

# codex alimentarius commission



FOOD AND AGRICULTURE  
ORGANIZATION  
OF THE UNITED NATIONS

WORLD  
HEALTH  
ORGANIZATION



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Agenda Item 8

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## JOINT FAO/WHO FOOD STANDARDS PROGRAMME CODEX COMMITTEE ON FOOD ADDITIVES AND CONTAMINANTS

Thirty-eighth Session

The Hague, the Netherlands, 24 – 28 April 2006

### 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 recognised 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 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 an updated version of the IPA for consideration at its next session.

2. The 37<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. It further agreed that an introductory text with an explanation of changes, suggestions on the use of IPA and possible future work would be included in this document<sup>2</sup>.

#### Development of the Inventory of Processing Aids

3. 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.

4. At its 21<sup>st</sup> session in 1989, 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.

5. 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.

6. 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.

<sup>1</sup> ALINORM 04/27/12, para 87 and 88

<sup>2</sup> ALINORM 05/28/12, para 99

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

7. Processing aids are listed alphabetically in one of 20 categories. Additional information is included on areas of utilisation, the level of residue, any interaction with food and the number of the JECFA meeting in which the substance was evaluated. 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).

8. Appendix A of the IPA is a comprehensive list of all substances that may function as a processing aid. The list includes substances:

- In the main body of the IPA that function solely as processing aids;
- Foods and food additives that could function as processing aids in limited circumstances.

9. Appendix B of the IPA lists microbial enzymes rearranged by micro-organism from the main catalogue of enzymes in the IPA.

10. CCFAC 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.

11. 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).

12. New Zealand recognises the value of maintaining the IPA is an interim measure until the Committee is able to further progress a standard for processing aids.

#### **THE IPA - UPDATE APRIL 2006**

13. The IPA -Update April 2006 updates the IPA presented at last year's meeting in CX/FAC 05/37/14. The April 2006 update includes:

- All substances in the original list in CAC/MISC 3
- All additions presented to 37<sup>th</sup> CCFAC in 2005 (including the updates from 2000-2004).
- Changes proposed by the US and Malaysia at 37<sup>th</sup> CCFAC<sup>4</sup>
- Updates from JECFA's 63<sup>rd</sup> and 65<sup>th</sup> meetings concerning processing aids
- Additions and editing to enzyme section by the Enzyme Technical Association and AMFEP.
- Deletion of Appendix B to avoid unnecessary duplication as it reproduces the *Microbial Enzyme Preparation Section* of the main Inventory.

14. This update also includes all additions to the IPA considered and agreed to by CCFAC up to and including its 31<sup>st</sup> Session in 1999. This information has been sourced from a draft update of the IPA prepared by New Zealand in 1999<sup>5</sup>. It contains additional columns that provide further information on the JECFA evaluation of substances and a number of new entries, including a new category for boiler water additives that was agreed to at the 22<sup>nd</sup> Session in 1992.

#### **UPDATING ISSUES FOR FUTURE CONSIDERATION**

15. Subject to the agreement of the Committee, New Zealand is able to continue to provide an annual update of the IPA based on the decisions relating to processing aids at each successive CCFAC Session until the Committee is able to progress a standard for processing aids.

<sup>4</sup> ALINORM 05/28/12 Report of the 37<sup>th</sup> Session April 2005 paragraph 98.

<sup>5</sup> An updated version of the IPA was drafted as an appendix to an initial discussion paper of processing aids by New Zealand for the 32<sup>nd</sup> Session in 2000. However, due to the length of the document and the timing of its completion the paper was not issued. An amended paper without the proposed updated IPA was presented at the 33<sup>rd</sup> Session in 2001 ALINORM 01/12 paras 59 to 61.

16. Further improvements to the IPA include:

- Converting the document to a spreadsheet table (for example Microsoft Excel) to enable easier updating.
- Placing enzymes in a separate section as many of the data columns do not apply usefully to enzymes
- A new column could be added for microbiologically derived enzyme preparations to name producing organisms.

## Inventory of Processing Aids<sup>6</sup>

Prepared by CCFAC and updated by New Zealand – April 2006

### Introduction

The Inventory of Processing Aids (IPA) is a working document prepared by the Codex Committee on Food Additives and Contaminants (CCFAC). The objectives of the Committee in developing the inventory have been to:

- develop information on substances used as processing aids, and
- identify processing aids whose safety should be evaluated by the Joint FAO/WHO Expert Committee on Food Additives (JECFA).

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).

The Committee notes that the Inventory is not intended to be complete or a "positive list" of permitted aids.

