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CODEX ALIMENTARIUS COMMISSION

Food and Agriculture Organization of the United Nations

World Health Organization

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Agenda Item 7 **CX/PFV 12/26/7**
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JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON PROCESSED FRUITS AND VEGETABLES

26th Session
Montego Bay, Jamaica,
15 – 19 October 2012

FOOD ADDITIVE PROVISIONS FOR PROCESSED FRUITS AND VEGETABLES: ADDITIONAL PROVISIONS FOR INCLUSION IN SELECTED ADOPTED AND STANDARDS UNDER DEVELOPMENT

(Prepared by the Electronic Working Group on Food Additives led by the European Union and the United States of America)

Codex Members and Observers wishing to submit comments on this proposal should do so in conformity with the Uniform Procedure for the Elaboration of Codex Standards and Related Texts (Codex Alimentarius Procedural Manual) as presented in Annex 1 - 6 before **30 September 2012**. Comments should be addressed:	
to: US Codex Office, Food Safety and Inspection Service, US Department of Agriculture, Room 4861 South Building, 1400 Independence Ave., S.W., Washington, D.C. 20250-3700 USA E-mail: uscodex@fsis.usda.gov; ccpfv@fsis.usda.gov	with copy to: Secretariat, Codex Alimentarius Commission, Joint FAO/WHO Food Standards Programme, Viale delle Terme di Caracalla, 00153 Rome, Italy E-mail: codex@fao.org
Format for submitting comments: In order to facilitate the compilation of comments and prepare a more useful comments document, Members and Observers, which are not yet doing so, are requested to provide their comments in the format outlined in the Annex to this document.	

Background

The 25th Session of the Committee on Processed Fruits and Vegetables (CCPFV) agreed to establish an Electronic Working Group on Food Additives (eWG) associated with desiccated coconut, table olives and certain processed fruits and vegetables led by the European Union and co-chaired by the United States of America.

The Committee gave the following terms of reference to the eWG:

Desiccated coconut (REP 11/PFV, para. 39)

The eWG should thoroughly examine the additives listed in Table 3 of the General Standard for Food Additives (GSFA; CODEX STAN 192-1995) with the functional classes of antioxidants and preservatives and to provide justification in light of Section 3 of the Preamble of the GSFA for possible inclusion or continued non-inclusion into the Standard for Desiccated Coconut (CODEX STAN 177-1991). It was further agreed that the approach taken was not a precedent for the approach with regard to food additives in other standards under discussion, but rather a way to allow the Standard for Desiccated Coconut to proceed.

Table olives (REP 11/PFV, para. 63)

Concerning the food additive provisions of Standard for Table Olives (CODEX STAN 66-1981), the eWG should:

1. identify the functional classes needed to perform the technological function;
2. examine the GSFA in order to assess whether all the additives for the identified functional classes were applicable to the product or whether some exceptions should be made in order to make the general reference to the GSFA in the Standard;

3. for those functional classes where direct reference to the GSFA was problematic, to provide a list of additives for consideration by the Committee with the appropriate justifications in light of Section 3 of the Preamble of the GSFA for their listing in the Standard; and
4. to look at any other novel approaches that could expedite this and future work in the Committee on this matter.

Certain processed fruits and vegetables (REP 11/PFV, paras. 106-108)

The 25th CCPFV recalled that at its 24th Session it agreed to append to its report a list of functional classes and their corresponding food additives with a view towards their possible inclusion in the Standards for Certain Canned Citrus Fruits (CODEX STAN 254-2007), Preserved Tomatoes (CODEX STAN 13-1981), Processed Tomato Concentrates (CODEX STAN 57-1981), and Pickled Fruits and Vegetables (CODEX STAN 260-2007).

Due to time constraints, the Committee could not consider this matter in detail and therefore agreed to entrust the work of the review of the list to the eWG, which was to provide proposals for additional additives and/or functional classes relevant to these commodities, as well as options for general references to the GSFA based on the written comments submitted to this Session and the discussions in the Working Group.

The Committee requested the eWG to look into the food additive provisions within the framework of GSFA with a view to establishing a general reference to the GSFA when feasible and to provide justification in light of section 3 of the preamble of the GSFA for exceptions to the general reference if/when such reference was not appropriate.

Conclusions

The analysis and conclusions of the eWG are presented in detail in the following Annexes:

- Annex 1: Desiccated coconut
- Annex 2: Table Olives
- Annex 3: Certain Canned Citrus Fruits
- Annex 4: Preserved Tomatoes
- Annex 5: Processed Tomato Concentrates
- Annex 6: Pickled Fruits and Vegetables

This report represents a significant compromise by an eWG member that favors the direct reference to the GSFA in food additive sections contained in commodity standards. This member set aside its positions on this matter to facilitate eWG completion of its mandate.

Recommendations

On the basis of the conclusions, the eWG puts forward the following recommendations for the 26th session of CCPFV:

Desiccated coconut:

In the absence of specific comments, the eWG could not conclude whether or not food additives with the functional classes of antioxidants (other than citric acid) and preservatives in Table 3 of the GSFA should be included in or excluded from the Standard for Desiccated Coconut. Therefore, no specific recommendations could be formulated.

Table olives:

The following general reference to the GSFA should be inserted in section 4 of the standard concerning food additives:

"Acidity regulators, antioxidants, firming agents, flavour enhancers, preservatives, colour retention agents[1], thickeners[2] used in accordance with Tables 1 and 2 of the Codex General Standard of Food Additives in food category 04.2.2.3 or listed in Table 3 of the General Standard for Food Additives are acceptable for use in foods conforming to this standard."

Regarding the food additive provisions in the step procedure for the inclusion for food category 04.2.2.3, the eWG did not provide specific comments and, therefore, no technological need could be identified in table olives for adipates, sodium diacetate, aluminium ammonium sulphate and propylene glycol alginate. CCFA should be informed accordingly.

CCFA should be asked to classify calcium lactate and potassium chloride as firming agents in Table 3 of the GSFA.

Certain canned citrus fruits:

The following general reference to the GSFA should be inserted in section 4 of the standard concerning food additives:

[1] Table olives darkened with oxidation
[2] Table olives with stuffing

"Acidity regulators and firming agents used in accordance with Tables 1 and 2 of the Codex General Standard of Food Additives in food category 04.2.2.3 or listed in Table 3 of the General Standard for Food Additives are acceptable for use in foods conforming to this standard."

Regarding the food additive provisions in the step procedure for the inclusion for food category 04.1.2.4, the eWG did not provide specific comments and, therefore, no technological need could be identified in canned fruits for sodium diacetate and tartrates. CCFA should be informed accordingly.

CCFA should be asked to classify calcium lactate as a firming agent in Table 3 of the GSFA.

Preserved tomatoes:

The following provisions should be inserted in section 4 of the standard concerning food additives:

4.1 ACIDITY REGULATORS

INS No.	Name of the Food Additive	Maximum Level
300	Ascorbic acid, L-	GMP
330	Citric acid	GMP
331(i)	Sodium dihydrogen citrate	GMP
331(iii)	Trisodium citrate	GMP
332(i)	Potassium dihydrogen citrate	GMP
332(ii)	Tripotassium citrate	GMP
333(iii)	Tricalcium citrate	GMP
380	Triammonium citrate	GMP
507	Hydrochloric acid	GMP
514(i)	Sodium sulfate	GMP
515(i)	Potassium sulfate	GMP
575	Glucono delta-lactone	GMP
577	Potassium gluconate	GMP
578	Calcium gluconate	GMP
580	Magnesium gluconate	GMP

4.2 FIRMING AGENTS

Firming agents listed in Table 3 of the General Standard for Food Additives are acceptable for use in foods conforming to this standard.

Regarding the food additive provisions in the step procedure for the inclusion for food category 04.2.2.4, the eWG did not provide specific comments and, therefore, no technological need could be identified in preserved tomatoes for sodium diacetate and tartrates. CCFA should be informed accordingly.

Processed tomato concentrates:

The following provisions should be inserted in section 4 of the standard concerning food additives:

4.1 ACIDITY REGULATORS

INS No.	Name of the Food Additive Name	Maximum Level
300	Ascorbic acid, L-	GMP
330	Citric acid	GMP
331(i)	Sodium dihydrogen citrate	GMP
331(iii)	Trisodium citrate	GMP
332(i)	Potassium dihydrogen citrate	GMP
332(ii)	Tripotassium citrate	GMP
333(iii)	Tricalcium citrate	GMP
380	Triammonium citrate	GMP
507	Hydrochloric acid	GMP
514(i)	Sodium sulfate	GMP
515(i)	Potassium sulfate	GMP
575	Glucono delta-lactone	GMP
577	Potassium gluconate	GMP
578	Calcium gluconate	GMP
580	Magnesium gluconate	GMP

Pickled fruits and vegetables:

The following general reference to the GSFA should be inserted in section 4 of the standard concerning food additives:

"Acidity regulators, antifoaming agents, antioxidants, colours, firming agents, flavour enhancers, preservatives, sequestrants and sweeteners used in accordance with Tables 1 and 2 of the Codex General Standard of Food Additives in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, and 04.2.2.7 or listed in Table 3 of the General Standard for Food Additives are acceptable for use in foods conforming to this standard."

Regarding the food additive provisions in the step procedure for the inclusion for food category 04.1.2.3, the eWG did not provide specific comments and, therefore, no technological need could be identified in pickled fruits and vegetables for sodium diacetate, annatto extracts, bixin-based, tartrates and aspartame-acesulfame salt. CCFA should be informed accordingly.

Regarding the food additive provisions in the step procedure for the inclusion for food category 04.1.2.10, the eWG did not provide specific comments and, therefore, no technological need could be identified in pickled fruits and vegetables for tartrates, Annatto extracts, norbixin-based, and aspartame-acesulfame salt. CCFA should be informed accordingly.

Regarding the food additive provisions in the step procedure for the inclusion for food category 04.2.2.3, the eWG did not provide specific comments and, therefore, no technological need could be identified in pickled fruits and vegetables for adipates, sodium diacetate, tartrates, amaranth, azorubine (carmoisine), brown HT, brilliant black (black PN), curcumin, quinoline yellow, tartrazine, annatto extracts, bixin-based, annatto extracts, norbixin-based, aluminium ammonium sulphate, sorbates and propylene glycol alginate. CCFA should be informed accordingly.

