Polyacrylamide	Fruits and vegetables, sugar beets	< 1	None					3,51,54
Potassium bromide	Fruits and vegetables							3,54

<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
Sodium dodecylbenzenesulfonate (alkyl group predominantly C12 and not less than 95 percent C10-C16).	Fruits and vegetables, meat and poultry	< 2		None				3, 6, 54
Sodium 2-ethylhexyl sulphate	Fruits and vegetables	< 20		None				3,54
*Sodium carbonate				29	Comp/ 1323	Alkali	NL	52
*Sodium hydroxide	Fruits and vegetables, sugar beets			9	Comp/ 1361	Alkali	NL	53
Sodium hydroxide (10%, max.)	Fruits and vegetables for canning					See above		52
Sodium hydroxide (2%)	Mackerel for canning					See above		52
Sodium hypochlorite	Fruits and vegetables	No Information				No Information Available		3,52.54
		Available						
Sodium mono- and di-methyl naphthalene-sulfonates (mol. wt. 245-260)	Fruits and vegetables	< 0.2	None					3, 54
Sodium n-alkylbenzenesulfonate (alkyl group predominantly C12 and C13 and not less than 95 percent C10-C16).	Fruits and vegetables	Same as sodium dodecylbenzenesulfonate	None					3, 6, 54
*Sulphuric acid	Locust bean seeds				Comp/ 1457	As acid		CCFAC 25 (1993)
Tetrapotassium pyrophosphate	Sugar beets	0.00002 in sugar beets	None	26	Comp/ 1491	Specification as emulsifier, texturiser. MTDI for P from all sources	MTDI 70	3,54,57
		0 in sugar						



<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
Tetrasodium ethylenediaminetetraacetate	Sugar beets	0.000003 in sugar beets	None					3,54
		0 in sugar						
Triethanolamine	Sugar beets	0.00005 in sugar beets	None					3, 54
		0 in sugar						
<b>Other processing aids</b>								
Aluminum oxide								
Aluminum potassium sulphate				22	Comp/55	Acidity Regulator; Stabilizer	No ADI allocated	28
Ammonium nitrate								
Benzoyl peroxide	Bleaching whey			63	JECFA 63 Revised the specification	Treatment of whey with benzoyl peroxide at a maximum concentration of 100 mg/kg does not pose a safety concern.		
Beta – cyclodextrin	flavour adjunctor and cholesterol extraction in butter			44	Add 3/55 (1995)	As encapsulating agent for food additives, flavours and vitamins, thickening agent	0-5	CCFAC 25 (1993)
*Erythorbic acid				37	Comp/567	Antioxidant	NS	58
Calcium tartrate					Not prepared	No information on the use of this substance as a food additive	No ADI allocated	
*Citric Acid	Fats and Oils			17	Add 4/39 (1996)	As acids, antioxidants, sequestrants, synergist, flavour	NL	CCFAC 25 (Malaysia) (1993)
Ethyl parahydroxybenzoate				17	Add 3/165 (1995)	As sum of ethyl, methyl and propyl esters of p-hydroxybenzoic acid	0-10	32

<b>CATEGORY</b> * These substances may also function as a food additive or foods	<b>Use</b>	<b>Residues (mg/kg)</b> (≤ less than)	<b>Inter-action with food</b>	<b>JECFA Eval.</b>	<b>Specifications</b>	<b>JECFA comments</b>	<b>ADI mg/kg/bw</b>	<b>References</b>
Gibberellic acid								
*Glucono -delta lactone	pre acidification of milk in cheese making			51	Add 6/63(1998)	As acidulant , leavening agent, sequestrant	NS	Added at 25 <sup>th</sup> CCFAC (1993)
Glycerol ester of adipic acid								32
Hydrogen								
Magnesium tartrate				27	Not Prepared	No information on the use of this substance as a food additive	No ADI allocated	
*Phosphoric Acid	Fats and Oils			26	Comp/ 1081	As Phosphate from all sources evaluated as acid	MTDI 70	CCFAC 25 (Malaysia) 1993
Polyvinyl polypyrrolidone	Beverages			27	Comp/791	As colour stabiliser, colloidal stabiliser, clarifying agent	NS	13
Potassium gibberellate								
Propyl parahydroxybenzoate				17	Comp/ 1215	As antimicrobial preservative	0-10	32,58
Sodium								
*Sodium Hydroxide	Fats and Oils			9	Comp/ 1361	As alkali	NL	CCFAC 25 (Malaysia) 1993
Sodium hypochlorite								
*Sodium silicates				29	Not prepared	Anticaking agent. Also includes the free acid; no restriction provided that the contribution made to food is assessed and considered acceptable.	NS	

**ENZYME PREPARATIONS (INCLUDING IMMOBILIZED ENZYMES)****(updated for 39 CCFA, April 2007)**

Microbially-derived enzymes from genetically modified organisms are listed with the producing host organism name followed by a d-(name) to identify the source of the donor organism gene.

*Note:* Due to taxonomic changes of many micro-organisms used to produce enzymes, it would be necessary to mention all the synonyms in each case. This would make the table quite unreadable and require regular updating. Therefore please consult the following list of taxonomic changes for the current correct names of specific micro-organisms that produce enzymes.