This further update has been prepared as agreed by the 37<sup>th</sup> CCFAC<sup>7</sup>. **Changes are indicated in bold.** The update includes:

- All substances in the original list in CAC/MISC 3.
- All additions presented to 37<sup>th</sup> CCFAC in 2005 (including the updates from 2000-2004).
- Changes proposed by the US and Malaysia at 37<sup>th</sup> CCFAC<sup>8</sup>.
- Updates from JECFA's 63<sup>rd</sup> and 65<sup>th</sup> meetings concerning processing aids.
- Additions and editing to enzymes by the Enzyme Technical Association and AMFEP.
- All additions to the IPA considered and agreed to by CCFAC up to and including its 31st Session in 1999. This information has been sourced from a draft update of the IPA prepared by New Zealand in 1999<sup>9</sup>. It contains additional columns that provide further information on the JECFA evaluation of substances and a number of new entries, including a new category for boiler water additives that was agreed to at the 22<sup>nd</sup> Session in 1992.

The policy of CCFAC has been to include in the Inventory of Processing Aids 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 (\*).

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" (<).

<sup>6</sup> The Inventory of Processing Aids was adopted by the Codex Alimentarius Commission at its 18<sup>th</sup> Session in 1989. It has been sent to all Member Nations and Associate Members of FAO and WHO as an advisory text, and it is for individual governments to decide what use they wish to make of the Inventory.

<sup>7</sup> ALINORM 05/28/12 Report of the 37<sup>th</sup> Session April 2005 paragraph 99

<sup>8</sup> ALINORM 05/28/12 Report of the 37<sup>th</sup> Session April 2005 paragraph 98

<sup>9</sup> An updated version of the IPA was drafted as an appendix to an initial discussion paper of processing aids by New Zealand for the 32<sup>nd</sup> Session in 2000. However, due to the length of the document and the timing of its completion the paper was not issued. An amended paper without the proposed updated IPA was presented at the 33<sup>rd</sup> Session in 2001 ALINORM 01/12 paras 59 to 61.

- 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.

**In the April 2006 update additional columns provide further information on the JECFA evaluation of substances. The additional information provided is:**

- **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.**

**Appendix A to this inventory 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.** The substances are annotated according to the following system:

2. 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. compounds that because of carry-over residues, would seem to usually be considered only as food additives.
4. materials that might actually have simultaneous function as processing aids and functionality in the finished food.

Substances annotated with (1.) in earlier versions of the IPA have been deleted because these are already recorded in the main inventory.

**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.**

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.

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).

**IPA PROCESSING AID 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

Enzyme preparations (including immobilized enzymes)\*

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

\*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 makes the table quite unreadable and regular updating would be needed. 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 stearothermophilus* is also known as *Geobacillus stearothermophilus*
- *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*

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.

There are some species names that are still missing or unclear. These have been noted with a “?” after genus names until such time as they are able to be clarified.

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* 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 Fats and oils Vegetable protein			23	Comp/1099 'tentative'	ADI applies only to compounds with relative Mol. mass 200 - 300. Evaluated as misc. food additive	0-1.5	57 Fats and Oils CCFAC 22 (1990)
Ethylene oxide-propylene oxide copolymers	Juice-making							54
Fatty acid methyl ester	Vegetable protein							31
Fatty acid polyalkylene glycol ester (1-5 moles ethylene oxide or propylene oxide)	Vegetable protein							31
Fatty alcohol-glycol ether	Juice-making							54
Fatty alcohols (C8-C30)	Vegetable protein							
Formaldehyde	Sugar beet processing	< 0.05	None					39
	Yeast processing	< 0.05	None					
*Hydrogenated coconut oil	confectionery Vegetable protein	5-15						36, 49
Hydrophilic fatty acyl esters, linked to a neutral carrier	Juice-making							54
Alpha methylglycoside water	Juice-making							54
Mixture of ethylene and propylene oxides, copolymers and esters, castor oil and polyethylene glycol ester	Juice making							54

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
Mixture of naturally occurring and synthetic fatty acid derivatives, with added emulgators	Juice-making							54
Non-ionogenic alkylene oxide adduct with emulgator	Juice-making							54
Oxoalcohols C9-C30								31
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

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
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><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	Expressed as P from all sources	MTDI 70	CCFAC 22



CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
<b>*Sodium hexametaphosphate</b>	<b>boiler water</b>			<b>26</b>	<b>Comp/ 1379 (as emulsifier, texturiser, sequestrant</b>	<b>Expressed as P from all sources</b>	<b>MTDI 70</b>	<b>CCFAC 22</b>
<b>Sodium humate</b>	<b>boiler water</b>							<b>CCFAC 22</b>
<b>*Sodium hydroxide</b>	<b>boiler water</b>			<b>9</b>	<b>Comp/1361</b>		<b>NL</b>	<b>CCFAC 22</b>
<b>Sodium lignosulfonate</b>	<b>boiler water</b>							<b>CCFAC 22</b>
<b>*Sodium metasilicate</b>	<b>boiler water</b>							<b>CCFAC 22</b>
<b>*Sodium nitrate</b>	<b>boiler water</b>			<b>44</b>	<b>Add.3/173 as anti-microbial and colour tentative</b>	<b>Expressed as nitrate ion;ADI does not apply to infants below the age of 3 months</b>	<b>0-3.7</b>	<b>CCFAC 22</b>
<b>*Sodium phosphate (mono-, di-, tri-)</b>	<b>boiler water</b>			<b>26</b>	<b>Comp/1559</b>	<b>Expressed as P from all sources</b>	<b>MTDI 70</b>	<b>CCFAC 22</b>
<b>Sodium polyacrylate</b>	<b>boiler water</b>							
<b>*Sodium polyphosphates</b>	<b>boiler water</b>				<b>See sodium hexa-meta phosphate</b>			<b>CCFAC 22</b>
<b>*Sodium silicate</b>	<b>boiler water</b>			<b>29</b>	<b>Not prepared</b>		<b>NS</b>	<b>CCFAC 22</b>
<b>*Sodium sulfate</b>	<b>boiler water</b>			<b>29</b>	<b>Not prepared</b>	<b>Intake limited by laxative action</b>	<b>NS</b>	<b>CCFAC 22</b>
<b>*Sodium sulfite</b>	<b>boiler water</b>			<b>29</b>	<b>Comp/ 1395</b>	<b>ADI for sulfite ion</b>	<b>0-0.7</b>	<b>CCFAC 22</b>
<b>*Sodium tripolyphosphate</b>	<b>boiler water</b>			<b>26</b>	<b>Not prepared</b>	<b>Expressed as P from all sources</b>	<b>MTDI 70</b>	<b>CCFAC 22</b>
<b>*Starch, unmodified</b>	<b>boiler water</b>							
<b>*Tannin (including quebracho extract)</b>	<b>boiler water</b>			<b>35</b>	<b>Add.1/117 (1992) (as clarifying agent, flavours)</b>	<b>for use in a filtering agent where GMP ensures it is removed from food after use</b>	<b>NS</b>	<b>CCFAC 22</b>

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
<b>Tetrasodium diphosphate</b>	<b>boiler water</b>				see Tetrasodium pyrophosphate below			CCFAC 22
<b>Tetra sodium EDTA</b>	<b>boiler water</b>							
* <b>Tetrasodium pyrophosphate</b>	<b>boiler water</b>			26	Add.2/129 (1993)	Expressed as P from all sources	MTDI 70	CCFAC 22
<b><u>Catalysts</u></b>								
Alloys of 2 or more listed metals	Hydrogenated food oils							5,22
Aluminum				33	Add 6/7 (1998) for alum. powder as a food colour	Includes food additive uses of aluminum salts	PTWI 7 mg/kg/bw	
Chromium	Hydrogenated food oils	< 0.1						1,22
Copper	Hydrogenated food oils	< 0.1		26			PTDI 0.5	1, 22
Copper chromate								33
Copper chromite								45
<b>Ferric chloride hexahydrate</b>								CX/FAC 92/7
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



CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
<b>Clarifying agents/ filtration,aids</b>								
Absorbent clays (bleaching, natural or activated earths)	Starch hydrolysis Sugars Edible vegetable oil							61
Active carbon	Sugars Oils			31	<b>Comp /21 (1990)</b>	<b>Evaluated as a clarifying agent</b>	NL	<b>32,55 Oils CCFAC 25/ (Malaysia) (1993)</b>
*Albumin								1
Asbestos				22	-	<b>Evaluated as contaminant. Concerns of carcinogen characteristics</b>	<b>No tolerable intake est.</b>	<b>6, 17,25</b>
Bentonite	Starch hydrolysis			20	<b>Not prepared</b>	<b>No info on use or impurities for JECFA to evaluate</b>	<b>No ADI allocated</b>	<b>1, 6, 37,39,49</b>
*Calcium oxide	Sugar			9	<b>Comp /317</b>	<b>Evaluated as Alkali, dough conditioner and yeast food</b>		<b>6, 15</b>
Chitin/ Chitosan								<b>CCFAC 22</b>
Chloromethylated aminated styrene-divinylbenzene resin	Sugar processing	<1	None					<b>58</b>
Diatomaceous earth	Fruit juices Starch hydrolysis general use			21	<b>Comp /487</b>	<b>Evaluated as filter aid</b>	DP	<b>2,6,37,49</b>
Divinylbenzene-ethylvinylbenzene copolymer	Aqueous foods (excluding carbonated beverages)	0.00002 (ex-tractives from copolymer)	None					<b>58</b>
Fuller's earth	Starch hydrolysis, Oils							<b>Oils CCFAC 25 (Malaysia)(1993)</b>

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
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,
Vegetable carbon (unactivated)								
<b>Contact freezing &amp; cooling agents</b>								
*Dichlorofluormethane	frozen food	100						1 57
Freon (to be specified)								
*Nitrogen				24	Add 7/65 1999	Packaging Gas, Cryogenic freezant	Not necessary, inert	1

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
<b>Desiccating agent/anticaking agents</b>								
Aluminum stearate				29	Comp / 1283	Evaluated as anion and cation	PTWI for AI 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
<b>Magnesium Sulphate</b>	<b>Fats and oils</b>							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
Sodium xylene sulphonate	Food fats & oils	<1						

