

GRAS

Flavoring Substances

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29. GRAS FLAVORING SUBSTANCES: This list of substances will appear in the 29th publication authored by the Expert Panel of the Flavor and Extract Manufacturers Association on recent progress in the consideration of flavoring ingredients “generally recognized as safe” (GRAS) under conditions of their intended use in food flavorings in accordance with the 1958 Food Additives Amendment to the Federal Food, Drug and Cosmetic Act. For more information on FEMA GRAS see “About the FEMA GRAS Program” on the FEMA website.

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GRAS FLAVORING SUBSTANCES 29

STATEMENT REGARDING GENERALLY RECOGNIZED AS SAFE STATUS OF ETHYL NITRITE

The FEMA GRAS status of ethyl nitrite (FEMA 2446) under the conditions of intended use as a flavor ingredient was reviewed by the FEMA Expert Panel as part of the continual reevaluation of FEMA GRAS status. The Expert Panel concluded that additional data, including further examination of the vascular effects observed in available toxicity studies as well as OECD- and GLP-compliant *in vitro* and *in vivo* genotoxicity testing, were required for the continuation of its GRAS status. Until such studies become available and further evaluated, the flavor ingredient ethyl nitrite has been removed from the FEMA GRAS list.

TABLE 1 – Primary Names & Synonyms

Primary names (in boldface) & Synonyms (in lightface).

FEMA NO.	SUBSTANCE PRIMARY NAMES AND SYNONYMS
4879	1-(3,5,5,6,8-Hexamethyl-5,6,7,8-tetrahydronaphthalen-2-yl)ethanone AHTN 6-Acetyl-1,1,2,4,4,7-hexamethyltetralin 6-Acetyl-1,1,2,4,4,7-hexamethyltetraline 7-Acetyl-1,1,3,4,4,6-hexamethyl-1,2,3,4-tetra-hydronaphthalene 7-Acetyl-1,1,3,4,4,6-hexamethyltetralin 7-Acetyl-1,1,3,4,4,6-hexamethyltetraline Acetyl hexamethyl tetrahydronaphthalene
4880	2-(4-Ethylphenoxy)-N-(1H-pyrazol-3-yl)-N-(thiophen-2-ylmethyl)acetamide 2-(4-Ethylphenoxy)-N-(1H-pyrazol-5-yl)-N-(thiophen-2-ylmethyl)acetamide
4881	N-(3-Hydroxy-4-methoxyphenyl)-2-isopropyl-5,5-dimethylcyclohexanecarboxamide
4882	N-(4-(Cyanomethyl)phenyl)-2-isopropyl-5,5-dimethylcyclohexanecarboxamide
4883	5-Allyl-L-cysteine sulfoxide Alliin (S)-3-(Allylsulphinyl)-L-alanine
4884	6-Methyl-5-hepten-2-ol (+/-)-6-Methyl-5-hepten-2-ol Sulcatol (+/-)-Sulcatol 2-Methyl-2-hepten-6-ol 6-Hydroxy-2-methyl-2-heptene 6-Methylhept-5-en-2-ol
4885	trans-5-Dodecenal (5E)-Dodecenal
4886	cis-6-Dodecenal (Z)-6-Dodecenal
4887	cis-9-Dodecenal (9Z)-Dodecenal
4888	Mixture of 5-hydroxy-4-(4'-hydroxy-3'-methoxyphenyl)-7-methylchroman-2-one and 7-hydroxy-4-(4'-hydroxy-3'-methoxyphenyl)-5-methylchroman-2-one
4889	Methyl propyl sulfide 2-Thiapentane
4890	3-p-Menthen-7-al
4891	(E)-3-Methyl-4-dodecenoic acid
4892	cis-2-Hexylcyclopropaneacetic acid
4893	2-Ethoxy-4-(hydroxymethyl)phenol 3-Ethoxy-4-hydroxybenzyl alcohol Ethyl vanillyl alcohol p-(Hydroxymethyl)guethol
4894	2-Mercapto-3-methyl-1-butanol
4895	Rebaudioside M Rebaudioside X
4896	N-(2-Hydroxy-2-phenylethyl)-2-isopropyl-5,5-dimethylcyclohexane-1-carboxamide
4897	Allulose D-Psicose
4898	trans-5-Octenal (5E)-5-Octenal (E)-5-Octen-1-al
4899	N-(1-((4-Amino-2,2-dioxido-1H-benzo[c][1,2,6]thiadiazin-5-yl)oxy)-2-methylpropan-2-yl)-2,6-dimethylisonicotinamide (sulfate salt)