- *Aspergillus niger* covers strains known under the names *Aspergillus aculeatus*, *A. awamori*, *A. ficuum*, *A. foetidus*, *A. japonicus*, *A. phoenicis*, *A. saitoi*, *A. usamii* and *A. tubingensis*.
- *Bacillus subtilis* formerly also covered the strain now known under the name *Bacillus amyloliquefaciens*.
- *Humicola lanuginosa* is also known as *Thermomyces lanuginosus*
- *Klebsiella aerogenes* is the former name for *Klebsiella pneumoniae*
- *Micrococcus lysodeicticus* is the former name for *Micrococcus luteus*
- *Mucor miehei* is the former name for *Rhizomucor miehei*
- *Penicillium emersonii* is the former name for *Talaromyces emersonii*. It is also known as *Geosmithia emersonii*
- *Rhizopus arrhizus* is the former name for *Rhizopus oryzae*.
- *Sporotrichum dimorphosporum* is the former name for *Disporotrichum dimorphosporum*
- *Streptoverticillium mobaraense* is the former name for *Streptomyces mobaraense*
- *Trichoderma reesei* is also known as *Trichoderma longibrachiatum*
- *Verticicladiella procera* is the former name for *Leptographium procerum*

CATEGORY	JECFA Eval.	Specifications	JECFA comments	References
<b><u>Animal-Derived Enzyme Preparations:</u></b>				
Alpha amylase (hog or bovine pancreas)				10,23
Catalase (bovine or horse liver)	15	Comp 411 (for cheese manufacture)	Use limited by GMP	1
Chymosin (calf or kid or lamb abomasum)				
<b><u>Chymotrypsin (bovine or porcine pancreas)</u></b>				
Lipase (bovine stomach) (salivary glands or forestomach of calf, kid, or lamb) (hog or bovine pancreas)	15	Comp /853	Use limited by GMP	1, 3, 10,13
Lysozyme (egg whites)		Add 1/61	Regard as food/preservative	44, 48, 57
<b><u>Pancreatin (bovine or porcine pancreas)</u></b>				
<b><u>Pepsin</u></b>				
(hog stomach)	15	Comp /1069	Limited by GMP	1
(proventricum of poultry)	20	Comp /167		41
(porcine pancreas)				55
<b><u>Rennet</u></b>				
(calf or kid stomach)	15	Comp /1257	Limited by GMP	1
(goat or sheep stomach)	15			
(bovine stomach)		Comp/ 1259	Limited by GMP	
<b>Trypsin</b> (porcine or bovine pancreas)	15	Comp/1561	Regard as food	1
<b><u>Plant-Derived Enzyme Preparations:</u></b>				
Alpha amylase (malted barley)				
Beta amylase				
(malted or ungerminated barley)				
(soya)				
Bromelain ( <i>Ananas comosus</i> ; <i>Ananas bracteatus</i> )	15	Comp /221	Limited by GMP	1
Chymopapain ( <i>Carica papaya</i> )	15	Comp /1033	Limited by GMP	
Ficin ( <i>Ficus glabrata</i> )	15	Comp /661	Non edible plant derived enzyme preparation. No toxicological data	1, 3
Lipases (origin?)				CCFAC 25/ (1993) Malaysia
Lipoxydase (soya)				55

CATEGORY	JECFA Eval.	Specifications	JECFA comments	References
Malt carbohydrases (alpha or beta amylase) (malted barley or barley)	15	Comp /901	Limited by GMP	1, 6, 40,49,55
Papain ( <i>Carica papaya</i> )	15	Comp /1033	Limited by GMP	
Peroxidase (soya)				
<b><u>Microbiologically derived Enzyme Preparations</u></b>				
Acetolactate decarboxylase ( <i>Bacillus subtilis d-Bacillus brevis</i> )	49			
Acid phosphatase ( <i>Aspergillus niger</i> )				in CX/FAC 92/7
Alcohol dehydrogenase ( <i>Saccharomyces cerevisiae</i> )				15
Alpha amylase				
( <i>Aspergillus niger</i> )	31		Data required to show strains used do not produce mycotoxins	7
( <i>Aspergillus niger d-Aspergillus niger</i> )				
( <i>Aspergillus oryzae</i> )	31	Add 2/13 (1993)	Regard as normal constituent of food	7
( <i>Bacillus amyloliquefaciens</i> )				CX/FAC 92/7
( <i>Bacillus amyloliquefaciens d-Bacillus amyloliquefacien</i> )				
( <i>Bacillus licheniformis</i> )				7
( <i>Bacillus licheniformis</i> containing a-modified alpha amylase gene from <i>B. licheniformis</i> )	61			CCFAC 37
( <i>Bacillus licheniformis d-Bacillus stearothermophilus</i> )				
( <i>Bacillus stearothermophilus</i> )	37	Add 2/9 (1993)		
( <i>Bacillus subtilis</i> )	37	Add 2/11 (1993)		7
( <i>Bacillus subtilis d-Bacillus megaterium</i> )	37	Comp /107		in CX/FAC 92/7
( <i>Bacillus subtilis d-Bacillus stearothermophilus</i> )	37	Comp /111		in CX/FAC 92/7
( <i>Bacillus subtilis d-Bacillus subtilis</i> )				
( <i>Microbacterium imperiale</i> )				
( <i>Rhizopus delemar</i> )				7
( <i>Rhizopus oryzae</i> )				7