CATEGORY  * These substances may also function as a food additive or foods	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
<b>Enzyme immobilization agents &amp; supports</b>								
Polyethylenimine				29	Not mentioned	Evaluated as immobilizing agent. New method of analysis prepared at 29 <sup>th</sup> to ensure < 0.1 mg/kg in enzyme preparations of ethylenimine.	acceptable provided migration into food reduced to lowest technol. possible	42
Glutaraldehyde								33
Glass		Starch hydrolysis						33,49
Diatomaceous earth				21	Comp/487	Evaluated as filter aid	DP	33
Ceramics	Starch hydrolysis							37, 49
Diethylaminoethyl Cellulose								14, 33,
Ion exchange resins								55
<b>Enzyme preparations (including immobilized enzymes)</b>								
<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	NL	1
Chymosin (calf or kid or lamb abomasum)								
<b><u>Chymotrypsin (bovine or porcine pancreas)</u></b>								

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
Lipase (bovine stomach) (salivary glands or forestomach of calf, kid, or lamb) (hog or bovine pancreas)	<del>Cheese making,</del> lipid modification			15	Comp /853	Use limited by GMP	NL	1, 3, 10,13
Lysozyme (egg whites)	Cheese				Add 1/61	Regard as food/preservative	Use acceptable	44, 48, 57
<b>Pancreatin (bovine or porcine pancreas)</b>								
<b>Pepsin</b>								
Pepsin (hog stomach)	vegetable protein			15	Comp /1069	Limited by GMP	NL	1
<del>Pepsin, avian</del> (proventricum of poultry)	<del>cheesemaking</del>			20	Comp /167		NS	41
Phospholipase ( <b>porcine</b> pancreas)	<del>baking, starch processing</del>							55
<b>Rennet</b>								
<del>Rennet</del> (calf or kid stomach)				15	Comp /1257	Limited by GMP	NL	1
<del>Rennet</del> (goat or sheep stomach)				15				
<del>Rennet</del> (bovine stomach)					Comp/ 1259	Limited by GMP	NL	
Trypsin (porcine or bovine pancreas)				15	Comp/1561	Regard as food	NL	1
<b><u>Plant-Derived Enzyme Preparations:</u></b>								
<b>Alpha amylase (malted barley)</b>								
<b>Beta amylase</b>								
<b>(malted or ungerminated barley)</b>								
<b>(soya)</b>								
Bromelain ( <i>Ananas comosus</i> ; <i>Ananas bracteatus</i> )	<del>Chill proofing in beer, tenderising meat, production of plant hydrolysates, prep'n of precooked cereals</del>			15	Comp /221	Limited by GMP	NL	1





CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
<i>(Aspergillus oryzae d-Aspergillus niger)</i>								
<i>(Mortierella vinacea)</i>								7
<i>(Saccharomyces carlsbergensis)</i>				15		Evaluated as carbohydrases	NL	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	NL	31
<i>(Aspergillus niger d-Aspergillus niger)</i>								
Beta amylase								
<i>(Bacillus cereus)</i>								7
<i>(Bacillus licheniformis)</i>	Starch-syrups							in CX/FAC 92/7
<i>(Bacillus megaterium)</i>								7, 8
<i>(Bacillus subtilis)</i>				15	Comp/ 961	As mixed microbial carbohydrases and proteases	NL	7



CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
<i>(Trichoderma reesei d-Trichoderma reesei)</i>								
Beta xylosidase ( <i>Trichoderma reesei</i> )	baking							55
Carbohydrases, mixed carbohydrases (pectinase, cellulases, and hemicellulases) ( <i>Aspergillus niger</i> )	Fruit juice, chocolate syrup, liquid coffee,			15	Comp/357	Evaluated as carbohydrases	NS	CX/FAC 92/7
<i>(Aspergillus niger var aculeatus)</i>	beer, wine,			15	Comp/357	Evaluated as carbohydrases	NS	CX/FAC 92/7
<i>(Aspergillus niger)</i>	baked products			15	Comp/357	Evaluated as carbohydrases	NS	CX/FAC 92/7
Catalase								
<i>(Aspergillus niger)</i>	Preparation of milk, egg			15	Comp /693	Evaluated as carbohydrase	DP	71,24,
<i>(Aspergillus niger d-Aspergillus niger)</i>								
<i>(Aspergillus oryzae)</i>								
<i>(Micrococcus luteus lysodeieticus)</i>	Beverages, salads			15	Comp /413		DP	7
Carboxypeptidase ( <i>Aspergillus niger d-Aspergillus niger</i> )								
Cellobiase (beta-glucosidase)								
<i>(Aspergillus niger)</i>				15		As carbohydrases	temp-NL	7
<i>(Trichoderma harzianum)</i>								
<i>(Trichoderma reesei)</i>								7,20
Cellulase	Juices,							
<i>(Aspergillus niger)</i>	fruit and vegetable			15	Comp/ 367 tentative	Evaluated as carbohydrase	temp NL	6, 7,55
<i>(Aspergillus oryzae)</i>	processing, baking, beer,			15		Evaluated as carbohydrase	DP	7