Regarding the food additive provisions in the step procedure for the inclusion for food category 04.2.2.7, the eWG did not provide specific comments and, therefore, no technological need could be identified in pickled fruits and vegetables for the following food additives. CCFA should be informed accordingly.

INS No.	Name of the Food Additive
355-357, 359	Adipates
300	Ascorbic acid, l-
170(i)	Calcium carbonate
327	Calcium lactate
504(i)	Magnesium carbonate
501(i)	Potassium carbonate
500(i)	Sodium carbonate
365	Sodium fumarates
325	Sodium lactate
350(ii)	Sodium dl-malate
334; 335(i),(ii); 336(i),(ii); 337	Tartrates
331(iii)	Trisodium citrate
472c	Citric and fatty acid esters of glycerol
322(i)	Lecithin
301	Sodium ascorbate
316	Sodium isoascorbate (sodium isoascorbate)
123	Amaranth
170(i)	Calcium carbonate
150a	Caramel I - plain Caramel
100(i)	Curcumin
161b(i)	Lutein from tagetes erecta
102	Tartrazine
160b(i)	Annatto extracts, bixin-based
160b(ii)	Annatto extracts, norbixin-based
523	Aluminium ammonium sulphate

INS No.	Name of the Food Additive
634	Calcium 5'-ribonucleotides
627	Disodium 5'-guanylate
631	Disodium 5'-inosinate
635	Disodium 5'-ribonucleotides
508	Potassium chloride
957	Thaumatin
260	Acetic acid, glacial
262(i)	Sodium acetate
400	Alginic acid
472c	Citric and fatty acid esters of glycerol
576	Sodium gluconate
420(i)	Sorbitol
420(ii)	Sorbitol syrup

ANNEX 1

DESICCATED COCONUT (CODEX STAN 177-1991)

Based on current food additive provisions in the standard, the eWG concluded that use of food additives with the functional classes of antioxidants and preservatives are technologically justified.

Desiccated coconut is included under food category 04.1.2.2 (Dried fruit) in the GSFA. This food category is not listed in the Annex to Table 3 of the GSFA. As such, additives listed in Table 3 of the GSFA can be used in foods included in this food category in accordance with good manufacturing practices (GMP), so that specific provisions for their use are not listed in food category 04.1.2.2 in Tables 1 and 2 of the GSFA.

Table 3 of the GSFA lists the following antioxidants:

INS	Additive Name	INS	Additive Name
300	Ascorbic acid, L-	325	Sodium lactate
301	Sodium ascorbate	326	Potassium lactate
302	Calcium ascorbate	330	Citric acid
303	Potassium ascorbate	472c	Citric and fatty acid esters of glycerol
315	Erythorbic Acid (Isoascorbic acid)	942	Nitrous oxide
316	Sodium erythorbate (Sodium isoascorbate)	1102	Glucose oxidase
322(i)	Lecithin		

Table 3 of the GSFA lists the following preservatives:

INS	Additive Name	INS	Additive Name
260	Acetic acid, glacial	281	Sodium propionate
261	Potassium acetates	282	Calcium propionate
262(i)	Sodium acetate	283	Potassium propionate
263	Calcium acetate	290	Carbon dioxide
280	Propionic acid		

In the absence of specific comments, the eWG could not conclude whether or not food additives with the functional classes of antioxidants (other than citric acid) and preservatives in Table 3 of the GSFA should be included in or excluded from the Standard for Desiccated Coconut. General concerns were expressed about the fact that some of these food additives have several functions, which complicates the evaluation of technological needs.

The eWG also took the opportunity to study whether the following food additive provisions for food category 04.1.2.2, which are either adopted or are currently in the Step process for inclusion under that food category in Tables 1 and 2 of the GSFA, are applicable to desiccated coconut:

Antioxidants:

INS	GSFA Mainterm	ML	Notes	Step
304, 305	Ascorbyl Esters	80 mg/kg	10	Adopted 2001
385, 386	Ethylene diamine tetra acetates	265 mg/kg	21	Adopted 2001
220-225, 227, 228, 539	Sulfites	1000 mg/kg	44, 135, 218	Adopted 2006
334; 335(i),(ii); 336(i),(ii); 337	Tartrates	GMP	45	Step 7
307a, b, c	Tocopherols	200 mg/kg		Step 7

Preservatives:

INS	GSFA Mainterm	ML	Notes	Step
210-213	Benzoates	800 mg/kg	13	Adopted 2003
385,386	Ethylene diamine tetra acetates	265 mg/kg	21	Adopted 2001
214, 218	Hydroxybenzoates, para-	800 mg/kg	27	Adopted 2010
243	Lauric Arginate Ethyl Ester	200 mg/kg		Adopted 2011
200-203	Sorbates	500 mg/kg	42	Adopted 2012
220-225, 227, 228, 539	Sulfites	1000 mg/kg	44, 135, 218	Adopted 2006

The 25th Session of the CCPFV noted that the use of benzoates (INS 210-213) and para-hydroxybenzoates (INS 214, 218) as a preservative may not be effective due to the pH of the product, and may also result in “off flavours” and that the use of ascorbyl esters (INS 304, 305) does not have an advantage in desiccated coconut and its function as an antioxidant can be achieved by using sulfites[3] In the absence of specific comments, the eWG could not conclude whether or not other antioxidants and preservatives listed in food category 04.1.2.2 in Tables 1 and 2 should be included in or excluded from the Standard for Desiccated Coconut.

[3] REP 11/PFV, para. 37.

ANNEX 2

TABLE OLIVES (CODEX STAN 66-1981)

Based on current food additive provisions in the standard, the eWG concluded that food additives with the following functional classes are needed in table olives:

- Acidity regulators
- Antioxidants
- Firming agents
- Flavour enhancers
- Preservatives
- Colour retention agents
- Thickeners

Thickeners are needed only for olives with stuffing, and colour retention agents are needed only in olives darkened by oxidation.

Table olives are included under food category 04.2.2.3 (Vegetables (including mushrooms and fungi, roots and tubers, pulses and legumes, and aloe vera), and seaweeds in vinegar, oil, brine, or soybean sauce) in the GSFA. This food category is not listed in the Annex to Table 3 of the GSFA. As such, additives listed in Table 3 of the GSFA can be used in foods included in this food category in accordance with GMP, so that specific provisions for their use are not listed in food category 04.2.2.3 in Tables 1 and 2 of the GSFA.

Acidity regulators

Phosphates are the only adopted acidity regulator in food category 04.2.2.3 of the GSFA. However, the following draft provisions for acidity regulators are currently in the Step process for listing in food category 04.2.2.3:

INS	GSFA Mainterm	ML	Notes	Step
355-357, 359	Adipates	50,000 mg/kg	1	Step 7
338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
262(ii)	Sodium diacetate	GMP		Step 7
334; 335(i),(ii); 336(i),(ii); 337	Tartrates	15,000 mg/kg	45	Step 7

Table 3 of the GSFA lists the following acidity regulators:

INS	Additive Name	INS	Additive Name
170(i)	Calcium carbonate	365	Sodium fumarates
260	Acetic acid, glacial	380	Triammonium citrate
261	Potassium acetates	500(i)	Sodium carbonate
262(i)	Sodium acetate	500(ii)	Sodium hydrogen carbonate
263	Calcium acetate	500(iii)	Sodium sesquicarbonate
264	Ammonium acetate	501(i)	Potassium carbonate
270	Lactic acid, L-, D- and DL-	501(ii)	Potassium hydrogen carbonate
296	Malic acid, DL-	503(i)	Ammonium carbonate
297	Fumaric acid	503(ii)	Ammonium hydrogen carbonate

INS	Additive Name	INS	Additive Name
300	Ascorbic acid, L-	504(i)	Magnesium carbonate
325	Sodium lactate	504(ii)	Magnesium hydroxide carbonate
326	Potassium lactate	507	Hydrochloric acid
327	Calcium lactate	514(i)	Sodium sulfate
328	Ammonium lactate	514(ii)	Sodium hydrogen sulfate
329	Magnesium lactate, DL-	515(i)	Potassium sulfate
330	Citric acid	515(ii)	Potassium hydrogen sulfate **(Step 3)**
331(i)	Sodium dihydrogen citrate	524	Sodium hydroxide
331(iii)	Trisodium citrate	525	Potassium hydroxide
332(i)	Potassium dihydrogen citrate	526	Calcium hydroxide
332(ii)	Tripotassium citrate	527	Ammonium hydroxide
333(iii)	Tricalcium citrate	528	Magnesium hydroxide
350(i)	Sodium hydrogen DL-malate	529	Calcium oxide
350(ii)	Sodium DL-malate	575	Glucono delta-lactone
351(i)	Potassium hydrogen malate	577	Potassium gluconate
351(ii)	Potassium malate	578	Calcium gluconate
352(ii)	Calcium malate, DL-	580	Magnesium gluconate

Based on the current food additive provisions in the standard, there is a technological need for, acetic acid, lactic acid, and citric acid as acidity regulators in table olives. In addition, the eWG concluded that tartrates are needed as acidity regulators in table olives. The eWG could not identify a justification for excluding acidity regulators listed in food category 04.2.2.3 or in Table 3 of the GSFA for use in table olives. However, the eWG could not identify a technological need for phosphates and sodium diacetate. The eWG also could not identify the technological need for other acidity regulators that are not listed in food category 04.2.2.3 or in Table 3 of the GSFA for use in table olives.