CATEGORY	JECFA Eval.	Specifications	JECFA comments	References
<i>(Thermomonospora viridis)</i>				
Alpha galactosidase or Melibiase				7
<i>(Aspergillus niger)</i>	35			
<i>(Aspergillus oryzae)</i>				
<i>(Aspergillus oryzae d-Aspergillus niger)</i>				
<i>(Mortierella vinacea)</i>				7
<i>(Saccharomyces carlsbergensis)</i>	15		Evaluated as carbohydrases	7,31
<i>(Saccharomyces cerevisiae d-Guar seed)</i>				
Aminopeptidase				
<i>(Aspergillus niger)</i>				
<i>(Aspergillus oryzae)</i>				
<i>(Lactococcus lactis)</i>				
<i>(Rhizopus oryzae)</i>				
<i>(Trichoderma reesei)</i>				
AMP deaminase <i>(Aspergillus melleus)</i>				
Arabinofuranosidase				
<i>(Aspergillus niger)</i>	15		Evaluated as carbohydrases	31
<i>(Aspergillus niger d-Aspergillus niger)</i>				
Beta amylase				
<i>(Bacillus cereus)</i>				7
<i>(Bacillus lichenformis)</i>				in CX/FAC 92/7
<i>(Bacillus megaterium)</i>				7, 8
<i>(Bacillus subtilis)</i>	15	Comp/ 961	As mixed microbial carbohydrases and proteases	7
Beta glucanase				
<i>(Aspergillus niger)</i>	15	Add 1/53	Temporary acceptance of microbial carbohydrase pending further short term tests	
<i>(Bacillus amyloquefaciens)</i>				in CX/FAC 92/7

CATEGORY	JECFA Eval.	Specifications	JECFA comments	References
<i>(Bacillus amyloquefaciens d- Bacillus amyloquefaciens)</i>				
<i>(Bacillus subtilis)</i>	15			
<i>(Disporotrichum dimorphosporum)</i>				
<i>(Humicola insolens)</i>				
<i>(Penicillium funiculosum)</i>				
<i>(Penicillium multicolor)</i>				
<i>(Pseudomonas paucimobilis)</i>				
<i>(Talaromyces emersonii)</i>				
<i>(Trichoderma harzianum)</i>	31, 39	Add 1/53		20
<i>(Trichoderma reesei)</i>				in CX/FAC 92/7
<i>(Trichoderma reesei d-Trichoderma reesei)</i>				
Beta d-glucosidase or Cellobiase				
<i>(Aspergillus niger)</i>				7
<i>(Penicillium decumbens)</i>				
<i>(Trichoderma harzianum)</i>	15		As carbohydrases	
<i>(Trichoderma reesei)</i>				7, 20
<i>(Trichoderma reesei d-Trichoderma reesei)</i>				
Beta xylosidase <i>(Trichoderma reesei)</i>				55
Carbohydrases, mixed (pectinase, cellulases, and hemicellulases) <i>(Aspergillus niger)</i>	15	Comp/357	Evaluated as carbohydrases	CX/FAC 92/7
Catalase				
<i>(Aspergillus niger)</i>	15	Comp /693	Evaluated as carbohydrase	71.24,
<i>(Aspergillus niger d-Aspergillus niger)</i>				
<i>(Aspergillus oryzae)</i>				
<i>(Micrococcus luteus)</i>	15	Comp /413		7
Carboxypeptidase <i>(Aspergillus niger d-Aspergillus niger)</i>				
Cellulase				
<i>(Aspergillus niger)</i>	15	Comp/ 367 tentative	Evaluated as carbohydrase	6, 7,55
<i>(Aspergillus oryzae)</i>	15		Evaluated as carbohydrase	7
<i>(Disporotrichum dimorphosporum)</i>				7

CATEGORY	JECFA Eval.	Specifications	JECFA comments	References
<i>(Humicola insolens)</i>				
<i>(Penicillium funiculosum)</i>				
<i>(Rhizopus delemar)</i>				7
<i>(Rhizopus oryzae)</i>	15		Evaluated as carbohydrase	7
<i>(Streptomyces lividans)</i>				
<i>(Talaromyces emersonii)</i>				
<i>(Thielavia terrestris)</i>				7
<i>(Trichoderma reesei)</i>	39	Add 1/35		
<i>(Trichoderma reesei d-Trichoderma reesei)</i>				
<i>(Trichoderma viride)</i>				
Chymosin A ( <i>E coli K-12</i> d-calf stomach)	37	Add 7/17 (1999)		CCFAC 23 (1991)
Chymosin B				
<i>(Kluveromyces marxianus var. lactis</i> d-calf stomach)	37	Add 7/21 (1999)		CCFAC 23 (1991)
<i>(Aspergillus niger var. awamori</i> d-calf stomach)	37	Add 7/19 (1999)		CCFAC 23 (1991)
Cyclomaltodextrin glucanotransferase ( <i>Bacillus licheniformis d-Thermoanaerobacter.</i> )				
Dextranase				
<i>(Aspergillus ?)</i>				
<i>(Bacillus subtilis)</i>	15		Evaluated as mixed carbohydrases and proteases	
<i>(Chaetomium erraticum)</i>				
<i>(Chaetomium gracile)</i>				
<i>(Klebsiella pneumoniae)</i>				7
<i>(Penicillium funiculosum)</i>				7
<i>(Penicillium lilacinum)</i>				7
Endo beta glucanase				
<i>(Aspergillus niger)</i>	15		Evaluated as carbohydrases	7
<i>(Aspergillus oryzae)</i>	15		Evaluated as carbohydrases	7
<i>(Bacillus circulans)</i>				7