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
<i>(Disporotrichum dimorphosporum)</i>	<del>spices, starch</del>							7
<i>(Humicola insolens)</i>								
<i>(Penicillium funiculosum)</i>								
<i>(Rhizopus delemar)</i>	extraction's							7
<i>(Rhizopus oryzae)</i>	coffee, tea,			15		Evaluated as carbohydrase	NL	7
<del><i>(Sporotrichum dimorphosporum)</i></del>	<del>spices, starch</del>							7
<i>(Streptomyces lividans)</i>								
<i>(Talaromyces emersonii)</i>								
<i>(Thielavia terrestris)</i>	vegetable oils							7
<i>(Trichoderma reesei)</i>	processing			39	Add 1/35		NS	
<i>(Trichoderma reesei d- Trichoderma reesei)</i>								
<i>(Trichoderma viride)</i>								
Chymosin A ( <i>E coli K-12</i> d-calf stomach)	<del>fermented dairy products</del>			37	Add 7/17 (1999)		NS	CCFAC 23 (1991)
Chymosin B								
<i>(Kluveromyces marxianus var. lactis</i> d-calf stomach)	<del>fermented dairy products</del>			37	Add 7/21 (1999)		NS	CCFAC 23 (1991)
<i>(Aspergillus niger var. awamori</i> d- calf stomach)	<del>fermented dairy products</del>			37	Add 7/19 (1999)		NS	CCFAC 23 (1991)
Cyclomaltodextrin glucanotransferase <i>(Bacillus licheniformis d- Thermoanaerobacter.)</i>								
Dextranase								
<i>(Aspergillus ?)</i>								
<i>(Bacillus subtilis)</i>				15		Evaluated as mixed	NL	



CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
<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 amaurii)</i>								9,50
<i>(Aspergillus niger var awamori)</i>								9, 16, 50
<i>(Aspergillus niger)</i>	Starch hydrolysis			35	Comp /115 (Tentative)		NS	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	acceptabl e	7
<i>(Penicillium funiculosum)</i>								
<i>(Rhizopus arrhizus)</i>	Glucose syrups							7
<i>(Rhizopus delemar)</i>								7
<i>(Rhizopus niveus)</i>								7
<i>(Rhizopus oryzae)</i>				15	Comp/ 365	Evaluated as carbohydrase	DP	7
<i>(Trichoderma reesei)</i>								7, 30
Glucose isomerase	Isomerized glucose syrups							





CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
<b>Hexose oxidase (<i>Hansenula polymorpha d-Chondrus crispus</i>)</b>				<b>63</b>	<b>New specification JECFA 63</b>		<b>NS</b>	<b>CCFAC 38</b>
Inulinase								
( <i>Aspergillus niger</i> )				15		<b>Evaluated as carbohydrase</b>	<b>NL</b>	
( <i>Disporotrichum dimorphosporum</i> )								
( <i>Kluyveromyces fragilis</i> )								<b>7</b>
<del>(<i>Sporotrichum dimorphosporum</i>)</del>								
( <i>Streptomyces ?</i> )				15				
Invertase								<b>7</b>
( <i>Aspergillus niger</i> )				15		<b>Evaluated as carbohydrase</b>	<b>tempNL</b>	
( <i>Bacillus subtilis</i> )				15		<b>Evaluated as carbohydrase</b>	<b>NL</b>	
( <i>Kluyveromyces fragilis</i> )								<b>7</b>
( <i>Saccharomyces carlsbergensis</i> )				15	<b>Comp/ 367</b>	<b>Evaluated as carbohydrase</b>	<b>NL</b>	<b>7</b>
( <i>Saccharomyces cerevisiae</i> )				15, 57		<b>Evaluated as carbohydrase</b>	<b>NL</b>	<b>7, 17</b>
( <i>Saccharomyces ?</i> )				15		<b>Evaluated as carbohydrase</b>	<b>NL</b>	
Isoamylase ( <i>Bacillus cereus</i> )								<b>7</b>
Laccase ( <i>Aspergillus oryzae d-Myceliophthora thermophila</i> )				<b>61, 65</b>	<b>JECFA 65 revised the specification</b>			<b>CCFAC 37</b>
Lactase or Beta galactosidase								
( <i>Aspergillus niger</i> )	<del>Milk products</del>			15	<b>Comp/357</b>	<b>Evaluated as carbohydrase</b>	<b>NL</b>	<b>7</b>







CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
Pectin lyase ( <i>Aspergillus niger</i> )				15		Evaluated as carbohydrase	tempNL	20
Phosphodiesterase								
<i>(Penicillium citrinum)</i>								
<i>(Leptographium procerum)</i>								
<b>Phospholipase A1 (<i>Aspergillus oryzae</i> <i>d-Fusarium venenatum</i>)</b>				65	<b>New Specification JECFA 65</b>	<b>Information too limited to assess safety</b>		
Phospholipase A2								
<i>(Aspergillus niger d-porcine pancreas)</i>								
<i>(Streptomyces violaceoruber)</i>								
<i>(Streptomyces chromofuscus)</i>								
Phytase	<b><del>Cereal-based foods, alcoholic beverages, corn wet milling, soy- bean products</del></b>							<b>CX/FAC 92/7</b>
<i>(Aspergillus niger)</i>								
<i>(Aspergillus niger d-Aspergillus niger)</i>								
<i>(Aspergillus oryzae d-Peniophora lycii)</i>								
<i>(Trichoderma reesei d-Aspergillus ?)</i>								
Polygalacturonase				15	<b>Comp/ 357</b>	Evaluated as carbohydrase	temp NL	30

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
<i>(Aspergillus niger)</i>				15	Comp/ 357	Evaluated as carbohydrase	temp NL	30
<i>(Aspergillus niger d-Aspergillus niger)</i>								
Protease (including milk clotting enzymes)								
<i>(Aspergillus melleus)</i>	Bakery products							7
<i>(Aspergillus niger)</i>	Cheese Vegetable protein			35	Not prepared		NS	7
<i>(Aspergillus niger d-Aspergillus niger)</i>								
<i>(Aspergillus oryzae)</i>	Cheese Vegetable protein			31	Comp/ 1233		acceptable	7
<i>(Aspergillus oryzae d-Rhizomucor miehei)</i>								
<b><i>(Bacillus amyloliquefaciens)</i></b>								
<i>(Bacillus amyloliquefaciens d-Bacillus amyloliquefaciens)</i>								
<i>(Bacillus cereus)</i>	Cheese							7
<i>(Bacillus licheniformis)</i>	Cheese							7
<i>(Bacillus stearothermophilus)</i>								
<i>(Bacillus subtilis)</i>	Starch hydrolysis Vegetable proteins			15	Comp/ 961	Evaluated as mixed carbohydrases and proteases	NL	1,7
<i>(Bacillus subtilis d-Bacillus amyloliquefaciens)</i>								
<i>(Brevibacterium lineus)</i>	Glucose syrups Bakery products							46







CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
*Isinglass				17	Add.3/1 (1995)	Specification for thickening agent, Stabilizer	NL	
*Dried and powdered blood plasma								
Modified acrylamide resin	Sugar, boiler water							3, 24
Polyacrylic acid	Sugar							1,15,17
Polyacrylamide	Sugar (beet)							
Sodium polyacrylate	Sugar (beet)							6, 17 6
*Trisodium diphosphate				26		P from all sources	MTDI 70	28,16,57
*Trisodium orthophosphate				26	Comp /1559	specification as buffer, sequestrant, emulsion stabiliser	MTDI 70	28,16,57
<b>Ion exchange resins, membranes, and molecular sieves.</b>								
Resins:	Enzyme immob. Starch hydrolysis	<. 1 (calculated at Total Organic Carbon)						49
Completely hydrolyzed copolymers of methyl acrylate and divinylbenzene.								3
Completely hydrolyzed terpolymers of methyl acrylate, divi-nylbenzene and acrylonitrile.								3

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
Cross-linked phenol-formaldehyde activated with one or both -of the following:								3
Triethylenetetramine Tetraethylenepentmine								
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 tot 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								3





CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
Membranes: Polyethylene - polystyrene base modified by reaction with chloromethyl ether and subsequent amination with trimethylamine, diethylenetriamine or dimethylethanolamine.								46
<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 polypiperazineamides, 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>								
Molecular Sieves:								
Calcium aluminum silicate				29	Comp /265	Anticaking agent	NS	28
Sodium aluminum silicate				29	Comp /1315	Anticaking agent.	NS	28

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
<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
*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 <sup>1</sup>	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	acceptabl e	58

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
Formaldehyde <sup>1</sup>	sugar							56
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								
Quaternary ammonium compounds	Food oils							22
Salts of sulfurous acid	Corn milling Starch hydrolysis	< 100						32,37,57
Lactoperoxidase system (lactoperoxidase, glucose oxidase, thiocyanate salt)								47
<b>Propellant and packaging gases</b>								
*Air								45
Argon								45
*Carbon dioxide								56
Chloropentafluoroethane								1

<sup>1</sup> The WG at 21CCFAC recommended chlorine dioxide and formaldehyde not be included (see App 4) The CCFAC agreed with WG but it appears they were included in the published inventory.