FEMA NO.	SUBSTANCE PRIMARY NAMES AND SYNONYMS
4900	Hexyl propyl disulfide 1-Hexyl propyl disulfide 1-Hexyl-2-propyldisulfane 4,5-Dithiaundecane
4901	O-Ethyl 5-(3-methylbut-2-en-1-yl)thiocarbonate
4902	3-Methyl-2(5H)-furanone α -Methyl- γ -crotonolactone 2-Methyl-2-butenolide 2-Methylbut-2-en-4-olide 4-Hydroxy-2-methyl-2-butenic acid γ -lactone 4-Hydroxy-2-methyl-2-butenic acid lactone
4903	Ethyl 3-methyl-2-oxopentanoate Ethyl 2-oxo-3-methylpentanoate Ethyl 2-oxo-3-methylvalerate
4904	trans-Tetradec-4-enal
4905	2,6-Dimethylheptenyl formate
4906	L-Carnitine tartrate Levocarnitine tartrate L-Carnitine-L-tartrate
4907	Corynebacterium glutamicum corn syrup fermentation product
4908	Corynebacterium stationis corn syrup fermentation product
4909	Glucosylated steviol glycosides, 70-80%
4910	Glucosylated steviol glycosides, 40%
4911	Stevia extract stevioside, 70%
4912	Hibiscus blossom extract <i>Hibiscus sabdariffa</i> L. extract Roselle extract
4913	3,7-Dimethyl-2-methyleneoct-6-en-1-ol
4914	bis-(3-Methyl-2-butenyl)disulfide bis-(3-Methyl-2-buten-1-yl)disulfide
4915	(5Z)-3,4-Dimethyl-5-propylidene-2(5H)-furanone
4916	2-Methyl-3-butene-2-thiol α,α -Dimethyl allyl mercaptan
4917	(Z)-9-Dodecenoic acid (9Z)-9-Dodecenoic acid 9-Dodecenoic acid, (Z)- cis-9-Dodecenoic acid Lauroleic acid
4918	Tridec-5-enal
4919	Refined soybean oil extract
4920	1-Ethyl-2-(1-pyrrolylmethyl)pyrrole
4921	Rebaudioside D 95%
4922	Rebaudioside M 95% Rebaudioside X 95%

TABLE 1 CONTINUED - Primary Names & Synonyms

Primary names (in boldface) & Synonyms (in lightface).

FEMA NO.	SUBSTANCE PRIMARY NAMES AND SYNONYMS
4923	Buchu leaves extract <i>Barosma betulina</i> Bartl. et Wendl. leaves extract <i>B. crenulata</i> (L.) Hook leaves extract <i>B. serratifolia</i> Willd. leaves extract
4924	Peppermint oil terpeneless <i>Mentha piperita</i> L. oil terpeneless
4925	Spearmint oil terpeneless <i>Mentha spicata</i> L. oil terpeneless
4926	(Z)-8-Pentadecenal
4927	4,7-Decadienal
4928	2-Methylthiophene
4929	4-Methylidene-2-(2-methylprop-1-enyl)oxane
4930	4-Isopropoxycinnamaldehyde
4931	Glucosylated steviol glycosides, 90%
4932	<i>Chaenomeles speciosa</i> leaf extract
4933	<i>Eriobotrya japonica</i> leaves extract
4934	Sodium gluconate <i>D</i> -Gluconic acid, monosodium salt Sodium <i>D</i> -gluconate
4935	3-Methylbutane-1,3-dithiol
4936	Rebaudioside E ≥85%
4937	Rebaudioside I 95%
4938	5-Methyl 5-(1-ethoxyethoxy)tetradecanethioate
4939	5-Methyl 5-(1-ethoxyethoxy)decanethioate
4940	β-Bisabolene ≥88%
4941	Nootkatone complex
4942	Modified guaiac wood extract <i>Guaiacum</i> spp. wood extract