Antioxidants

Tables 1 and 2 of the GSFA list the following antioxidants for food category 04.2.2.3:

INS	GSFA Mainterm	ML	Notes	Step
385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2001
338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
220-225, 227, 228, 539	Sulfites	100 mg/kg	44	Adopted 2006
334; 335(i),(ii); 336(i),(ii); 337	Tartrates	15000 mg/kg	45	Step 7

Table 3 of the GSFA lists the following antioxidants:

INS	Additive Name	INS	Additive Name
300	Ascorbic acid, L-	325	Sodium lactate
301	Sodium ascorbate	326	Potassium lactate
302	Calcium ascorbate	330	Citric acid
303	Potassium ascorbate	472c	Citric and fatty acid esters of glycerol
315	Erythorbic Acid (Isoascorbic acid)	942	Nitrous oxide
316	Sodium erythorbate (Sodium isoascorbate)	1102	Glucose oxidase
322(i)	Lecithin		

Based on the current food additive provisions in the standard, there is a technological need for ascorbic acid. In addition, the eWG concluded that sulfites are needed as antioxidants in table olives. The eWG could not identify a justification for excluding antioxidants listed in food category 04.2.2.3 or in Table 3 of the GSFA from use in table olives. However, the eWG could not identify a technological need for phosphates which was adopted in 2012. The eWG also could not identify a technological need for other antioxidants that are not listed in food category 04.2.2.3 or in Table 3 of the GSFA for use in table olives.

Firming agents

Tables 1 and 2 of the GSFA list the following firming agents for food category 04.2.2.3:

INS	GSFA Mainterm	ML	Notes	Step
523	Aluminium ammonium sulfate	500 mg/kg	6	Step 3
338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012

Table 3 of the GSFA lists the following firming agents:

INS	Additive Name	INS	Additive Name
333(iii)	Tricalcium citrate	516	Calcium sulfate
424	Curdlan	518	Magnesium sulfate
466	Sodium carboxymethyl cellulose (Cellulose gum)	526	Calcium hydroxide
509	Calcium chloride	578	Calcium gluconate
511	Magnesium chloride	580	Magnesium gluconate

Based on the current food additive provisions in the standard, there is a technological need for calcium chloride, calcium lactate, calcium citrate, and potassium chloride in stuffed table olives. In addition, the eWG identified a technological need for calcium lactate and potassium chloride to enhance the texture of all types of table olives. The eWG recommends that CCPFV requests CCFA to consider classifying calcium lactate and potassium chloride as a firming agent in Table 3 of the GSFA. The eWG could not identify a justification for excluding firming agents listed in food category 04.2.2.3 or Table 3 of the GSFA for use in table olives. However, the eWG could not identify a technological need for aluminium ammonium sulfate (500 mg/kg) and phosphates. The eWG also could not identify a technological need for other firming agents that are not listed in food category 04.2.2.3 or in Table 3 of the GSFA for use in table olives.

Flavour enhancers

Tables 1 and 2 of the GSFA list the following flavour enhancers for food category 04.2.2.3:

INS	GSFA Mainterm	ML	Notes	Step
950	Acesulfame potassium	200 mg/kg	188, 144	Adopted 2007
951	Aspartame	300 mg/kg	144, 191	Adopted 2007
961	Neotame	10 mg/kg	144	Adopted 2007

Table 3 of GSFA lists the following flavour enhancers:

INS	Additive Name	INS	Additive Name
508	Potassium chloride	630	Inosinic acid, 5'-
518	Magnesium sulphate	631	Disodium 5'-inosinate
580	Magnesium gluconate	632	Potassium 5'-inosinate
620	Glutamic acid, L(+)-	633	Calcium 5'-inosinate
621	Monosodium L-glutamate	634	Calcium 5'-ribonucleotides
622	Monopotassium L-glutamate	635	Disodium 5'-ribonucleotides
623	Calcium di-L-glutamate	957	Thaumatin
624	Monoammonium L-glutamate	968	Erythritol
625	Magnesium di-L-glutamate	1101(i)	Protease
626	Guanylic acid, 5'-	1101(ii)	Papain
627	Disodium 5'-guanylate	1101(iii)	Bromelain
628	Dipotassium 5'-guanylate	1104	Lipases
629	Calcium 5'-guanylate		

Based on the current food additive provisions in the standard, there is a technological need for monosodium L-glutamate in table olives stuffed with anchovies. In addition, the eWG identified a technological need for monosodium L-glutamate in all types of olives. The eWG could not identify a justification for excluding flavour enhancers listed in food category 04.2.2.3 or Table 3 of the GSFA for use in table olives. The eWG also could not identify a technological need for other flavour enhancers that are not listed in food category 04.2.2.3 or in Table 3 of the GSFA for use in table olives.

Preservatives

Tables 1 and 2 of the GSFA list the following preservatives for food category 04.2.2.3:

INS	GSFA Mainterm	ML	Notes	Step
210, 211, 212, 213	Benzoates	2,000 mg/kg	13	Adopted 2001
385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2001
214, 218	Hydroxybenzoates, para-	1,000 mg/kg	27	Adopted 2010
243	Lauric arginate ethyl ester	200 mg/kg		Adopted 2011
338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
262(ii)	Sodium diacetate	GMP		Step 7
200-203	Sorbates	1000 mg/kg	42	Adopted 2012
220, 221, 222, 223, 224, 225, 227, 228, 539	Sulfites	100 mg/kg	44	Adopted 2006

Table 3 of GSFA lists are the following preservatives:

INS	Additive Name	INS	Additive Name
260	Acetic acid, glacial	281	Sodium propionate
261	Potassium acetates	282	Calcium propionate
262(i)	Sodium acetate	283	Potassium propionate
263	Calcium acetate	290	Carbon dioxide
280	Propionic acid		

Based on the current food additive provisions in the standard, there is a technological need for benzoic acid and its sodium and potassium salts, and for sorbic acid and its sodium and potassium salts as preservatives in table olives. Although not currently used, para-hydroxybenzoates could also be technologically justified because they are closely related to benzoates. The eWG could not identify a justification for excluding preservatives listed in food category 04.2.2.3 or in Table 3 of the GSFA for use in table olives. However, the eWG could not identify a technological need for phosphates and sodium diacetate. The eWG could not identify a technological need for other preservatives that are not listed in food category 04.2.2.3 or in Table 3 of the GSFA for use in table olives.

Colour retention agents

Tables 1 and 2 of the GSFA list the following colour retention agents for food category 04.2.2.3:

INS	GSFA Mainterm	ML	Notes	Step
385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2001
579	Ferrous gluconate	150 mg/kg	23, 48	Adopted 1999
585	Ferrous lactate	150 mg/kg	23, 48	Adopted 1999

Table 3 of GSFA lists the following colour retention agents:

INS	Additive Name	INS	Additive Name
504(i)	Magnesium carbonate	528	Magnesium hydroxide
504(ii)	Magnesium hydroxide carbonate	1202	Polyvinylpyrrolidone, insoluble
511	Magnesium chloride		

Based on the current food additive provisions in the standard, there is a technological need for ferrous gluconate and ferrous lactate to stabilize the color of treated olives darkened by oxidation. The eWG could not identify a justification for excluding colour retention agents listed in food category 04.2.2.3 or in Table 3 of the GSFA for use in table olives. The eWG could not identify a technological need for other colour retention agents that are not listed in food category 04.2.2.3 or in Table 3 of the GSFA for use in table olives.

Thickeners

There are no adopted provisions for thickeners in food category 04.2.2.3 of the GSFA. However, two draft provisions are in the Step process:

INS	GSFA Mainterm	ML	Notes	Step
338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
405	Propylene glycol alginate	6000 mg/kg		Step 7

Table 3 of the GSFA lists the following thickeners:

INS	Additive Name	INS	Additive Name
325	Sodium lactate	464	Hydroxypropyl methyl cellulose
400	Alginic acid	465	Methyl ethyl cellulose
401	Sodium alginate	466	Sodium carboxymethyl cellulose (Cellulose gum)
402	Potassium alginate	467	Ethyl hydroxyethyl cellulose
403	Ammonium alginate	468	Cross-linked sodium carboxymethyl cellulose (Cross-linked-cellulose gum)
404	Calcium alginate	469	Sodium carboxymethyl cellulose, enzymatically hydrolysed (Cellulose gum, enzymatically hydrolyzed)
406	Agar	508	Potassium chloride
407	Carrageenan	509	Calcium chloride
407a	Processed eucheuma seaweed (PES)	553(iii)	Talc
410	Carob bean gum	576	Sodium gluconate
412	Guar gum	966	Lactitol
413	Tragacanth gum	967	Xylitol
414	Gum arabic (Acacia gum)	1200	Polydextroses

INS	Additive Name	INS	Additive Name
415	Xanthan gum	1400	Dextrins, roasted starch
416	Karaya gum	1401	Acid treated starch
417	Tara gum	1402	Alkaline treated starch
418	Gellan gum	1403	Bleached starch
422	Glycerol	1404	Oxidized starch
424	Curdlan	1405	Starches, enzyme treated
425	Konjac flour	1410	Monostarch phosphate
427	Cassia gum **(Step 3)**	1412	Distarch phosphate
440	Pectins	1413	Phosphated distarch phosphate
457	Cyclodextrin, alpha-	1414	Acetylated distarch phosphate
458	Cyclodextrin, gamma-	1420	Starch acetate
460(i)	Microcrystalline cellulose (Cellulose gel)	1422	Acetylated distarch adipate
460(ii)	Powdered cellulose	1440	Hydroxypropyl starch
461	Methyl cellulose	1442	Hydroxypropyl distarch phosphate
462	Ethyl cellulose	1450	Starch sodium octenyl succinate
463	Hydroxypropyl cellulose	1451	Acetylated oxidized starch

Based on the current food additive provisions in the standard, there is a technological need for sodium alginate, carrageenan, carob bean gum, guar gum, and xantham gum as thickeners, but only in pastes used for filling stuffed olives. The eWG could not identify a justification for excluding thickeners listed in food category 04.2.2.3 or in Table 3 of the GSFA for use in table olives. However, the eWG could not identify a technological need for phosphates and propylene glycol alginate. The eWG also could not identify a technological need for other thickeners not listed in food category 04.2.2.3 or in Table 3 of the GSFA for use in table olives.

ANNEX 3

CERTAIN CANNED CITRUS FRUITS (CODEX STAN 254-2007)

The products covered by the standard are included under food category 04.1.2.4 (Canned or bottled (pasteurized) fruit) of the GSFA. This food category is not listed in the Annex to Table 3 of the GSFA. As such, additives listed in Table 3 of the GSFA can be used in foods included in this food category in accordance with GMP, so that specific provisions for their use are not listed in food category 04.1.2.4 in Tables 1 and 2 of the GSFA.