CATEGORY	JECFA Eval.	Specifications	JECFA comments	References
<i>(Bacillus subtilis)</i>	15		Evaluated as mixed carbohydrases and protease	7
<i>(Disporotrichum dimorphosporum)</i>				56
<i>(Rhizopus delemar)</i>				7
<i>(Rhizopus oryzae)</i>	15		Evaluated as carbohydrase	7, 30
<i>(Talaromyces emersonii)</i>				7
<i>(Trichoderma reesei)</i>				
Esterase				from CX/FAC 92/7
<i>(Aspergillus niger)</i>				55
<i>(Rhizomucor miehei)</i>				7
<i>(Trichoderma reesei)</i>				55
Exo alpha glucosidase <i>(Aspergillus niger)</i>				
Exo-alpha glucosidase (immobilized) (same source as above) no more than 10 mg/kg glutaraldehyde				
Fructosyl transferase				
<i>(Aspergillus niger)</i>				
Glucoamylase or amyloglucosidase				
<i>(Aspergillus niger)</i>	35	Comp /115 (Tentative)		7, 9, 16, 49, 50
<i>(Aspergillus niger d-Aspergillus niger)</i>				
<i>(Aspergillus niger d-Talaromyces emersonii)</i>				
<i>(Aspergillus oryzae)</i>	31	Add 2/13 (1993)	Microbial enzyme preparation	7
<i>(Penicillium funiculosum)</i>				
<i>(Rhizopus delemar)</i>				7
<i>(Rhizopus niveus)</i>				7
<i>(Rhizopus oryzae)</i>	15	Comp/ 365	Evaluated as carbohydrase	7
<i>(Trichoderma reesei)</i>				7, 30
Glucose isomerase				
<i>(Actinoplanes missouriensis)</i>	29	Comp/681	Acceptable for use in food processing when immobilised.	7
<i>(Arthrobacter?)</i>	15		Evaluated as carbohydrase	7

CATEGORY	JECFA Eval.	Specifications	JECFA comments	References
<i>(Bacillus coagulans)</i>	29	Comp/ 683	Non immobilised: No info on use Immobilised: Use acceptable in food	7
<i>(Microbacterium arborescens)</i>				
<i>(Streptomyces albus)</i>				7
<i>(Streptomyces lividans)</i>				
<i>(Streptomyces murinus)</i>				
<i>(Streptomyce olivaceus)</i>	29	Comp/685	acceptable when immobilised	7
<i>(Streptomyces olivochromogenes)</i>	29	Comp/687	acceptable when immobilised	12, 7
<i>(Streptomyces rubiginosus)</i>	29	Comp /689	acceptable when immobilised	9,20,21
<i>(Streptomyces ?)</i>			See specific sp. above	17
<i>(Streptomyces violaceoniger)</i>	28	Comp/ 691		
Glucose isomerase (immobilized) .(same sources as above) not more than 10 mg/kg glutaraldehyde			See comments above	
<i>(Microbacterium arborescens)</i>				CX/FAC 92/7
<i>(Streptococcus murinus)</i>				CX/FAC 92/7
Glucose oxidase				
<i>(Aspergillus niger)</i>	18, 35	Comp /693		1, 6, 7
<i>(Aspergillus niger d- Aspergillus niger)</i>				
<i>(Aspergillus oryzae d- Aspergillus niger)</i>				
<i>(Penicillium chrysogenum)</i>				
Glutaminase ( <i>Bacillus subtilis</i> )				
Hemicellulase				
<i>(Aspergillus niger)</i>				

CATEGORY	JECFA Eval.	Specifications	JECFA comments	References
<i>(Aspergillus oryzae)</i>	15		Evaluated as carbohydrase	7
<i>(Bacillus lentus)</i>				
<i>(Bacillus subtilis)</i>	15		Evaluated as carbohydrase	7
<i>(Bacillus subtilis d-Bacillus ?)</i>				
<i>(Disporotrichum dimorphosporum)</i>				7
<i>(Rhizopus delemar)</i>				7
<i>(Rhizopus oryzae)</i>	15		Evaluated as carbohydrase	7
<i>(Trichoderma reesei)</i>				7,30
Hexose oxidase ( <i>Hansenula polymorpha d-Chondrus crispus</i> )	63	New specification JECFA 63		CCFAC 38
Inulinase				
<i>(Aspergillus niger)</i>	15		Evaluated as carbohydrase	
<i>(Disporotrichum dimorphosporum)</i>				
<i>(Kluyveromyces fragilis)</i>				7
<i>(Streptomyces ?)</i>	15			
Invertase				7
<i>(Aspergillus niger)</i>	15		Evaluated as carbohydrase	
<i>(Bacillus subtilis)</i>	15		Evaluated as carbohydrase	
<i>(Kluyveromyces fragilis)</i>				7
<i>(Saccharomyces carlsbergensis)</i>	15	Comp/ 367	Evaluated as carbohydrase	7
<i>(Saccharomyces cerevisiae)</i>	15, 57		Evaluated as carbohydrase	7, 17
<i>(Saccharomyces ?)</i>	15		Evaluated as carbohydrase	
Isoamylase ( <i>Bacillus cereus</i> )				7
Laccase ( <i>Aspergillus oryzae d-Myceliophthora thermophila</i> )	61, 65	JECFA 65 revised the specification		CCFAC 37
Lactase or Beta galactosidase				
<i>(Aspergillus niger)</i>	15	Comp/357	Evaluated as carbohydrase	7
<i>(Aspergillus oryzae)</i>	15		Evaluated as carbohydrase	7,10
<i>(Candida pseudotropicalis)</i>				CX/FAC 92/7
<i>(Kluyveromyces fragilis)</i>	7			
<i>(Kluyveromyces lactis)</i>				
<i>(Kluyveromyces lactis d-Kluyveromyces lactis)</i>				