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TABLE 2 – Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for new FEMA GRAS Flavoring Substances on which the FEMA Expert Panel based its judgments that the substances are generally recognized as safe (GRAS)

	1-(3,5,5,6,8-Hexamethyl-5,6,7,8-tetrahydronaphthalen-2-yl)ethanone	2-(4-Ethylphenoxy)-N-(1H-pyrazol-3-yl)-N-(thiophen-2-ylmethyl)acetamide	N-(3-Hydroxy-4-methoxyphenyl)-2-isopropyl-5,5-dimethylcyclohexanecarboxamide	N-(4-(Cyanomethyl)phenyl)-2-isopropyl-5,5-dimethylcyclohexanecarboxamide	5-Allyl-L-cysteine sulfoxide	6-Methyl-5-hepten-2-ol	trans-5-Dodecenal	cis-6-Dodecenal	cis-9-Dodecenal	Mixture of 5-hydroxy-4-(4-hydroxy-3-methoxyphenyl)-7-methylchroman-2-one and 7-hydroxy-4-(4-hydroxy-3-methoxyphenyl)-5-methylchroman-2-one
CATEGORY/FEMA NO.	4879	4880	4881	4882	4883	4884	4885	4886	4887	4888
BAKED GOODS	0/0	3/15	0/0	0/0	100/500	10/50	0/0	0/0	0/0	45/60
BEVERAGES, NON-ALCOHOLIC	3/7.5	1/3	0.1/10	0.1/10	0/0	5/25	0.03/0.3	0.02/0.5	0.01/0.4	30/45
BEVERAGES, ALCOHOLIC	0/0	2/6	0.1/10	0.1/10	0/0	10/50	0.15/0.6	0.1/1.5	0.06/1	45/60
BREAKFAST CEREALS	0/0	3/15	0/0	0/0	0/0	5/25	0/0	0/0	0/0	45/60
CHEESES	0/0	0/0	0/0	0/0	200/1000	7/35	0/0	0/0	0/0	0/0
CHEWING GUM	1/2	75/150	1/100	1/100	0/0	0/0	0.3/1	0.25/2.5	0.25/2.5	0/0
CONDIMENTS AND RELISHES	0/0	3/15	0.1/10	0.1/10	100/500	5/25	0/0	0/0	0/0	30/45
CONFECTIONS AND FROSTINGS	0/0	5/30	1/100	1/100	0/0	10/50	0.15/0.6	0.1/1	0.06/1	45/60
EGG PRODUCTS	0/0	3/15	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
FATS AND OILS	0/0	3/15	0.05/5	0.05/5	800/5000	5/25	0.15/0.6	0.1/1	0.05/1	0/0
FISH PRODUCTS	0/0	0/0	0/0	0/0	100/500	2/10	0/0	0/0	0/0	0/0
FROZEN DAIRY	0/0	1/3	0.1/10	0.1/10	0/0	0/0	0.03/0.3	0.02/0.5	0.01/0.5	45/60
FRUIT ICES	1/2	1/3	0.1/10	0.1/10	0/0	10/50	0.03/0.3	0.02/0.5	0.01/0.25	30/45
GELATINS AND PUDDINGS	0/0	1/3	0.05/5	0.05/5	0/0	0/0	0.03/0.3	0.02/0.5	0.01/0.25	45/60
GRANULATED SUGAR	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	45/60
GRAVIES	0/0	3/15	0.05/5	0.05/5	0/0	5/25	0/0	0/0	0/0	0/0
HARD CANDY	1/2	5/15	0.1/10	0.1/10	0/0	0/0	0.15/0.6	0.1/1	0.05/1	30/45
IMITATION DAIRY	0/0	1/3	0.05/5	0.05/5	0/0	7/35	0/0	0/0	0/0	30/45
INSTANT COFFEE AND TEA	0/0	1/3	0.01/1	0.01/1	0/0	5/25	0.01/0.5	0.02/0.5	0.01/0.5	0/0
JAMS AND JELLIES	0/0	1/3	0.1/10	0.1/10	0/0	20/100	0.15/0.6	0.02/0.5	0.01/0.5	45/60
MEAT PRODUCTS	0/0	3/15	0/0	0/0	200/500	2/10	0/0	0/0	0/0	0/0
MILK PRODUCTS	0/0	1/3	0.05/5	0.05/5	0/0	7/35	0/0	0/0	0/0	45/60
NUT PRODUCTS	0/0	1/3	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
OTHER GRAINS	0/0	0/0	0/0	0/0	100/500	5/25	0/0	0/0	0/0	0/0
POULTRY	0/0	3/15	0/0	0/0	200/500	2/10	0/0	0/0	0/0	0/0
PROCESSED FRUITS	0/0	1/3	0/0	0/0	0/0	7/35	0.03/0.3	0.02/0.5	0.01/0.5	45/60
PROCESSED VEGETABLES	0/0	3/15	0/0	0/0	100/500	0/0	0/0	0/0	0/0	0/0
RECONSTITUTED VEGETABLE PROTEIN	0/0	3/15	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SEASONINGS AND FLAVORS	0/0	3/15	3/900	3/900	200/1500	5/25	0.06/0.6	0.04/1	0.02/1	0/0
SNACK FOODS	0/0	3/15	0.1/10	0.1/10	100/500	10/50	0/0	0/0	0/0	0/0
SOFT CANDY	1/2	5/15	0.1/10	0.1/10	0/0	0/0	0.05/1	0.1/1	0.05/1	30/45
SOUPS	0/0	3/15	0.1/10	0.1/10	200/2500	5/25	0/0	0/0	0/0	0/0
SUGAR SUBSTITUTES	0/0	0/0	0.005/0.5	0.005/0.5	0/0	0/0	0/0	0/0	0/0	45/60
SWEET SAUCES	0/0	5/15	0.5/50	0.5/50	0/0	5/25	0/0	0/0	0/0	0/0