Based on the current food additive provisions in the standard, the eWG concluded that use of food additives with functional classes of acidity regulators and firming agents are technologically justified.

Acidity regulators

There are no adopted provisions for acidity regulators in food category 04.1.2.4 of the GSFA. However, due to the hierarchy of the food category system, carnauba wax (INS 903), which is listed in food category 04.1.2, is allowed for use in foods included in food category 04.1.2.4 as an acidity regulator. In addition, the following draft provisions for acidity regulators are currently in the Step process for listing in food category 04.1.2.4:

Food Cat.	**INS**	**GSFA Mainterm**	**ML**	**Notes**	**Step**
04.1.2	903	Carnauba wax	400 mg/kg		Adopted 2004
04.1.2.4	262(ii)	Sodium diacetate	GMP		Step 7
04.1.2.4	334; 335(i),(ii); 336(i),(ii); 337	Tartrates	1300 mg/kg	45	Step 7

Table 3 of the GSFA lists the following acidity regulators:

INS	**Additive Name**	**INS**	**Additive Name**
170(i)	Calcium carbonate	365	Sodium fumarates
260	Acetic acid, glacial	380	Triammonium citrate
261	Potassium acetates	500(i)	Sodium carbonate
262(i)	Sodium acetate	500(ii)	Sodium hydrogen carbonate
263	Calcium acetate	500(iii)	Sodium sesquicarbonate
264	Ammonium acetate	501(i)	Potassium carbonate
270	Lactic acid, L-, D- and DL-	501(ii)	Potassium hydrogen carbonate
296	Malic acid, DL-	503(i)	Ammonium carbonate
297	Fumaric acid	503(ii)	Ammonium hydrogen carbonate
300	Ascorbic acid, L-	504(i)	Magnesium carbonate
325	Sodium lactate	504(ii)	Magnesium hydroxide carbonate
326	Potassium lactate	507	Hydrochloric acid
327	Calcium lactate	514(i)	Sodium sulfate
328	Ammonium lactate	514(ii)	Sodium hydrogen sulfate
329	Magnesium lactate, DL-	515(i)	Potassium sulfate
330	Citric acid	515(ii)	Potassium hydrogen sulfate **(Step 3)**

INS	Additive Name	INS	Additive Name
331(i)	Sodium dihydrogen citrate	524	Sodium hydroxide
331(iii)	Trisodium citrate	525	Potassium hydroxide
332(i)	Potassium dihydrogen citrate	526	Calcium hydroxide
332(ii)	Tripotassium citrate	527	Ammonium hydroxide
333(iii)	Tricalcium citrate	528	Magnesium hydroxide
350(i)	Sodium hydrogen DL-malate	529	Calcium oxide
350(ii)	Sodium DL-malate	575	Glucono delta-lactone
351(i)	Potassium hydrogen malate	577	Potassium gluconate
351(ii)	Potassium malate	578	Calcium gluconate
352(ii)	Calcium malate, DL-	580	Magnesium gluconate

Based on the current food additive provisions in the standard, the eWG concluded that all acidity regulators listed in Table 3 are needed for use in mandarin oranges, sweet orange varieties, and pummelos; and that citric acid is needed for use in grapefruit. The eWG could not identify a justification for excluding acidity regulator listed in food category 04.1.2.4 or its parent categories, or in Table 3 of the GSFA for use in certain canned citrus fruits. However, the eWG could not identify a technological need for phosphates, sodium diacetate and tartrates. The eWG also could not identify the technological need for other acidity regulators not listed in food category 04.1.2.4 or its parent food categories, or in Table 3 of the GSFA for use in certain canned citrus fruits.

Firming agents

There are no adopted provisions for any firming agents in food category 04.1.2.4. Phosphates were revoked in 2012 for use as a firming agent in food category 04.1.2.4.

Table 3 of the GSFA lists are the following firming agents:

INS	Additive Name	INS	Additive Name
333(iii)	Tricalcium citrate	516	Calcium sulfate
424	Curdlan	518	Magnesium sulfate
466	Sodium carboxymethyl cellulose (Cellulose gum)	526	Calcium hydroxide
509	Calcium chloride	578	Calcium gluconate
511	Magnesium chloride	580	Magnesium gluconate

Based on the current food additive provisions in the standard, there is a technological need for calcium lactate and calcium chloride as firming agents in certain canned citrus fruits. The eWG recommends that CCPFV requests CCFA to consider classifying calcium lactate as a firming agent in Table 3 of the GSFA. The eWG could not identify a justification for excluding any firming agents listed in food category 04.1.2.4 or in Table 3 of the GSFA for use in certain canned citrus fruits. The eWG could not identify a technological need for other firming agents not listed in food category 04.1.2.4 or in Table 3 of the GSFA for use in certain canned citrus fruits.

ANNEX 4

PRESERVED TOMATOES (CODEX STAN 13-1981)

Preserved tomatoes are included under food category 04.2.2.4 (Canned or bottled (pasteurized) or retort pouch vegetables (including mushrooms and fungi, roots and tubers, pulses and legumes, and aloe vera), and seaweeds) of the GSFA. This food category is not listed in the Annex to Table 3 of the GSFA. As such, additives listed in Table 3 of the GSFA can be used in foods included in this food category in accordance with GMP, so that specific provisions for their use are not listed in food category 04.2.2.4 in Tables 1 and 2 of the GSFA.

Based on the current food additive provisions in the standard, the eWG concluded that use of food additives with functional classes of acidity regulators and firming agents are technologically justified.

Acidity regulators

Phosphates are the only adopted acidity regulators listed in food category 04.2.2.4 of the GSFA. However, there are several provisions in the Step process:

INS	GSFA Mainterm	ML	Notes	Step
338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
262(ii)	Sodium diacetate	GMP		Step 7
334; 335(i),(ii); 336(i),(ii); 337	Tartrates	10000 mg/kg	45	Step 7

According to the industry (WTPC)[4], the use of the above food additives is not technologically justified in preserved tomatoes because:

- Phosphates are not used by tomato processors.
- Acetates, including sodium diacetate, should not be allowed as acidity regulators because they are metabolites that can occur naturally following raw material spoilage. Allowing these as additives would de-facto open a legal way of masking the use of partially altered tomatoes.
- Tartrates could cause major damages to pasteurization equipment used to treat the covering juice.

Therefore, the eWG could not identify a technological need for the above food additives.

Table 3 of the GSFA lists the following acidity regulators:

INS	Additive Name	INS	Additive Name
170(i)	Calcium carbonate	365	Sodium fumarates
260	Acetic acid, glacial	**380**	Triammonium citrate
261	Potassium acetates	500(i)	Sodium carbonate
262(i)	Sodium acetate	500(ii)	Sodium hydrogen carbonate
263	Calcium acetate	500(iii)	Sodium sesquicarbonate
264	Ammonium acetate	501(i)	Potassium carbonate
270	Lactic acid, L-, D- and DL-	501(ii)	Potassium hydrogen carbonate
296	Malic acid, DL-	503(i)	Ammonium carbonate
297	Fumaric acid	503(ii)	Ammonium hydrogen carbonate

[4] The World Processing Tomato Council (WPTC) represents more that 95% of the worldwide production of preserved tomatoes.

INS	Additive Name	INS	Additive Name
300	Ascorbic acid, L-	504(i)	Magnesium carbonate
325	Sodium lactate	504(ii)	Magnesium hydroxide carbonate
326	Potassium lactate	507	Hydrochloric acid
327	Calcium lactate	514(i)	Sodium sulfate
328	Ammonium lactate	514(ii)	Sodium hydrogen sulfate
329	Magnesium lactate, DL-	515(i)	Potassium sulfate
330	Citric acid	515(ii)	Potassium hydrogen sulfate **(Step 3)**
331(i)	Sodium dihydrogen citrate	**524**	Sodium hydroxide
331(iii)	Trisodium citrate	**525**	Potassium hydroxide
332(i)	Potassium dihydrogen citrate	**526**	Calcium hydroxide
332(ii)	Tripotassium citrate	**527**	Ammonium hydroxide
333(iii)	Tricalcium citrate	**528**	Magnesium hydroxide
350(i)	Sodium hydrogen DL-malate	529	Calcium oxide
350(ii)	Sodium DL-malate	575	Glucono delta-lactone
351(i)	Potassium hydrogen malate	577	Potassium gluconate
351(ii)	Potassium malate	578	Calcium gluconate
352(ii)	Calcium malate, DL-	580	Magnesium gluconate

Based on the current food additive provisions in the standard, the eWG concluded that citric acid, sodium dihydrogen citrate, trisodium citrate, potassium dihydrogen citrate, tripotassium citrate, calcium citrates, and glucono delta-lactone are needed as acidity regulators in preserved tomatoes.

According to the industry (WPTC), the following acidity regulators are not used in preserved tomatoes. WPTC also provided the following justification for excluding them:

- Acetic acid (260) should not be allowed as an acidity regulator because in its dissociated anionic form it is equivalent to dissociated anionic form of acetates, the presence of which could be used to mask spoilage.
- **Lactates** and **acetates** (INS 261, 262(i), 263, 264, 270, 325, 326, 327, 328, 329) should not be allowed as acidity regulators because they are metabolites that can occur naturally following raw material spoilage. Allowing these as additives would *de facto* open a legal way of masking the use of partially altered tomatoes.
- **Malates** and **fumarates** (INS 296, 297, 350(i), 350(ii), 351(i), 351(ii), 352(ii), 365) should be excluded for the same reason as for lactates and acetates, although these compounds are less frequent spoilage metabolites.
- **Hydroxydes** (INS 524, 525, 526, 527, 528) and **calcium oxide** (INS 529) are acidity regulators which are used to raise pH and thus have no technological justification for use in tomato products where acidity regulators are used to reduce the pH in order to guarantee microbiological stability.
- **Carbonates** (INS 170(i), 500(i), 500(ii), 500(iii), 501(i), 501(ii), 503(i), 503(ii), 504(i), 504(ii)) is that they can produce foam, but more importantly they can release gasses in the finished products that lead to a loss of vacuum (vacuum is, for the consumer, a sign of a metal can with no microbial spoilage or corrosion).