CATEGORY	JECFA Eval.	Specifications	JECFA comments	References
( <i>Saccharomyces</i> ?)	15	Comp/ 367	Evaluated as carbohydrase	
Lactoperoxidase (Origin?)		Comp /375	under sodium percarbonate system for milk preservation	47,57
Lipase				
( <i>Aspergillus niger</i> )				7
( <i>Aspergillus niger d-Candida antarctica</i> )				
( <i>Aspergillus oryzae</i> )	15, 18	Comp /857		1,7
( <i>Aspergillus oryzae d-Rhizomucor miehei</i> )				
( <i>Aspergillus oryzae d-Humicola lanuginosus</i> )				
( <i>Aspergillus oryzae d-Fusarium oxysporum</i> )				
( <i>Aspergillus oryzae d-Candida antarctica</i> )				
( <i>Brevibacterium lineus</i> )				46
( <i>Candida lipolytica</i> )				7
( <i>Candida rugosa</i> )				
( <i>Mucor javanicus</i> )				7
( <i>Mucor pusillus</i> )				
( <i>Penicillium roqueforti</i> )				
( <i>Penicillium camembertii</i> )				
( <i>Rhizopus delemar</i> )				
( <i>Rhizomucor miehei</i> )				7
( <i>Rhizopus nigrican</i> )				7
( <i>Rhizopus niveus</i> )				
( <i>Rhizopus oryzae</i> )				
Lysophos- pholipase				23
( <i>Aspergillus niger</i> )				
( <i>Aspergillus niger d-Aspergillus niger</i> )				
Malic acid decarboxylase ( <i>Leuconostoc oenos</i> )				7
Maltase or alpha glucosidase				
( <i>Aspergillus niger</i> )	15	Comp/ 357 tentative	Evaluated as carbohydrase	7
( <i>Aspergillus oryzae</i> )	15		Evaluated as carbohydrase	7
( <i>Rhizopus oryzae</i> )	15	Comp/ 365	Evaluated as carbohydrase	7
( <i>Trichoderma reesei</i> )				

CATEGORY	JECFA Eval.	Specifications	JECFA comments	References
Maltogenic amylase ( <i>Bacillus subtilis</i> d- <i>Bacillus stearothermophilus</i> )	51	Add 6/83 (1998)		CX/FAC 92/7
Mixed xylanase, beta glucanase enzyme preparation ( <i>Humicola insolens</i> )	61			CCFAC 37
Nitrate reductase ( <i>Micrococcus violagabriella</i> )				46
Pectinase				
( <i>Aspergillus niger</i> )	35	Comp /1059		6, 7
( <i>Aspergillus niger</i> d- <i>Aspergillus niger</i> )				
( <i>Aspergillus oryzae</i> )	15		Evaluated as carbohydrase	6, 7
( <i>Aspergillus oryzae</i> d- <i>Aspergillus niger</i> var. <i>aculeatus</i> )				
( <i>Penicillium funiculosum</i> )				
( <i>Penicillium simplicissium</i> )				7
( <i>Rhizopus oryzae</i> )	15	Comp/ 365	Evaluated as carbohydrase	7
( <i>Trichoderma reesei</i> )				7, 30
( <i>Trichoderma reesei</i> d- <i>Aspergillus</i> ?)				
Pectin esterase ( <i>Aspergillus niger</i> )	15		Evaluated as carbohydrase	20
( <i>Aspergillus niger</i> d- <i>Aspergillus niger</i> )				
Pectin lyase ( <i>Aspergillus niger</i> )	15		Evaluated as carbohydrase	20
Phosphodiesterase				
( <i>Penicillium citrinum</i> )				
( <i>Leptographium procerum</i> )				
Phospholipase A1 ( <i>Aspergillus oryzae</i> d- <i>Fusarium venenatum</i> )	65	New Specification JECFA 65	Information too limited to assess safety	CCFAC 38
Phospholipase A2				
( <i>Aspergillus niger</i> d- <i>porcine pancreas</i> )				
( <i>Streptomyces violaceoruber</i> )				
( <i>Streptomyces chromofuscus</i> )				
Phytase				CX/FAC 92/7
( <i>Aspergillus niger</i> )				
( <i>Aspergillus niger</i> d- <i>Aspergillus niger</i> )				
( <i>Aspergillus oryzae</i> d- <i>Peniophora lycii</i> )				

CATEGORY	JECFA Eval.	Specifications	JECFA comments	References
<i>(Trichoderma reesei d-Aspergillus ?)</i>				
Polygalacturonase	15	Comp/ 357	Evaluated as carbohydrase	30
<i>(Aspergillus niger)</i>	15	Comp/ 357	Evaluated as carbohydrase	30
<i>(Aspergillus niger d-Aspergillus niger)</i>				
Protease (including milk clotting enzymes)				
<i>(Aspergillus melleus)</i>				7
<i>(Aspergillus niger)</i>	35	Not prepared		7
<i>(Aspergillus niger d-Aspergillus niger)</i>				
<i>(Aspergillus oryzae)</i>	31	Comp/ 1233		7
<i>(Aspergillus oryzae d-Rhizomucor miehei)</i>				
<i>(Bacillus amyloliquefaciens)</i>				
<i>(Bacillus amyloliquefaciens d-Bacillus amyloliquefaciens)</i>				
<i>(Bacillus cereus)</i>				7
<i>(Bacillus licheniformis)</i>				7
<i>(Bacillus stearothermophilus)</i>				
<i>(Bacillus subtilis)</i>	15	Comp/ 961	Evaluated as mixed carbohydrases and proteases	1,7
<i>(Bacillus subtilis d-Bacillus amyloliquefaciens)</i>				
<i>(Brevibacterium lineus)</i>				46
<i>(Endothia parasitica)</i>	15			1,7
<i>(Endothia parasitica d-Endothia parasitica)</i>				
<i>(Lactobacillus casei)</i>				46
<i>(Micrococcus caseolyticus)</i>				56
<i>(Mucor pusillus)</i>	18	Comp/ 1265		1,7
<i>(Rhizomucor miehei)</i>	18	Comp/ 1265		1,7
<i>(Rhizopus niveus)</i>				
<i>(Rhizopus oryzae)</i>				
<i>(Streptococcus cremoris)</i>				46
<i>(Streptococcus lactis)</i>				