GRAS FLAVORING SUBSTANCES 29

TABLE 2 CONTINUED - Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for new FEMA GRAS Flavoring Substances on which the FEMA Expert Panel based its judgments that the substances are generally recognized as safe (GRAS)

	Methyl propyl sulfide	3-p-Menthen-7-ol	(E)-3-Methyl-4-dodecenoic acid	Hexyl cyclopropaneacetic acid cis-2-	2-Ethoxy-4-(hydroxymethyl)phenol	2-Mercapto-3-methyl-1-butanol	Rebaudioside M	N-(2-Hydroxy-2-phenylethyl)-2-isopropyl-5,5-dimethylcyclohexane-1-carboxamide	Allulose	trans-5-Octenal	N-(1-((4-Amino-2,2-dioxido-1H-benzo[c][1,2,6]thiadiazin-5-yl)oxy)-2-methylpropan-2-yl)-2,6-dimethylisonicotinamide (sulfate salt)
CATEGORY/FEMA NO.	4889	4890	4891	4892	4893	4894	4895	4896	4897	4898	4899
BAKED GOODS	0.1/1	0.001/0.01	0.1/1	0.001/0.01	50/200	0.001/1	0/0	0/0	0/0	5/50	0/0
BEVERAGES, NON-ALCOHOLIC	0.002/0.1	0.0003/0.005	0.001/0.1	0.0002/0.005	25/100	0.0001/0.1	15/20	1/100	15000/20000	2.5/25	18/27
BEVERAGES, ALCOHOLIC	0.006/0.3	0.0003/0.005	0.001/0.1	0.0002/0.005	20/50	0.0001/0.1	0/0	1/100	15000/15000	2.5/25	18/27
BREAKFAST CEREALS	0.01/1	0/0	0/0	0/0	30/50	0/0	0/0	0/0	0/0	10/100	20/27
CHEESES	0.01/2	0.001/0.01	0/0	0/0	5/10	0/0	0/0	0/0	0/0	0/0	0/0
CHEWING GUM	0/0	0.001/0.01	0.001/0.1	0.001/0.01	1000/2500	0/0	0/0	10/1000	0/0	50/250	27/27
CONDIMENTS AND RELISHES	0.01/2	0.01/0.1	0/0	0.001/0.01	10/30	0/0	0/0	1/100	0/0	0/0	20/27
CONFECTIONS AND FROSTINGS	0/0	0.001/0.01	0.001/0.3	0.0005/0.005	30/50	0/0	0/0	10/1000	0/0	5/50	27/27
EGG PRODUCTS	0.01/1	0/0	0.001/0.3	0.0005/0.005	5/10	0/0	0/0	0/0	0/0	0/0	0/0
FATS AND OILS	0.01/0.1	0.01/0.1	0.01/1	0.01/0.1	30/50	0/0	0/0	0.5/50	0/0	3/30	0/0
FISH PRODUCTS	0.01/2	0/0	0.001/0.3	0.001/0.01	5/10	0/0	0/0	0/0	0/0	3/30	0/0
FROZEN DAIRY	0/0	0.001/0.01	0.001/0.2	0.001/0.01	20/50	0.0001/0.1	15/20	1/100	0/0	5/50	18/27