Industry also stated that hydrochloric acid (INS 507) and sulfates (INS 514(i), 514(ii), 515(i), 515(ii)) and glucono-delta-lactone (INS 575) and gluconates (INS 577, 578, 580) are not traditionally used as acidity regulators, but did not provide a justification for excluding their use in preserved tomatoes. The eWG also could not identify a technological for other acidity regulators that are not listed in food category 04.2.2.4 or in Table 3 of the GSFA for use in preserved tomatoes.

Thus, the following remaining acidity regulators are acceptable for use in preserved tomatoes:

INS	**Additive Name**
300	Ascorbic acid, L-
330	Citric acid
331(i)	Sodium dihydrogen citrate
331(iii)	Trisodium citrate
332(i)	Potassium dihydrogen citrate
332(ii)	Tripotassium citrate
333(iii)	Tricalcium citrate
380	Triammonium citrate
507	Hydrochloric acid
514(i)	Sodium sulfate
515(i)	Potassium sulfate
575	Glucono delta-lactone
577	Potassium gluconate
578	Calcium gluconate
580	Magnesium gluconate

Firming agents

Phosphates have been adopted for use as firming agents in food category 04.2.2.4:

INS	**GSFA Mainterm**	**ML**	**Notes**	**Step**
338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	200 mg/kg	33	Adopted 2012

According to the industry (WPTC), phosphates are not used by tomato processors. Therefore, the eWG could not identify a technological need for phosphates as firming agents.

Table 3 of the GSFA lists the following firming agents:

INS	Additive Name	INS	Additive Name
333(iii)	Tricalcium citrate	516	Calcium sulfate
424	Curdlan	518	Magnesium sulfate
466	Sodium carboxymethyl cellulose (Cellulose gum)	526	Calcium hydroxide
509	Calcium chloride	578	Calcium gluconate
511	Magnesium chloride	580	Magnesium gluconate

Based on the current food additive provisions in the standard (CODEX STAN 13-1981), the eWG concluded that calcium lactate, calcium citrates and calcium chlorides are needed as firming agents in preserved tomatoes. The eWG could not identify a justification for excluding any firming agents found in Table 3 of the GSFA for preserved tomatoes. However, the industry (WPTC) indicated that curdlan, sodium carboxymethyl cellulose, magnesium chloride, magnesium sulfite and magnesium gluconate are not widely used by industry in preserved tomatoes. The eWG could not identify a technological need in preserved tomatoes for other firming agents not listed in food category 04.2.2.4.or Table 3 of the GSFA.

ANNEX 5

PROCESSED TOMATO CONCENTRATES (CODEX STAN 57-1981)

The products covered by the standard are included under the following food categories in the GSFA:

- Canned tomato paste - 04.2.2.4 (Canned or bottled (pasteurized) or retort pouch vegetables (including mushrooms and fungi, roots and tubers, pulses and legumes, and aloe vera), and seaweeds).
- Tomato puree - 04.2.2.5 (Vegetable (including mushrooms and fungi, roots and tubers, pulses and legumes, and aloe vera), seaweed, and nut and seed purees and spreads (e.g.,. peanut butter)).
- Tomato paste - 04.2.2.6 (Vegetable (including mushrooms and fungi, roots and tubers, pulses and legumes, and aloe vera), seaweed, and nut and seed pulps and preparations (e.g., vegetable desserts and sauces, candied vegetables) other than food category 04.2.2.5)).

These food categories are not listed in the Annex to Table 3 of the GSFA. As such, additives listed in Table 3 of the GSFA can be used in foods included in these food categories in accordance with GMP, so that specific provisions for their use are not listed in these food categories in Tables 1 and 2 of the GSFA.

Based on the current food additive provisions in the standard, the eWG concluded that the use of food additives with the functional class acidity regulators is technologically justified.

Based on the current food additive provisions in the standard and information provided by the industry (WTPC), and referring to the evaluation presented in Annex 4 concerning preserved tomatoes, no justification was provided for excluding the following acidity regulators listed in Table 3:

INS	**Additive Name**
300	Ascorbic acid, L-
330	Citric acid
331(i)	Sodium dihydrogen citrate
331(iii)	Trisodium citrate
332(i)	Potassium dihydrogen citrate
332(ii)	Tripotassium citrate
333(iii)	Tricalcium citrate
380	Triammonium citrate
507	Hydrochloric acid
514(i)	Sodium sulfate
515(i)	Potassium sulfate
575	Glucono delta-lactone
577	Potassium gluconate
578	Calcium gluconate
580	Magnesium gluconate

ANNEX 6

PICKLED FRUITS AND VEGETABLES (CODEX STAN 260-2007)

The products covered by the standard are included under the following food categories in the GSFA:

- Pickled fruit - 04.1.2.3 (Fruit in vinegar, oil, or brine).
- Fermented fruit - 04.1.2.10 (Fermented fruit products).
- Pickled vegetables - 04.2.2.3 (Vegetables (including mushrooms and fungi, roots and tubers, pulses and legumes, and aloe vera), and seaweeds in vinegar, oil, brine, or soybean sauce).
- Fermented vegetables - 04.2.2.7 (Fermented vegetable (including mushrooms and fungi, roots and tubers, pulses and legumes, and aloe vera), and seaweed products. Excluding fermented soybean products of food categories 06.8.6, 06.8.7, 12.9.1, 12.9.2.1, and 12.9.2.3).

Please note: Food category 04.2.2.7 is listed in the Annex to Table 3. Food categories in the Annex to Table 3 are excluded from the general conditions of Table 3, meaning that only those food additives that are listed in Tables 1 and 2 for food category 04.2.2.7 are permitted for use.

Based on the current food additive provisions in the standard, the eWG concluded that food additives with the following functional classes are technologically justified:

- Acidity regulators
- Antifoaming agents
- Antioxidants
- Colours
- Firming agents
- Flavour enhancers
- Preservatives
- Sequestrants
- Sweeteners

Acidity regulators

Tables 1 and 2 of the GSFA list the following acidity regulators for food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, and 04.2.2.7:

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.1.2	903	Carnauba wax	400 mg/kg		Adopted 2004
04.1.2.3	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
04.1.2.3	262(ii)	Sodium diacetate	GMP		Step 7
04.1.2.4	334; 335(i),(ii); 336(i),(ii); 337	Tartrates	GMP	45	Step 7
04.1.2.10	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2009
04.1.2.10	334; 335(i),(ii); 336(i),(ii); 337	Tartrates	GMP	45	Step 7
04.2.2.3	355-357, 359	Adipates	50000 mg/kg	1	Step 7

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.2.2.3	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
04.2.2.3	262(ii)	Sodium diacetate	GMP		Step 7
04.2.2.7	260	Acetic acid, glacial	GMP		Step 4
04.2.2.7	355-357, 359	Adipates	50000 mg/kg	1	Step 4
04.2.2.7	300	Ascorbic acid, l-	GMP		Step 4
04.2.2.7	170(i)	Calcium carbonate	10000 mg/kg	58	Step 4
04.2.2.7	327	Calcium lactate	10000 mg/kg	58	Step 4
04.2.2.7	330	Citric acid	GMP		Step 4
04.2.2.7	270	Lactic acid, l-, d- and dl-	GMP		Step 4
04.2.2.7	504(i)	Magnesium carbonate	5000 mg/kg	36	Step 4
04.2.2.7	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2010
04.2.2.7	501(i)	Potassium carbonate	GMP		Step 4
04.2.2.7	262(i)	Sodium acetate	GMP		Step 4
04.2.2.7	500(i)	Sodium carbonate	GMP		Step 4
04.2.2.7	365	Sodium fumarates	GMP		Step 4
04.2.2.7	325	Sodium lactate	GMP		Step 4
04.2.2.7	350(ii)	Sodium dl-malate	GMP		Step 4
04.2.2.7	334; 335(i),(ii); 336(i),(ii); 337	Tartrates	10000 mg/kg	45	Step 4
04.2.2.7	331(iii)	Trisodium citrate	GMP		Step 4

Table 3 of the GSFA lists the following acidity regulators:

INS	Additive Name	INS	Additive Name
170(i)	Calcium carbonate	365	Sodium fumarates
260	Acetic acid, glacial	380	Triammonium citrate
261	Potassium acetates	500(i)	Sodium carbonate
262(i)	Sodium acetate	500(ii)	Sodium hydrogen carbonate
263	Calcium acetate	500(iii)	Sodium sesquicarbonate
264	Ammonium acetate	501(i)	Potassium carbonate
270	Lactic acid, L-, D- and DL-	501(ii)	Potassium hydrogen carbonate
296	Malic acid, DL-	503(i)	Ammonium carbonate
297	Fumaric acid	503(ii)	Ammonium hydrogen carbonate
300	Ascorbic acid, L-	504(i)	Magnesium carbonate
325	Sodium lactate	504(ii)	Magnesium hydroxide carbonate
326	Potassium lactate	507	Hydrochloric acid
327	Calcium lactate	514(i)	Sodium sulfate
328	Ammonium lactate	514(ii)	Sodium hydrogen sulfate
329	Magnesium lactate, DL-	515(i)	Potassium sulfate
330	Citric acid	515(ii)	Potassium hydrogen sulfate **(Step 3)**
331(i)	Sodium dihydrogen citrate	524	Sodium hydroxide
331(iii)	Trisodium citrate	525	Potassium hydroxide
332(i)	Potassium dihydrogen citrate	526	Calcium hydroxide
332(ii)	Tripotassium citrate	527	Ammonium hydroxide
333(iii)	Tricalcium citrate	528	Magnesium hydroxide
350(i)	Sodium hydrogen DL-malate	529	Calcium oxide
350(ii)	Sodium DL-malate	575	Glucono delta-lactone
351(i)	Potassium hydrogen malate	577	Potassium gluconate
351(ii)	Potassium malate	578	Calcium gluconate
352(ii)	Calcium malate, DL-	580	Magnesium gluconate

Based on the current food additive provisions in the standard, there is a technological need for acetic acid, sodium diacetate, and lactic acid as acidity regulators in pickled fruits and vegetables.

There is also a technological need for malic acid and citric acid as acidity regulators in pickled fruits and vegetables.