CATEGORY	JECFA Eval.	Specifications	JECFA comments	References
Pullulanase				CX/FAC 92/7
<i>(Bacillus acidopullulyticus)</i>				30, 20
<i>(Bacillus circulans)</i>				
<i>(Bacillus licheniformis d-Bacillus deramificans)</i>				
<i>(Bacillus naganoensis)</i>				
<i>(Bacillus subtilis)</i>				48, 49
<i>(Bacillus subtilis d-Bacillus naganoensis)</i>				
<i>(Bacillus subtilis d-Bacillus deramificans)</i>				
<i>(Klebsiella pneumoniae)</i>	25 spec	Comp/ 1237		7
<i>(Klebsiella planticola d-Bacillus planticola)</i>				
Rhamnosidase ( <i>Penicillium decumbens</i> )				
Serine proteinase				
<i>(Bacillus amyloliqu- efaciens)</i>				CX/FAC 92/7
<i>(Bacillus licheniformis)</i>				
<i>(Bacillus subtilis)</i>				CX/FAC 92/7
<i>(Streptomyces fradiae)</i>	28	Comp /1235	Insufficient toxicological data available	23
Tannase				
<i>(Aspergillus niger)</i>				7
<i>(Aspergillus oryzae)</i>				7
Transglucosidase ( <i>Aspergillus niger</i> )				
Transglutaminase ( <i>Streptomyces mobaraense</i> )				
Urease ( <i>Lactobacillus fermentum</i> )				
Xylanase				
<i>(Aspergillus niger)</i>				7
<i>(Aspergillus niger d-Aspergillus niger)</i>				
<i>(Aspergillus oryzae d-Aspergillus niger var. aculeatus)</i>				
<i>(Aspergillus oryzae d-Humicola lanuginosus)</i>				
<i>(Bacillus licheniformis d-Bacillus licheniformis)</i>				
<i>(Bacillus subtilis d-Bacillus subtilis)</i>	63	JECFA 63 – new		CCFAC 38

CATEGORY	JECFA Eval.	Specifications	JECFA comments	References
		specification		
<i>(Bacillus subtilis with modified gene from d-Bacillus subtilis)</i>	63	JECFA 63 – new specification		CCFAC 38
<i>(Disporotrichum dimorphosporum)</i>				7
<i>(Fusarium venenatum d-Humicola lanuginosus)</i>	61			CCFAC 37
<i>(Humicola insolens)</i>				
<i>(Streptomyces ?)</i>				7
<i>(Trichoderma reesei)</i>				48
<i>(Trichoderma reesei d-Trichoderma reesei)</i>				



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**APPENDIX A****CODEX INVENTORY OF COMPOUNDS USED AS PROCESSING AIDS WHICH ALSO SERVE OTHER FUNCTIONS**

(excludes those substances already covered in the main IPA which were formerly annotated as (1.))

The substances are annotated according to the following system:

2. indicates those materials that are both food additives and processing aids (i.e. the substance functions as a processing aid in one food but may have a different function in another food).
3. indicates those compounds that because of carry-over residues, would seem to usually be considered only as food additives.
4. indicates those materials that might actually have simultaneous function as processing aids and functionality in the finished food.

**Antifoam agents**

- (2) Aluminum stearate
- (2) Butyl stearate
- (3) Butylated hydroxyanisole (as antioxidant in defoamers)
- (3) Butylated hydroxytoluene (as antioxidant in defoamers)
- (2) Calcium stearate
- (2) Dimethylpolysiloxane
- (2) Fatty acids
- (2) Hydroxylated lecithin
- (2) Magnesium stearate
- (3) Margarine
- (2) Mineral oil
- (2) Mono- and diglycerides of fatty acids
- (2) n-Butoxypolyoxyethylene polyoxypropylene glycol
- (2) Odourless light petroleum hydrocarbons
- (2) Oleic acid from tall oil fatty acids
- (2) Oxystearin
- (2) Petroleum wax
- (2) Petroleum wax (synthetic)
- (2) Petrolatum
- (2) Polyacrylic acid, sodium salt
- (2) Polydimethylpolysiloxane (fruit juices at 10mg/kg CCFAC 37)
- (2) Polyethylene glycol
- (2) Polyethylene glycol (400) dioleate
- (2) Polyethylene glycol (600) dioleate
- (2) Polyglycerol esters of fatty acids
- (2) Polyoxyethylene 40 monostearate
- (2) Polypropylene glycol
- (2) Polysorbate 60
- (2) Polysorbate 65
- (2) Polysorbate 80
- (2) Potassium stearate
- (2) Propylene glycol alginate
- (2) Propylene glycol mono- and di-esters of fats and fatty acids
- (2) Silicon dioxide

- (2) Sorbitan monolaurate
- (2) Sorbitan monostearate
- (2) Soybean oil fatty acids
- (2) Tallow
- (2) Tallow, hydrogenated, oxidized or sulphated
- (2) Tallow alcohol, hydrogenated
- (3) Vegetable oil

#### **Catalysts**

- (2) Ammonia
- (2) Ammonium bisulfite
- (2) Calcium chloride
- (2) Ferrous sulfate
- (2) Sodium chloride
- (2) Sodium hydroxide
- (2) Sodium metabisulfite
- (2) Sulfur dioxide