FRUIT ICES	0/0	0.0005/0.01	0.001/0.2	0.0005/0.005	5/10	0/0	15/20	1/100	0/0	5/50	18/27
GELATINS AND PUDDINGS	0/0	0.0005/0.01	0.01/0.1	0.0005/0.005	40/80	0.0001/0.1	0/0	0.5/50	0/0	10/100	18/27
GRANULATED SUGAR	0/0	0/0	0/0	0/0	5/10	0/0	0/0	0/0	0/0	0/0	0/0
GRAVIES	0/0	0/0	0.001/0.05	0/0	5/10	0/0	0/0	0.5/50	0/0	0.5/5	0/0
HARD CANDY	0/0	0.001/0.01	0.001/0.3	0.001/0.01	200/500	0/0	0/0	1/100	0/0	10/50	27/27
IMITATION DAIRY	0/0	0/0	0.0001/0.05	0.001/0.01	20/50	0/0	15/20	0.5/50	0/0	3/30	10/27
INSTANT COFFEE AND TEA	0.01/0.1	0/0	0.0001/0.1	0.0002/0.005	15/30	0.0001/0.1	15/20	0.1/10	0/0	5/50	10/27
JAMS AND JELLIES	0/0	0.0005/0.01	0/0	0.0005/0.005	20/50	0/0	0/0	1/100	0/0	5/50	18/27
MEAT PRODUCTS	0.01/2	0.001/0.01	0/0	0/0	5/10	0/0	0/0	0/0	0/0	0/0	0/0
MILK PRODUCTS	0.01/0.5	0/0	0.001/0.05	0.001/0.01	20/50	0.0001/0.01	15/20	0.5/50	15000/15000	3/30	18/27
NUT PRODUCTS	0.01/2	0/0	0.001/0.05	0.001/0.01	60/200	0/0	0/0	0/0	0/0	3/30	0/0
OTHER GRAINS	0.01/0.2	0/0	0/0	0/0	5/10	0/0	0/0	0/0	0/0	0/0	0/0
POULTRY	0.01/2	0/0	0/0	0/0	5/10	0/0	0/0	0/0	0/0	0/0	0/0
PROCESSED FRUITS	0/0	0/0	0/0	0/0	20/50	0/0	15/20	0/0	0/0	0/0	0/0
PROCESSED VEGETABLES	0.01/0.5	0/0	0/0	0/0	5/10	0/0	0/0	0/0	0/0	0/0	0/0
RECONSTITUTED VEGETABLE PROTEIN	0.01/0.5	0/0	0/0	0/0	5/10	0/0	0/0	0/0	0/0	0/0	0/0
SEASONINGS AND FLAVORS	0.001/2	0.05/0.3	0.01/2	0.01/0.2	100/200	0/0	0/0	30/9000	0/0	0/0	0/0
SNACK FOODS	0.2/2	0.003/0.1	0.001/0.3	0.001/0.01	20/50	0/0	0/0	1/100	0/0	15/150	0/0
SOFT CANDY	0/0	0.001/0.01	0.001/0.3	0.001/0.01	100/300	0/0	0/0	1/100	0/0	10/100	20/27
SOUPS	0.02/2	0.0005/0.01	0.0001/0.3	0.0002/0.005	5/10	0/0	0/0	1/100	0/0	0.5/5	0/0
SUGAR SUBSTITUTES	0/0	0/0	0.001/0.05	0/0	10/30	0/0	0/0	0.05/5	0/0	0/0	0/0
SWEET SAUCES	0/0	0.001/0.01	0/0	0.001/0.01	10/30	0/0	0/0	5/500	0/0	10/100	18/27