The eWG could not identify a justification for excluding acidity regulators listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7 or in Table 3 of the GSFA for use in pickled fruits and vegetables. However, the eWG could not identify a technological need for acidity regulators that are currently in the step process for inclusion in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3 or 04.2.2.7 of the GSFA with the exception of acetic acid, sodium diacetate, lactic acid and citric acid in food category 04.2.2.7. The eWG also could not identify a technological need for other acidity regulators that are not listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7, or in Table 3 of the GSFA for use in pickled fruits and vegetables.

Antifoaming agents

Tables 1 and 2 of the GSFA list the following antifoaming agents for food categories 04.1.2.3, 04.1.2.10, 04.2.2.3 and 04.2.2.7:

Food Cat.	INS	GSFA Mainterm	ML	Step
04.1.2.3	900a	Polydimethylsiloxane	10 mg/kg	Adopted 1999
04.1.2.10	900a	Polydimethylsiloxane	10 mg/kg	Adopted 2008
04.2.2.3	900a	Polydimethylsiloxane	10 mg/kg	Adopted 1999
04.2.2.7	900a	Polydimethylsiloxane	10 mg/kg	Adopted 2008

Table 3 of the GSFA lists the following antifoaming agents:

INS	Additive Name
404	Calcium alginate
471	Mono- and di-glycerides of fatty acids

Based on the current food additive provisions in the standard, there is a need for polydimethylsiloxane as an antifoaming agent in pickled fruits and vegetables. The eWG could not identify a justification for excluding antifoaming agents listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7 or in Table 3 of the GSFA for use in pickled fruits and vegetables. However, the eWG could not identify a technological need for antifoaming agents that are currently in the step process for inclusion in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, or 04.2.2.7 of the GSFA. The eWG also could not identify a technological need for other antifoaming agents that are not listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7 or in Table 3 of the GSFA for use in pickled fruits and vegetables.

Antioxidants

Tables 1 and 2 of the GSFA list the following antioxidants for food categories 04.1.2.3, 04.1.2.10, 04.2.2.3 and 04.2.2.7:

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.1.2.3	385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2008
04.1.2.3	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
04.1.2.3	220-225, 227, 228, 539	Sulfites	100 mg/kg	44	Adopted 2006
04.1.2.3	334; 335(i),(ii); 336(i),(ii); 337	Tartrates	GMP	45	Step 7
04.1.2.10	385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2008
04.1.2.10	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2009

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.1.2.10	220-225, 227, 228, 539	Sulfites	100 mg/kg	44	Adopted 2008
04.1.2.10	334; 335(i),(ii); 336(i),(ii); 337	Tartrates	GMP	45	Step 7
04.2.2.3	385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2001
04.2.2.3	220-225, 227, 228, 539	Sulfites	100 mg/kg	44	Adopted 2006
04.2.2.3	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
04.2.2.3	334; 335(i),(ii); 336(i),(ii); 337	Tartrates	15000 mg/kg	45	Step 7
04.2.2.7	300	Ascorbic acid, l-	GMP		Step 4
04.2.2.7	330	Citric acid	GMP		Step 4
04.2.2.7	472c	Citric and fatty acid esters of glycerol	GMP		Step 4
04.2.2.7	385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2001
04.2.2.7	322(i)	Lecithin	GMP		Step 4
04.2.2.7	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2010
04.2.2.7	301	Sodium ascorbate	GMP		Step 4
04.2.2.7	316	Sodium isoascorbate (sodium isoascorbate)	GMP		Step 4
04.2.2.7	325	Sodium lactate	GMP		Step 4
04.2.2.7	220-225, 227, 228, 539	Sulfites	500 mg/kg	44	Adopted 2006
04.2.2.7	334; 335(i),(ii); 336(i),(ii); 337	Tartrates	10000 mg/kg	45	Step 4

In Table 3 of the GSFA there are the following antioxidants:

INS Number	Additive Name	INS Number	Additive Name
300	Ascorbic acid, L-	325	Sodium lactate
301	Sodium ascorbate	326	Potassium lactate
302	Calcium ascorbate	330	Citric acid
303	Potassium ascorbate	472c	Citric and fatty acid esters of glycerol
315	Erythorbic Acid (Isoascorbic acid)	942	Nitrous oxide
316	Sodium erythorbate (Sodium isoascorbate)	1102	Glucose oxidase
322(i)	Lecithin		

Based on the current food additive provisions in the standard, there is a technological need for ascorbic acid as an antioxidant in pickled fruits and vegetables. The eWG could not identify a justification for excluding antioxidants listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, or 04.2.2.7 or in Table 3 of the GSFA for use in pickled fruits and vegetables. However, the eWG could not identify a technological need for antioxidants that are currently in the step process for inclusion in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, or 04.2.2.7 of the GSFA with the exception of ascorbic acid in food category 04.2.2.7. The eWG also could not identify a technological need for other antioxidants that are not listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7 or in Table 3 of the GSFA for use in pickled fruits and vegetables.

Colours

Tables 1 and 2 of the GSFA list the following colours for food categories 04.1.2.3, 04.1.2.10, 04.2.2.3 and 04.2.2.7:

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.1.2	150b	Caramel II - sulfite caramel	80000 mg/kg	182	Step 4
04.1.2.3	160b(i)	Annatto extracts, bixin-based	20 mg/kg	8	Step 4
04.1.2.3	150c	Caramel III - ammonia caramel	200 mg/kg		Adopted 2010
04.1.2.3	150d	Caramel IV - sulfite ammonia caramel	7500 mg/kg		Adopted 2011
04.1.2.3	160a(ii)	Carotenes, beta-, vegetable	1000 mg/kg		Adopted 2005
04.1.2.3	160a(i),a(iii),e,f	Carotenoids	1000 mg/kg		Adopted 2009
04.1.2.3	141(i),(ii)	Chlorophylls and chlorophyllins, copper complexes	100 mg/kg	62	Adopted 2005
04.1.2.3	163(ii)	Grape skin extract	1500 mg/kg	161	Adopted 2009
04.1.2.10	160b(ii)	Annatto extracts, norbixin-based	200 mg/kg	185	Step 4
04.1.2.10	160a(ii)	Carotenes, beta-, vegetable	200 mg/kg		Adopted 2005
04.1.2.10	160a(i),a(iii),e,f	Carotenoids	500 mg/kg		Adopted 2009

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.1.2.10	141(i),(ii)	Chlorophylls and chlorophyllins, copper complexes	100 mg/kg	62	Adopted 2005
04.1.2.10	163(ii)	Grape skin extract	500 mg/kg	161, 181	Adopted 2009
04.1.2.10	101(i),(ii)	Riboflavins	500 mg/kg		Adopted 2008
04.2.2.3	129	Allura red AC	300 mg/kg	161	Adopted 2009
04.2.2.3	123	Amaranth	300 mg/kg		Step 7
04.2.2.3	122	Azorubine (carmoisine)	500 mg/kg		Step 7
04.2.2.3	155	Brown HT	500 mg/kg		Step 7
04.2.2.3	151	Brilliant black (black PN)	500 mg/kg		Step 7
04.2.2.3	133	Brilliant blue FCF	500 mg/kg	161	Adopted 2009
04.2.2.3	150c	Caramel III - ammonia caramel	500 mg/kg		Adopted 1999
04.2.2.3	120	Carmines	500 mg/kg	161, 178	Adopted 2008
04.2.2.3	160a(ii)	Carotenes, beta-, vegetable	1320 mg/kg		Adopted 2011
04.2.2.3	160a(i),a(iii),e,f	Carotenoids	50 mg/kg	161	Adopted 2010
04.2.2.3	100(i)	Curcumin	500 mg/kg		Step 7
04.2.2.3	143	Fast green FCF	300 mg/kg		Adopted 1999
04.2.2.3	163(ii)	Grape skin extract	100 mg/kg	179, 181	Adopted 2011
04.2.2.3	132	Indigotine (indigo carmine)	150 mg/kg	161	Adopted 2009
04.2.2.3	104	Quinoline yellow	500 mg/kg		Step 7
04.2.2.3	101(i),(ii)	Riboflavins	500 mg/kg		Adopted 2005
04.2.2.3	102	Tartrazine	500 mg/kg		Step 7
04.2.2.3	160b(i)	Annatto extracts, bixin-based	20 mg/kg	8	Step 4
04.2.2.3	160b(ii)	Annatto extracts, norbixin-based	300 mg/kg	185	Step 4
04.2.2.7	123	Amaranth	300 mg/kg		Step 4
04.2.2.7	162	Beet red	GMP		Step 4
04.2.2.7	133	Brilliant blue FCF	100 mg/kg	92, 161	Adopted 2009

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.2.2.7	170(i)	Calcium carbonate	10000 mg/kg	58	Step 4
04.2.2.7	150a	Caramel I - plain Caramel	GMP		Step 4
04.2.2.7	150c	Caramel III - ammonia caramel	50000 mg/kg	161	Adopted 2010
04.2.2.7	160a(ii)	Carotenes, beta-, vegetable	1000 mg/kg		Adopted 2005
04.2.2.7	160a(i),a(iii),e,f	Carotenoids	50 mg/kg		Adopted 2009
04.2.2.7	140	Chlorophylls	GMP		Step 4
04.2.2.7	141(i),(ii)	Chlorophylls and chlorophyllins, copper complexes	100 mg/kg	62	Adopted 2005
04.2.2.7	100(i)	Curcumin	500 mg/kg		Step 4
04.2.2.7	127	Erythrosine	30 mg/kg		Adopted 2011
04.2.2.7	143	Fast green FCF	100 mg/kg	161	Adopted 2009
04.2.2.7	163(ii)	Grape skin extract	100 mg/kg	161, 181	Adopted 2009
04.2.2.7	132	Indigotine (indigo carmine)	300 mg/kg	161	Adopted 2009
04.2.2.7	161b(i)	Lutein from tagetes erecta	GMP		Step 4
04.2.2.7	124	Ponceau 4R (cochineal red A)	500 mg/kg	161	Adopted 2008
04.2.2.7	101(i),(ii)	Riboflavins	500 mg/kg		Adopted 2008
04.2.2.7	110	Sunset yellow FCF	200 mg/kg	92	Adopted 2008
04.2.2.7	102	Tartrazine	500 mg/kg		Step 4
04.2.2.7	160b(i)	Annatto extracts, bixin-based	20 mg/kg	8	Step 4
04.2.2.7	160b(ii)	Annatto extracts, norbixin-based	200 mg/kg	185	Step 4