#### **Clarifying agents/filtration aids**

- (2) Acacia
- (2) Agar
- (2) Carbon dioxide
- (2) Carrageenan/Furcelleran
- (2) Casein
- (2) Cellulose
- (2) Cellulose powder
- Chloromethylated aminated styrene-divinylbenzene resin
- (2) Citric acid
- (1) Diatomaceous earth
- Divinylbenzene-ethylvinylbenzene copolymer
- Fuller's earth
- (2) Gelatin (edible)
- (2) Phosphoric acid
- Polyacrylamide/polysodium acrylate copolymer
- Polymaleic acid and sodium polymaleate
- (2) Polyvinylpyrrolidone
- (2) Polyvinylpolypyrrolidone
- (2) Potassium ferrocyanide
- (2) Silicon dioxide amorphous - silica hydrogel
- (2) Sodium alginate
- (2) Stabilized aqueous silica sol
- (2) Sulfur dioxide
- (2) Tannic acid
- (2) Wood flour/Sawdust

#### **Colour stabilizers**

- (2) Dextrose
- (2) Sodium acid pyrophosphate
- (2) Sulphur dioxide

**Contact freezing and cooling agents**

- (2) Brine (eg. salt brine)
- (2) Carbon dioxide  
Dichlorodifluoromethane
- (2) Glycerol

**Desiccating agent/anticaking agents**

- Aluminum stearate
- (2) Calcium aluminum silicate
- (2) Calcium silicate  
Calcium stearate
- (2) Magnesium carbonate, heavy
- (2) Magnesium carbonate, light
- (2) Magnesium oxide, heavy
- (2) Magnesium oxide, light
- (2) Magnesium silicate, synthetic  
Magnesium stearate
- (2) Magnesium trisilicate
- (2) Silicon dioxide
- (2) Silicon dioxide amorphous - silica gel
- (2) Sodium aluminum silicate  
Sodium calcium silicoaluminate
- (2) Tricalcium diorthophosphate

**Enzyme immobilization agents and supports**

- (2) Carrageenan (including Furcelleran)
- (2) Gelatin
- (2) Sodium alginate

**Solvents (extraction and processing)**

- (2) Ammonia in methanol/ethanol
- (2) Benzyl benzoate
- (2) Butan-2-ol
- (2) Butyl acetate
- (2) Carbon dioxide
- (2) Castor oil
- (2) Diethyl tartrate
- (2) Ethanol
- (2) Ethyl acetate
- (2) Ethyl lactate
- (2) Glycerol
- (2) Glycerol mono- di- and triacetate  
Isobutanol (2-methylpropan-1-ol)
- (2) Isopropyl alcohol
- (2) Methanol
- (2) Methyl acetate  
Methyl propanol-1
- (2) Nitric acid
- (2) Propane-2-ol (isopropyl alcohol)  
Trichlorofluoromethane

(2) Water

**Fat crystal modifiers**

- (4) Lecithin
- (4) Oxystearin
- (4) Polyglycerol esters of fatty acids
- (4) Polysorbate 60
- (4) Sodium dodecylbenzene sulphonate
- (4) Sodium lauryl sulphate
- (4) Sorbitan monostearate
- (4) Sorbitan tristearate

**Flocculating agents**

Acrylamide resins

- (2) Aluminum ammonium sulfate
- (2) Aluminum sulfate
- (2) Citric acid
- Dimethylamine-epichlorohydrin copolymer
- (2) Gelatin
- (2) Polyacrylic acid, sodium salt
- (2) Silica
- (2) Sodium alginate

**Lubricants, release and anti-stick agents, moulding aids**

Acetic acid esters of fatty acid mono- and diglycerides

- (2) Acetylated monoglycerides
- (2) Beeswax
- (2) Butyl stearate
- (2) Carnauba wax
- (2) Calcium aluminum silicate
- (2) Calcium carbonate
- (2) Calcium phosphates
- (2) Calcium silicate
- (2) Calcium stearate
- (2) Castor oil
- (2) Edible bone phosphate
- (2) Ethoxylated mono- and diglycerides
- (2) Fats and waxes of vegetable and animal origin
- (2) Fatty acids of tallow **and vegetable oils** ~~of cottonseed and of soybean oil~~
- (2) Hydrogenated sperm oil
- (2) Lecithin
- (2) Magnesium carbonate
- (2) Magnesium oxide, light and heavy
- (2) Magnesium trisilicate
- (2) Mineral oil based greases (lubricants for pumps)
- (2) Mineral oil/Paraffin oil
- (2) Mineral oils and waxes
- Mono- and diglycerides of fatty acids
- (2) Oxidatively polymerised soya bean oil
- (2) Paraffin and paraffin oils

- (2) Partially hydrogenated vegetable oil (~~cottonseed, soy~~)
- (2) Polyglycerol esters of dimerised fatty acids of soya bean oil
- (2) Polyglycerol polylinoleate
- (2) Polyglycerol polyricinoleate
- Shellac
- Silicates (magnesium, potassium, sodium)
- (2) Silicon dioxide
- (2) Sodium aluminum silicate
- (2) Starches
- (2) Stearates (magnesium, calcium, and aluminum)
- Stearates (potassium and sodium)
- (2) Stearic acid
- (2) Stearins
- (2) Talc
- (2) Tetrasodium diphosphate
- (2) Tri-calcium phosphate
- (2) Vegetable triglycerides
- (2) Wax
- (2) Wax coatings

#### **Micro-organism control agents**

- (3) Disodium cyanodithioamidocarbonate
- Disodium ethylene bis dithiocarbamate
- Dimethyldicarbonate
- (3) Ethylenediamine
- (3) N-alkyl (C12-C16) dimethyl benzylchloride
- (2) Natamycin
- (2) Nitric acid
- (3) Potassium N-methyldithiocarbamate
- (3) Propylene oxide
- (3) Sodium chlorite
- Sodium dimethyldithiocarbamate
- (2) Sulfur dioxide