GRAS FLAVORING SUBSTANCES 29

TABLE 2 CONTINUED - Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for new FEMA GRAS Flavoring Substances on which the FEMA Expert Panel based its judgments that the substances are generally recognized as safe (GRAS)

	Hexyl propyl disulfide	O-Ethyl 5-(3-methylbut-2-en-1-yl)thiocarbonate	3-Methyl-2(5H)-furanone	Ethyl 3-methyl-2-oxopentanoate	trans-Tetradec-4-enal	2,6-Dimethylheptenyl formate	L-Carnitine tartrate	Corynebacterium glutamicum com syrup fermentation product	Corynebacterium stationis com syrup fermentation product	Glucosylated xeriol glycosides, 70-80%	Glucosylated xeriol glycosides, 40%
CATEGORY/FEMA NO.	4900	4901	4902	4903	4904	4905	4906	4907	4908	4909	4910
BAKED GOODS	0.4/20	0/0	0.01/20	10/100	0.5/35	0.5/30	750/1250	0/0	0/0	0/0	30/135
BEVERAGES, NON-ALCOHOLIC	0.1/10	0.0001/0.003	0.001/10	5/50	0.1/10	0.1/5	750/1250	0/0	0/0	55/65	30/135
BEVERAGES, ALCOHOLIC	0.3/30	0.0002/0.006	0.001/10	2.5/25	0.3/20	0.3/15	750/1250	0/0	0/0	0/0	30/135
BREAKFAST CEREALS	0.2/20	0.005/0.015	0/0	5/50	0.3/25	0.3/20	0/0	0/0	0/0	0/0	30/135
CHEESES	0.3/30	0/0	0/0	0/0	0.1/10	0.1/5	0/0	0/0	0/0	0/0	30/135
CHEWING GUM	1/30	0/0	0.01/20	10/100	2.5/55	2.5/50	0/0	0/0	0/0	0/0	30/135
CONDIMENTS AND RELISHES	0.5/30	0/0	0/0	0/0	0.3/20	0.3/15	750/1250	3400/5100	1120/1680	0/0	30/135
CONFECTIONS AND FROSTINGS	0.1/10	0.005/0.015	0/0	5/50	0.2/15	0.2/10	0/0	0/0	0/0	0/0	30/135
EGG PRODUCTS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
FATS AND OILS	0.1/30	0/0	0/0	5/50	0.3/20	0.3/15	750/1250	3400/5100	1120/1680	0/0	30/135
FISH PRODUCTS	0.1/30	0/0	0/0	0/0	0.3/20	0.3/15	750/1250	1800/2700	600/900	0/0	0/0
FROZEN DAIRY	0.1/10	0.005/0.015	0.001/10	5/50	0.5/25	0.5/20	0/0	0/0	0/0	55/65	30/135
FRUIT ICES	0.1/10	0/0	0/0	5/50	0.4/25	0.4/20	0/0	0/0	0/0	0/0	30/135
GELATINS AND PUDDINGS	0.1/10	0.005/0.015	0/0	5/50	0.4/25	0.4/20	0/0	0/0	0/0	0/0	30/135
GRANULATED SUGAR	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
GRAVIES	0.2/40	0/0	0/0	0/0	0.2/25	0.2/20	750/1250	1667/2500	847/1270	0/0	30/135
HARD CANDY	0.1/15	0.005/0.15	0.01/20	10/100	0.3/25	0.3/20	0/0	0/0	0/0	0/0	30/135
IMITATION DAIRY	0/0	0.0001/0.003	0/0	2.5/25	0/0	0/0	0/0	0/0	0/0	55/65	30/135
INSTANT COFFEE AND TEA	0.1/10	0.0001/0.003	0.001/10	5/50	0.3/25	0.3/20	0/0	0/0	0/0	55/65	30/135
JAMS AND JELLIES	0.1/15	0.005/0.015	0/0	2.5/25	0.5/35	0.5/30	0/0	0/0	0/0	0/0	30/135
MEAT PRODUCTS	0.2/35	0/0	0/0	0/0	0.2/15	0.2/10	750/1250	1800/2700	600/900	0/0	0/0
MILK PRODUCTS	0.1/10	0.0001/0.003	0.001/10	2.5/25	0.3/15	0.3/10	0/0	0/0	0/0	55/65	30/135
NUT PRODUCTS	0.1/20	0.005/0.015	0/0	5/50	0.2/10	0.2/5	0/0	0/0	0/0	0/0	30/135
OTHER GRAINS	0/0	0/0	0/0	5/50	0/0	0/0	750/1250	0/0	0/0	0/0	30/135
POULTRY	0.2/40	0/0	0/0	0/0	0.3/15	0.3/10	750/1250	0/0	0/0	0/0	0/0
PROCESSED FRUITS	0.1/40	0/0	0/0	0/0	0.4/20	0.4/15	0/0	0/0	0/0	0/0	30/135
PROCESSED VEGETABLES	0.1/40	0/0	0/0	0/0	0/0	0/0	750/1250	0/0	0/0	0/0	30/135
RECONSTITUTED VEGETABLE PROTEIN	0.1/40	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SEASONINGS AND FLAVORS	50/500	0/0	0/0	10/100	20/100	20/100	0/0	2667/4000	893/1340	0/0	30/135
SNACK FOODS	0.1/50	0.005/0.015	0/0	2.5/25	0.3/20	0.3/15	750/1250	0/0	0/0	0/0	30/135
SOFT CANDY	0.1/15	0.005/0.015	0.01/20	5/50	0.3/20	0.3/20	0/0	0/0	0/0	0/0	30/135
SOUPS	0.1/40	0/0	0/0	2.5/25	0.2/25	0.2/20	750/1250	1667/2500	847/1270	0/0	30/135
SUGAR SUBSTITUTES	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SWEET SAUCES	0.1/20	0.005/0.015	0/0	2.5/25	0.3/25	0.3/20	0/0	0/0	0/0	0/0	30/135