Table 3 of the GSFA lists the following colours:

INS	Additive Name	INS	Additive Name
140	Chlorophylls	160d(iii)	Lycopene, Blakeslea trispora
150a	Caramel I – plain caramel	162	Beet red
160d(i)	Lycopene, synthetic **(Step 3)** (Recommended for adoption at Step 5/8 by the 44th CCFA (REP 12/FA, Apx. VI))	170(i)	Calcium carbonate
160d(ii)	Lycopene, tomato **(Step 3)** (Recommended for adoption at Step 5/8 by the 44th CCFA (REP 12/FA, Apx. VI))	171	Titanium dioxide

Based on the current food additive provisions in the standard, there is a technological need for the following colours in pickled fruits and vegetables:

INS	Additive Name
101(i),(ii)	Riboflavins
140	Chlorophylls
141(i),(ii)	Chlorophylls and chlorophyllins, copper complexes
150d	Caramel IV - sulfite ammonia caramel
160a(i),a(iii),e,f	Carotenoids
163(ii)	Grape skin extract

There is also a technological need for beet red as a colour in pickled fruits and vegetables. The eWG could not identify a justification for excluding colours listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, or 04.2.2.7 or in Table 3 of the GSFA for use in pickled fruits and vegetables. However, the eWG could not identify a technological need for colours that are currently in the step process for inclusion in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, or 04.2.2.7 of the GSFA with the exception of beet red and chlorophylls in food category 04.2.2.7. The eWG also could not identify the technological need for other colours that are not listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, or 04.2.2.7 or in Table 3 of the GSFA for use in pickled fruits and vegetables.

Firming agents

Tables 1 and 2 of the GSFA list the following firming agents for food categories 04.1.2.3, 04.1.2.10, 04.2.2.3 and 04.2.2.7:

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.1.2.3	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
04.1.2.10	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2009
04.2.2.3	523	Aluminium ammonium sulfate	500 mg/kg	6	Step 3

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.2.2.3	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
04.2.2.7	509	Calcium chloride	10000 mg/kg	58	Step 4
04.2.2.7	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2010

Table 3 of the GSFA lists the following firming agents:

INS	Additive Name	INS	Additive Name
333(iii)	Tricalcium citrate	516	Calcium sulfate
424	Curdlan	518	Magnesium sulfate
466	Sodium carboxymethyl cellulose (Cellulose gum)	526	Calcium hydroxide
509	Calcium chloride	578	Calcium gluconate
511	Magnesium chloride	580	Magnesium gluconate

Based on the current food additive provisions in the standard, there is a technological need for calcium chloride and calcium lactate as firming agents in pickled fruits and vegetables. The eWG noted that calcium lactate is not classified as a firming agent in the GSFA. The eWG could not identify a justification for excluding firming agents listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7, or in Table 3 of the GSFA for use in pickled fruits and vegetables. However, the eWG could not identify a technological need for firming agents that are currently in the step process for inclusion in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3 or 04.2.2.7 of the GSFA with the exception of calcium chloride in food category 04.2.2.7. Other than calcium lactate, the eWG could not identify a technological need for other firming agents that are not listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7, or in Table 3 of the GSFA for use in pickled fruits and vegetables.

Flavour enhancers

Tables 1 and 2 of the GSFA list the following flavour enhancers for food categories 04.1.2.3, 04.1.2.10, 04.2.2.3 and 04.2.2.7:

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.1.2.3	950	Acesulfame potassium	200 mg/kg	161, 188	Adopted 2007
04.1.2.3	951	Aspartame	300 mg/kg	144, 191	Adopted 2007
04.1.2.3	961	Neotame	100 mg/kg	161	Adopted 2007
04.1.2.10	950	Acesulfame potassium	350 mg/kg	161, 188	Adopted 2007
04.1.2.10	951	Aspartame	1000 mg/kg	161, 191	Adopted 2007
04.1.2.10	961	Neotame	65 mg/kg	161	Adopted 2007
04.2.2.3	950	Acesulfame potassium	200 mg/kg	144, 188	Adopted 2007

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.2.2.3	951	Aspartame	300 mg/kg	144, 191	Adopted 2007
04.2.2.3	961	Neotame	10 mg/kg	144	Adopted 2007
04.2.2.7	950	Acesulfame potassium	1000 mg/kg	188	Adopted 2008
04.2.2.7	951	Aspartame	2500 mg/kg	161, 191	Adopted 2008
04.2.2.7	634	Calcium 5'-ribonucleotides	GMP		Step 4
04.2.2.7	627	Disodium 5'-guanylate	GMP		Step 4
04.2.2.7	631	Disodium 5'-inosinate	GMP		Step 4
04.2.2.7	635	Disodium 5'-ribonucleotides	GMP		Step 4
04.2.2.7	621	Monosodium l-glutamate	GMP		Step 4
04.2.2.7	961	Neotame	33 mg/kg	161	Adopted 2007
04.2.2.7	508	Potassium chloride	GMP		Step 4
04.2.2.7	957	Thaumatin	GMP		Step 4

Table 3 of the GSFA lists the following flavour enhancers:

INS	Additive Name	INS	Additive Name
508	Potassium chloride	630	Inosinic acid, 5'-
518	Magnesium sulfate	631	Disodium 5'-inosinate
580	Magnesium gluconate	632	Potassium 5'-inosinate
620	Glutamic acid, L(+)-	633	Calcium 5'-inosinate
621	Monosodium L-glutamate	634	Calcium 5'-ribonucleotides
622	Monopotassium L-glutamate	635	Disodium 5'-ribonucleotides
623	Calcium di-L-glutamate	957	Thaumatin
624	Monoammonium L-glutamate	968	Erythritol
625	Magnesium di-L-glutamate	1101(i)	Protease
626	Guanylic acid, 5'-	1101(ii)	Papain
627	Disodium 5'-guanylate	1101(iii)	Bromelain
628	Dipotassium 5'-guanylate	1104	Lipases
629	Calcium 5'-guanylate		

Based on the current food additive provisions in the standard, there is a technological need for monosodium L-glutamate as a flavour enhancer in pickled fruits and vegetables. The eWG could not identify a justification for excluding flavour enhancers listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7, or in Table 3 of the GSFA for use in pickled fruits and vegetables. However, the eWG could not identify a technological need for flavour enhancers that are currently in the step process for inclusion in food category 04.2.2.7 of the GSFA with the exception of monosodium L-glutamate in food category 04.2.2.7. The eWG also could not identify a technological need for other flavour enhancers that are not listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7, or in Table 3 of the GSFA for use in pickled fruits and vegetables.

Preservatives

Tables 1 and 2 of the GSFA list the following preservatives for food categories 04.1.2.3, 04.1.2.10, 04.2.2.3 and 04.2.2.7:

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.1.2.3	210-213	Benzoates	1000 mg/kg	13	Adopted 2001
04.1.2.3	385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2008
04.1.2.3	214, 218	Hydroxybenzoates, para-	800 mg/kg	27	Adopted 2012
04.1.2.3	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
04.1.2.3	262(ii)	Sodium diacetate	GMP		Step 7
04.1.2.3	200-203	Sorbates	1000 mg/kg	42	Adopted 2009
04.1.2.3	220-225, 227, 228, 539	Sulfites	100 mg/kg	44	Adopted 2006
04.1.2.10	210-213	Benzoates	1000 mg/kg	13	Adopted 2001
04.1.2.10	385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2008
04.1.2.10	214, 218	Hydroxybenzoates, para-	800 mg/kg	27	Adopted 2010
04.1.2.10	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2009
04.1.2.10	200-203	Sorbates	1000 mg/kg	42	Adopted 2009
04.1.2.10	220-225, 227, 228, 539	Sulfites	100 mg/kg	44	Adopted 2008
04.2.2.3	210-213	Benzoates	2000 mg/kg	13	Adopted 2001
04.2.2.3	385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2001
04.2.2.3	214, 218	Hydroxybenzoates, para-	1000 mg/kg	27	Adopted 2010
04.2.2.3	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.2.2.3	262(ii)	Sodium diacetate	GMP		Step 7
04.2.2.3	200-203	Sorbates	2000 mg/kg	42	Adopted 2012
04.2.2.3	220-225, 227, 228, 539	Sulfites	100 mg/kg	44	Adopted 2006
04.2.2.3	243	Lauric arginate ethyl ester	200 mg/kg		Adopted 2011
04.2.2.7	260	Acetic acid, glacial	GMP		Step 4
04.2.2.7	210-213	Benzoates	1000 mg/kg	13	Adopted 2001
04.2.2.7	385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2001
04.2.2.7	214, 218	Hydroxybenzoates, para-	300 mg/kg	27	Adopted 2012
04.2.2.7	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2010
04.2.2.7	262(i)	Sodium acetate	GMP		Step 4
04.2.2.7	200-203	Sorbates	1000 mg/kg	42	Adopted 2012
04.2.2.7	220-225, 227, 228, 539	Sulfites	500 mg/kg	44	Adopted 2006

Table 3 of the GSFA lists the following preservatives

INS	Additive Name	INS	Additive Name
260	Acetic acid, glacial	281	Sodium propionate
261	Potassium acetates	282	Calcium propionate
262(i)	Sodium acetate	283	Potassium propionate
263	Calcium acetate	290	Carbon dioxide
280	Propionic acid		

Based on the current food additive provisions in the standard, there is a technological need for sorbates, benzoates, para-hydroxybenzoates, and sulfites as preservatives in pickled fruits and vegetables. The eWG could not identify a justification for excluding preservatives listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7, or in Table 3 of the GSFA for use in pickled fruits and vegetables. However, the eWG could not identify a technological need for preservatives that are currently in the step process for inclusion in food categories 04.1.2.3, 04.2.2.3, or 04.2.2.7 of the GSFA. The eWG also could not identify a technological need for other preservatives that are not listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7, or in Table 3 of the GSFA for use in pickled fruits and vegetables.