#### **Propellant and packaging gases**

- (2) Carbon dioxide
- (2) Dichlorodifluoromethane
- (2) Oxygen

#### **Washing and peeling agents**

- (2) Ammonium chloride
- Ammonium orthophosphate
- (2) Calcium chloride
- (2) Calcium hydroxide
- (2) Calcium oxide
- Diammonium orthophosphate
- Dithiocarbamate
- (2) Oleic acid
- Organophosphates
- (2) Sodium carbonate

- (2) Sodium hydroxide
- (2) Sodium hydroxide, 10%
- (2) Sodium hydroxide, 2%
- (2) Sodium tripolyphosphate
- (2) Sulfuric acid

**Yeast nutrients**

- (3) Ammonium chloride
- (3) Ammonium sulphate
- (3) Ammonium phosphates
- (3) B-Complex vitamins
- (3) Biotin
- (3) Calcium carbonate
- (3) Calcium phosphates
- (3) Calcium sulphate
- (3) Cupric sulphate
- (3) Ferrous ammonium sulphate
- (3) Ferrous sulphate
- (3) Inositol
- (3) Magnesium sulfate
- (3) Niacin
- (3) Pantothenic acid
- (3) Potassium carbonate
- (3) Potassium chloride
- (3) Potassium hydrogen carbonate
- (3) Yeast autolysates
- (3) Zinc sulphate

**Other processing aids**

- (2) Acetic acid
- Acrylic resin with primarily tertiary amino groups
- Alkylene oxide adduct
- (2) Allyl isothiocyanate
- (2) Ammonium bicarbonate
- (2) Amyl acetate
- (2) Benzyl alcohol
- (2) BHA
- (2) BHT
- (2) Calcium carbonate
- (2) Calcium chloride
- (2) Calcium citrate
- (2) Calcium hydroxide
- Calcium oxide
- (2) Calcium phosphates
- (2) Calcium sulfate
- (1) Calcium tartrate
- (2) Caramel flavoring
- Carbon dioxide
- (2) Citric acid
- (2) Coconut oil



- (2) Disodium hydrogen phosphate  
Ethylene oxide-propylene oxide copolymers
- (2) Fatty acids of soybean oil  
Fatty alcohol-glycol ether
- (2) Fractionated soybean oil
- (2) Fumaric acid
- (2) Glycerol tripropionate
- (2) Glycine
- (2) Hydrochloric acid
- (2) Hydrogenated soybean oil  
Hydrophilic fatty acyl esters, linked to a neutral carrier
- (2) Isopropyl alcohol
- (2) Lactic acid
- (2) Lactylated mono esters
- (2) Magnesium chloride
- (2) Magnesium citrate  
Magnesium oxide
- (2) Magnesium sulfate
- (2) Magnesium hydroxide
- (2) Magnesium phosphates  
alpha-Methyl glycoside water  
Methyl glycoside coconut oil ester
- (2) Methyl paraben (Methyl parahydroxybenzoate)
- (2) Mineral oil  
Mixture of ethylene and propylene oxides, copolymers and esters, castor oil and polyethylene glycol ester  
Mixture of naturally occurring and synthetic fatty acyl derivatives, with added emulgators  
Modified higher alcohol  
Mono- and diglycerides of fatty acids from feed fat (E471)  
Mono- and diglycerides of fatty acids from feed fat, esterified with acetic acid, lactic acid and citric acid  
Non-ionogenic alkylene oxide adduct with emulgator
- (2) Oxalic acid
- (2) Paraffin
- (2) Phosphoric acid  
Polyalkylene oxide, in combination with special fatty alcohols  
Polyethoxylated alcohol, modified  
Polyacrylate  
Polyacrylate with carboxyl groups  
Polyethylene glycol  
Polyglycol copolymer  
Polyphosphate  
Polypropylene-polyethylene block polymer
- (2) Polyvinylpyrrolidone
- (2) Potassium carbonate
- (2) Potassium chloride
- (2) Potassium citrate
- (2) Potassium nitrate
- (2) Potassium phosphates

- (2) Potassium sulfate
- (2) Potassium tartrate
- (2) Propyl gallate
- (2) Propan-1-ol
- (2) Propane-1,2-diol
- (2) Shellac
- (2) Sandarac gum
- (2) Sodium chloride
- (2) Sodium aluminosilicate
- (2) Sodium bisulfite
- (2) Sodium bicarbonate
- (2) Sodium carbonate
- (2) Sodium citrate
- (2) Sodium hexametaphosphate
- (2) Sodium hydroxide
- (2) Sodium metabisulfite
- (2) Sodium phosphate monobasic
- (2) Sodium phosphate dibasic
- (2) Sodium phosphate tribasic
- Sodium polyacrylate
- Sodium polyacrylate-acrylamide resin
- (2) Sodium sulfate
- Sodium sulfite
- (2) Sodium tartrate
- Solution of: anhyd. polyphosphate, polycarboxylic acid salt, polyalkylene glycol, sodium hydroxide
- Sorbitan-fatty acyl esters and polyoxyethylene-20-sorbitan fatty acyl esters
- (2) Soy lecithin
- (2) Sulfuric acid
- (2) Sulphur dioxide
- Sulphonated copolymer of styrene and divinylbenzene
- Surface-active esters with neutral carriers
- Tannic acid with quebracho extract
- (2) Tartaric acid
- (2) TBHQ
- Vegetable fatty acid esters
- Vegetable fatty acyl (hydrophilic)
- (2) Xylose