GRAS FLAVORING SUBSTANCES 29

TABLE 2 CONTINUED - Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for new FEMA GRAS Flavoring Substances on which the FEMA Expert Panel based its judgments that the substances are generally recognized as safe (GRAS)

	Stevia extract stevioside, 70%	Hibiscus blossom extract	3,7-Dimethyl-2-methylenecyclohex-1-ene	bis-(3-Methyl-2-butenyl) disulfide	(5Z)-3,4-Dimethyl-5-propylidene-2(5H)-furanone	2-Methyl-3-butene-2-thiol	(Z)-9-Dodecenoic acid	Tridec-5-enal	Refined soybean oil extract	1-Ethyl-2-(1-pyrrolyl)methylpyrrole
CATEGORY/FEMA NO.	4911	4912	4913	4914	4915	4916	4917	4918	4919	4920
BAKED GOODS	100/200	600/5000	5/50	0.1/1	0/0	0.001/0.05	1/10	0.5/35	1/5	0.00001/0.002
BEVERAGES, NON-ALCOHOLIC	50/50	300/10000	1/10	0.005/0.05	0.01/0.1	0.0001/0.002	0.02/0.2	0.1/10	0.2/2	0.00001/0.002
BEVERAGES, ALCOHOLIC	50/50	0/0	1/10	0.005/0.05	0.01/0.1	0.0001/0.002	0.02/0.2	0.3/20	0.2/2	0.00001/0.002
BREAKFAST CEREALS	100/250	600/5000	0/0	0.1/1	0/0	0/0	0.05/5	0.3/25	1/5	0/0
CHEESES	50/50	0/0	2/20	0.1/1	0/0	0.0005/0.005	0.2/2	0.1/10	0/0	0/0
CHEWING GUM	50/50	1200/10000	50/500	0.1/1	0/0	0.001/0.02	0.1/1	2.5/55	1/5	0/0
CONDIMENTS AND RELISHES	50/50	0/0	0/0	0.1/1	0.1/1	0.001/0.01	0.1/1	0.3/20	0.5/2	0.00001/0.002
CONFECTIONS AND FROSTINGS	50/50	1200/5000	10/100	0.1/1	0/0	0.0005/0.005	0.1/1	0.2/15	0.5/2	0/0
EGG PRODUCTS	50/50	0/0	0/0	0.1/1	0/0	0.0002/0.002	0.05/0.5	0/0	0/0	0/0
FATS AND OILS	50/50	0/0	10/100	0.1/1	0/0	0/0	0.5/5	0.3/20	0/0	0.00001/0.002
FISH PRODUCTS	50/50	0/0	0/0	0.1/1	0/0	0/0	0.05/0.5	0.3/20	0/0	0/0
FROZEN DAIRY	50/50	600/5000	2/20	0.1/1	0/0	0.0002/0.003	0.05/0.5	0.5/25	0.2/2	0/0
FRUIT ICES	50/50	600/5000	2/20	0.1/1	0.001/0.01	0.0002/0.003	0.05/0.5	0.4/25	0.2/2	0/0