Sequestrants

Tables 1 and 2 of the GSFA list the following sequestrants for food categories 04.1.2.3, 04.1.2.10, 04.2.2.3 and 04.2.2.7:

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.1.2.3	472e	Diacetyltartaric and fatty acid esters of glycerol	1000 mg/kg		Adopted 2005
04.1.2.3	385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2008
04.1.2.3	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
04.1.2.3	262(ii)	Sodium diacetate	GMP		Step 7
04.1.2.3	220-225, 227, 228, 539	Sulfites	100 mg/kg	44	Adopted 2006
04.1.2.3	334; 335(i),(ii); 336(i),(ii); 337	Tartrates	GMP	45	Step 7
04.1.2.10	472e	Diacetyltartaric and fatty acid esters of glycerol	2500 mg/kg		Adopted 2005
04.1.2.10	385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2008
04.1.2.10	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2009
04.1.2.10	220-225, 227, 228, 539	Sulfites	100 mg/kg	44	Adopted 2008
04.1.2.10	334; 335(i),(ii); 336(i),(ii); 337	Tartrates	GMP	45	Step 7
04.2.2.3	472e	Diacetyltartaric and fatty acid esters of glycerol	2500 mg/kg		Adopted 2005
04.2.2.3	385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2001
04.2.2.3	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2012
04.2.2.3	262(ii)	Sodium diacetate	GMP		Step 7
04.2.2.3	220-225, 227, 228, 539	Sulfites	100 mg/kg	44	Adopted 2006
04.2.2.3	334; 335(i),(ii); 336(i),(ii); 337	Tartrates	15000 mg/kg	45	Step 7
04.2.2.7	400	Alginic acid	GMP		Step 4

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.2.2.7	330	Citric acid	GMP		Step 4
04.2.2.7	472c	Citric and fatty acid esters of glycerol	GMP		Step 4
04.2.2.7	472e	Diacetyltartaric and fatty acid esters of glycerol	2500 mg/kg		Adopted 2005
04.2.2.7	385, 386	Ethylene diamine tetra acetates	250 mg/kg	21	Adopted 2001
04.2.2.7	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2010
04.2.2.7	338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542	Phosphates	2200 mg/kg	33	Adopted 2010
04.2.2.7	262(i)	Sodium acetate	GMP		Step 4
04.2.2.7	576	Sodium gluconate	GMP		Step 4
04.2.2.7	420(i)	Sorbitol	70000 mg/kg		Step 4
04.2.2.7	220-225, 227, 228, 539	Sulfites	500 mg/kg	44	Adopted 2006
04.2.2.7	334; 335(i),(ii); 336(i),(ii); 337	Tartrates	10000 mg/kg	45	Step 4
04.2.2.7	331(iii)	Trisodium citrate	GMP		Step 4
04.2.2.7	420(ii)	Sorbitol syrup	70000 mg/kg		Step 4

Table 3 of the GSFA lists the following sequestrants:

INS	Additive Name	INS	Additive Name
262(i)	Sodium acetate	404	Calcium alginate
330	Citric acid	420(i)	Sorbitol
331(i)	Sodium dihydrogen citrate	420(ii)	Sorbitol syrup
331(iii)	Trisodium citrate	472a	Acetic and fatty acid esters of glycerol
332(i)	Potassium dihydrogen citrate	472b	Lactic and fatty acid esters of glycerol
332(ii)	Tripotassium citrate	472c	Citric and fatty acid esters of glycerol
333(iii)	Tricalcium citrate	516	Calcium sulfate
400	Alginic acid	575	Glucono delta-lactone

INS	Additive Name	INS	Additive Name
401	Sodium alginate	576	Sodium gluconate
402	Potassium alginate	577	Potassium gluconate
403	Ammonium alginate	578	Calcium gluconate

Based on the current standard there is a need for ethylene diamine tetra acetates (385, 386) and phosphates (338; 339(i)-(iii); 340(i)-(iii); 341(i)-(iii); 342(i),(ii); 343(i)-(iii); 450(i)-(iii),(v)-(vii); 451(i),(ii); 452(i)-(v); 542) as sequestrants in pickled fruits and vegetables. The eWG could not identify a justification for excluding sequestrants listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7, or Table 3 of the GSFA in pickled fruits and vegetables. However, the eWG could not identify a technological need for sequestrants that are currently in the step process for inclusion in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, or 04.2.2.7 of the GSFA, with the exception of citric acid in food category 04.2.2.7. The eWG also could not identify a technological need in pickled fruits and vegetables for other sequestrants not listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7, or Table 3 of the GSFA.

Sweeteners

Tables 1 and 2 of the GSFA list the following sweeteners for food categories 04.1.2.3, 04.1.2.10, 04.2.2.3 and 04.2.2.7:

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.1.2.3	950	Acesulfame potassium	200 mg/kg	16, 188	Adopted 2007
04.1.2.3	951	Aspartame	300 mg/kg	144, 191	Adopted 2007
04.1.2.3	962	Aspartame-acesulfame salt	450 mg/kg	113, 144	Step 3
04.1.2.3	961	Neotame	100 mg/kg	161	Adopted 2007
04.1.2.3	954(i)-(iv)	Saccharins	160 mg/kg	144	Adopted 2007
04.1.2.3	955	Sucralose (trichlorogalactosucrose)	180 mg/kg	144	Adopted 2007
04.1.2.3	960	Steviol glycosides	100 mg/kg	26	Adopted 2011
04.1.2.10	950	Acesulfame potassium	350 mg/kg	161, 188	Adopted 2007
04.1.2.10	951	Aspartame	1000 mg/kg	161, 191	Adopted 2007
04.1.2.10	962	Aspartame-acesulfame salt	790 mg/kg	113	Step 3
04.1.2.10	961	Neotame	65 mg/kg	161	Adopted 2007
04.1.2.10	954(i)-(iv)	Saccharins	160 mg/kg	161	Adopted 2008
04.1.2.10	955	Sucralose (trichlorogalactosucrose)	150 mg/kg	161	Adopted 2007
04.1.2.10	960	Steviol glycosides	115 mg/kg	26	Adopted 2011
04.2.2.3	950	Acesulfame potassium	200 mg/kg	144, 188	Adopted 2007
04.2.2.3	951	Aspartame	300 mg/kg	144, 191	Adopted 2007
04.2.2.3	962	Aspartame-acesulfame salt	200 mg/kg	113, 161	Adopted 2009

Food Cat.	INS	GSFA Mainterm	ML	Notes	Step
04.2.2.3	961	Neotame	10 mg/kg	Note 144	Adopted 2007
04.2.2.3	954(i)-(iv)	Saccharins	160 mg/kg	144	Adopted 2007
04.2.2.3	955	Sucralose (trichlorogalactosucrose)	400 mg/kg		Adopted 2007
04.2.2.3	960	Steviol glycosides	330 mg/kg	26	Adopted 2011
04.2.2.7	950	Acesulfame potassium	1000 mg/kg	188	Adopted 2008
04.2.2.7	951	Aspartame	2500 mg/kg	161, 191	Adopted 2008
04.2.2.7	962	Aspartame-acesulfame salt	2270 mg/kg	113	Step 3
04.2.2.7	953	Isomalt (hydrogenated isomaltulose)	50000 mg/kg		Step 4
04.2.2.7	966	Lactitol	10000 mg/kg		Step 4
04.2.2.7	965(i)	Maltitol	100000 mg/kg		Step 4
04.2.2.7	961	Neotame	33 mg/kg	161	Adopted 2007
04.2.2.7	954(i)-(iv)	Saccharins	200 mg/kg	161	Adopted 2008
04.2.2.7	420(i)	Sorbitol	70000 mg/kg		Step 4
04.2.2.7	955	Sucralose (trichlorogalactosucrose)	580 mg/kg	161	Adopted 2008
04.2.2.7	957	Thaumatin	GMP		Step 4
04.2.2.7	967	Xylitol	10000 mg/kg		Step 4
04.2.2.7	420(ii)	Sorbitol syrup	70000 mg/kg		Step 4
04.2.2.7	965(ii)	Maltitol syrup	100000 mg/kg		Step 4
04.2.2.7	960	Steviol glycosides	200 mg/kg	26	Adopted 2011

Table 3 of the GSFA lists the following sweeteners:

INS	Additive Name	INS	Additive Name
420(i)	Sorbitol	965(i)	Maltitol
420(ii)	Sorbitol syrup	965(ii)	Maltitol syrup
421	Mannitol	966	Lactitol
953	Isomalt (Hydrogenated isomaltulose)	967	Xylitol
957	Thaumatin	968	Erythritol
964	Polyglycitol syrup		

Based on the current food additive provisions in the standard, there is a technological need for acesulfame potassium, aspartame, saccharins, and sucralose as sweeteners in pickled fruits and vegetables. The eWG could not identify a justification for excluding sweeteners listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7, or in Table 3 of the GSFA for use in pickled fruits and vegetables. However, the eWG could not identify a technological need for sweeteners that are currently in the step process for inclusion in food category 04.2.2.7 of the GSFA. The eWG also could not identify a technological need for other sweeteners that are not listed in food categories 04.1.2.3, 04.1.2.10, 04.2.2.3, 04.2.2.7, or in Table 3 of the GSFA for use in pickled fruits and vegetables.

ANNEX

GENERAL GUIDANCE FOR THE PROVISION OF COMMENTS

In order to facilitate the compilation and prepare a more useful comments' document, Members and Observers, which are not yet doing so, are requested to provide their comments under the following headings:

(i) General Comments

(ii) Specific Comments

Specific comments should include a reference to the relevant section and/or paragraph of the document that the comments refer to.

When changes are proposed to specific paragraphs, Members and Observers are requested to provide their proposal for amendments accompanied by the related rationale. New texts should be presented in underlined/bold font and deletion in ~~strikethrough font~~.

In order to facilitate the work of the Secretariats to compile comments, Members and Observers are requested to refrain from using colour font/shading as documents are printed in black and white and from using track change mode, which might be lost when comments are copied/pasted into a consolidated document.

In order to reduce the translation work and save paper, Members and Observers are requested not to reproduce the complete document but only those parts of the texts for which any change and/or amendments is proposed.