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
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								
<b>Isobutane</b>	<b>Propellant in vegetable oil pan spray (for professional use only)</b>							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
Trichlorofluoromethane (F 11)								43.60
<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

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
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 flavourings, colours	<1000		28	Comp /237	Evaluated as extraction solvent, flavouring agent	Not allocated	2,4,19
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



CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
Heptane	Flavourings, food oils	< 1		14	Comp/743	Extraction solvent	Limited by GMP	1, 4, 6,22
Hexane	Flavourings. food oils,	< 0.1		14	Comp/ 751 temporary	Extraction solvent JECFA 65 recommended a re-evaluation of hexanes as there was insufficient information to change current specifications	Limited by GMP	1,3,4,
	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 Decaffeination flavoring Sugar refining	20 1						56
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

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
Petroleum ether (light petroleum)	Flavourings, food oils	< 1		25	Comp/843	Extraction solvent	NS	1,4,6,22,19
*Propane	Flavourings, food oils	< 1, 0.1		23	Not prepared	Propellant; Extraction solvent Limited use and residue mean unnecessary to establish ADI	NS	4, 17,22,19
Propane-1,2-diol	Fatty acids flavourings, colours,							2,59
Propane-1-ol	Fatty acids, flavourings, colours			25	Comp/1205	Carrier/extraction solvent/ flavouring. Further tox studies required.	Not allocated	2,59
*Propylene Glycol				17	Comp/221	As solvent, humectant and wetting agent	0-25	CX/FAC 92/7
Tertiary butyl alcohol								38
1,1,2-Trichloroethylene	Flavourings, food oils	< 2		27	Comp/ 1527; 1993 tent.	Use as extraction solvent should be limited to ensure levels are as low as practicable	Not allocated	1,4,17,22, 19
Trichlorofluoromethane	Flavourings	<1						4,19,59
Tridodecylamine	Citric acid							3

<b>CATEGORY</b> <small>* These substances may also function as a food additive or foods</small>	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
Toluene	Flavourings	<1		25	Comp/ 1515	Residues of toluene occurring in food when this solvent is used in accordance with GMP would not pose any toxicological problems	NS	4, 19
<b>Washing and peeling agents</b>								
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

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
Alpha-alkyl-omega-hydroxy-poly (oxyethylene)	Sugar beets	0.001 in sugar beets, 0 in sugar		None				<b>3,51.54</b>
Ammonium chloride, quaternary	Sugar beets							<b>53</b>
Ammonium orthophosphate	Fruits and vegetables							<b>53</b>
*Calcium chloride	Fruits and vegetables			29	<b>Comp/277</b>		NS	<b>53</b>
*Calcium hydroxide	Sugar beets			9	<b>Comp /301</b>	<b>Specification for neutralizing agent; buffer; firming agent</b>	NL	<b>53</b>
*Calcium oxide	Sugar beets			9	<b>Comp/17</b>	<b>Specification for Alkali, dough conditioner, yeast food</b>	NL	<b>53</b>
Carbamate	Sugar beets							<b>53</b>
Dialkanolamine	sugar beets	0.001 in sugar beets, 0 in sugar	None					<b>3,54</b>
Diammonium orthophosphate	Fruits and vegetables for canning							<b>56</b>
Diammonium orthophosphate, (5% aqueous solution)	Fruits and vegetables for canning							<b>52</b>
Dithiocarbamate	Sugar beets							<b>53</b>
Ethylene dichloride	Sugar beets	0.00001 in sugar beets, 0 in sugar	None	23				<b>3,54</b>
Ethylene glycol monobutyl ether	Sugar beets	0.00003 in sugar beets, 0 in sugar	None					<b>3,54</b>
Hydrogen peroxide		No Information -Available		24	<b>Comp/ 763</b>	<b>As preservative sterilising agent</b>	<b>Not allocated</b>	<b>54</b>

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
Linear undecylbenzenesulfonic acid	Sugar beets	0.001 in sugar beets 0 in sugar	None					3,54
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

CATEGORY  * These substances may also function as a food additive or foods	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
<p><b>Peroxyacid antimicrobial solutions containing 1-hydroxyethylidene-1,1-diphosphonic acid (HEDP)</b></p> <p><i>Containing HEDP and three or more of the following components:</i></p> <p><i>peroxacetic acid, acetic acid, hydrogen peroxide, octanoic acid and peroxyoctanoic acid.</i></p> <p><b>Acetic acid</b> <b>1-Hydroxyethylidene-1,1-diphosphonic acid (HEDP)</b> <b>Hydrogen peroxide</b> <b>Octanoic acid (as food additive)</b></p>				63	<p>Revised</p> <p>New</p> <p>Revised</p> <p>New</p>	<p>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.</p>		
Polyacrylamide	Fruits and vegetables, sugar beets	< 1	None					3,51,54
Potassium bromide	Fruits and vegetables							3,54
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

CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
*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 Available				No Information Available		3,52,54
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 0 in sugar	None	26	Comp/ 1491	Specification as emulsifier, texturiser. MTDI for P from all sources	MTDI 70	3,54,57
Tetrasodium ethylenediaminetetraacetate	Sugar beets	0.000003 in sugar beets 0 in sugar	None					3,54
Triethanolamine	Sugar beets	0.00005 in sugar beets 0 in sugar	None					3, 54

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**Other processing aids**


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Aluminum oxide



CATEGORY	Use	Residues (mg/kg) (≤ less than)	Interaction with food	JECFA Eval.	Specifications	JECFA comments	ADI mg/kg/bw	References
* These substances may also function as a food additive or foods								
*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	

## REFERENCES

1. Appendix VI, Alinorm 79/12-A (Report of the 13th CCFA, List of processing Aids [prepared by Secretariat]).
2. United Kingdom, letter (Hall/Ronk), 7.8.80.
3. USA, letter (Witcher/Feberwee), 14.10.80
4. IOFI, letter (Grundschober/Ronk), 8.7-81.
5. Codex Committee Fats and oils, letter (Burt/Rank), 16.7.81.
6. Hungary, letter (Suto/Ronk), 10.8.81.
7. AMFEP, letter (Noordervliet/Ronk), 20.8.81.
8. INEC, letter (Nittner/Ronk), 1.9.81.
9. Enzyme Technical Association (ETA), letter (Middlekauf/Ronk), 4.9.81.
10. ETA, letter (Middlekauf/Mansor), 10.9.81.
11. European wax Federation, letter (Sayers/Ronk), 25.9.81.
12. UOP, Inc. letter (Moore/Ronk), 28.9.81.
13. (USA law firm), letter (Allera/Ronk), 29.9-81.
14. Corn Refiners Association, letter (Liebenow/Ronk), 30.9.81.
15. Thailand, letter (Sangruji/Ronk), 3.11.81.
16. United Kingdom, letter (Griffiths/Ronk), 12.11.81
- 17- France, letter (Gunzle/Ronk), 30.12.81.
18. Crosfield Chemicals, letter (Burak/Ronk), 25.11.82.
19. IOFI, letter (Grundschober/Ronk), -7.12.82.
20. AMFEP, letter (Noordervliet/Ronk), 28.12.82.
21. ETA, letter (Middlekauf/Ronk), 4.1.83.
22. Codex Committee on Fats and oils, letter (Burt/Ronk), 5.1.83.
23. Netherlands, letter (Goddijn/Ronk), 8.2.83.
24. Australia, letter (Erwin/Ronk), 9.2.83.
25. Sweden, letter (Agren/Ronk), 17.2.83.
26. Thailand, letter (Sooksmarn/Ronk), 28.7.83.
27. van den Bergh en Jurgens, B.V., letter (vanBeers/Prunier), 12.12.83.
28. United Kingdom, letter (Scrutton/Prunier), 20.12.83.
29. France, letter (Rioux/Prunier), 2.1.84
30. AMFEP, letter (Mahler/Prunier), 2.1.84.
31. CEFIC, letter (Bustillo/Prunier), 3.1.84.
32. CPC International, Inc., letter (Feldberg/Ronk), 21.2.84.
33. Anonymous comments at Working Group on Processing Aids, 17th CCFA 4.84.
34. Marinalg International, letter (Piot/Ronk), 24.7.85.
35. AMFEP, letter (Toet/Rank), 28.8.85.
36. Switzerland, letter (Rossier/Ronk), 18.9.85.
37. CPC international, Inc., letter (Feldberg/Modderman), 24.9.85.
38. United Kingdom, letter (Allday/Ronk), 30.9.85.
39. USA, letter (Houston/Ronk), 16.10.85.
40. ETA, letter (Middlekauf/Ronk), 18..10.85.
41. AMFEP comment to Working Group on Processing Aids, 18th CCFA.
42. Report of the 29th meeting of JECFA.
43. France, letter (Martin/Codex Secretariat), 12.2.87.
44. Italy, letter (Pricolo/Ronk), 3.2.87.
45. Italy, comment to Working Group on Processing A-ids, 19th CCFA-
46. CIAA, letter (Mouton/Ronk), 12.3.87.
47. Belgium, letter (Cremer/Ronk), 11.9.87.
48. Finnsugar Group, (Paajanen/Rank), 19.1.87.
- 49- CPC international, Inc. letters (Brooks-Ray/Modderman), 12.2.87 and 18.2.87.
50. AMFEP letter (Toet/Modderman), 24.4.87.
- 51- Finland, letter (Hallikainen & Tuomaala/Ronk), 30.11.87.
- 52- France, letter. (Martin/Ronk), 23.11.87.
53. Italy, letter (Pricolo/Ronk), 2-2.88.
54. Not used.
55. Finland, letter (Hallikainen & Tuomaala/Ronk), 10.10.88.
56. France, letter (Vergnettes/Ronk), 21.10.88.
57. United Kingdom, letter (Allday/Ronk), 15.11.88.
- 58- United States of America, letter (Crawford/Ronk), 9.12.89.
59. IOFI, letter (Grundschober/Ronk), 26.9.88.

60. France, letter (Martin/Ronk), 12.2.87.
61. Thailand, letter (Mekanontchai/Ronk), .3.89.

**APPENDIX A****CODEX INVENTORY OF COMPOUNDS USED AS PROCESSING AIDS WHICH ALSO SERVE OTHER FUNCTIONS (excludes those substances already covered in the main IPA)**

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.

(Substances formerly annotated in this Appendix as (1) have been deleted to avoid unnecessary duplication as they are already included in the main Inventory).

**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 CCAFC 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
- ( ) Carbamate
- ( ) 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
- ( ) Hydrophillic 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