GELATINS AND PUDDINGS	50/50	600/5000	2/20	0.1/1	0.001/0.01	0.0002/0.003	0.05/0.5	0.4/25	0/0	0/0
GRANULATED SUGAR	0/0	0/0	0/0	0.1/1	0/0	0/0	0/0	0/0	0/0	0/0
GRAVIES	50/50	0/0	0/0	0.1/1	0/0	0.001/0.01	0.05/0.5	0.2/25	1/5	0/0
HARD CANDY	50/50	1200/5000	10/100	0.1/1	0.1/5	0.001/0.01	0.05/0.5	0.3/25	1/5	0/0
IMITATION DAIRY	50/50	1200/5000	0/0	0.1/1	0/0	0/0	0.5/5	0/0	0/0	0/0
INSTANT COFFEE AND TEA	50/50	600/1000	0/0	0.1/1	0.01/0.1	0.0003/0.005	0.02/0.2	0.3/25	0.2/2	0.00001/0.002
JAMS AND JELLIES	50/50	0/0	5/100	0.1/1	0/0	0/0	0.05/0.5	0.5/35	0/0	0/0
MEAT PRODUCTS	0/0	0/0	0/0	0.1/1	0/0	0.001/0.01	0.05/0.5	0.2/15	1/5	0/0
MILK PRODUCTS	50/50	900/5000	2/20	0.1/1	0.01/0.1	0.0001/0.002	0.5/5	0.3/15	1/5	0/0
NUT PRODUCTS	50/50	0/0	0/0	0.1/1	0/0	0/0	0.05/0.5	0.2/10	1/5	0.00001/0.002
OTHER GRAINS	50/50	0/0	0/0	0.1/1	0/0	0/0	0.05/0.5	0/0	0/0	0/0
POULTRY	0/0	0/0	0/0	0.1/1	0/0	0/0	0.05/0.5	0.3/15	1/5	0/0
PROCESSED FRUITS	50/50	0/0	2/20	0.1/1	0/0	0/0	0/0	0.4/20	0/0	0/0
PROCESSED VEGETABLES	50/50	0/0	0/0	0.1/1	0/0	0/0	0/0	0/0	0/0	0/0
RECONSTITUTED VEGETABLE PROTEIN	50/50	0/0	0/0	0.1/1	0/0	0/0	0/0	0/0	0/0	0/0
SEASONINGS AND FLAVORS	50/50	0/0	0/0	0.1/1	0.01/0.1	0.1/1	0.05/0.5	20/50	1/5	0/0
SNACK FOODS	50/50	0/0	0/0	0.1/1	0.01/0.1	0.005/0.1	0.05/0.5	0.3/20	1/5	0/0
SOFT CANDY	50/50	900/5000	10/100	0.1/1	0/0	0.001/0.01	0.10/1	0.3/20	1/5	0/0
SOUPS	50/50	0/0	0/0	0.1/1	0/0	0.003/0.005	0.02/0.2	0.2/25	1/5	0.00001/0.002
SUGAR SUBSTITUTES	50/50	0/0	0/0	0.1/1	0/0	0/0	0/0	0/0	0/0	0/0
SWEET SAUCES	50/50	600/5000	0/0	0.1/1	0.1/5	0.001/0.01	0.05/2	0.3/25	0/0	0/0

GRAS FLAVORING SUBSTANCES 29

TABLE 2 CONTINUED - Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for new FEMA GRAS Flavoring Substances on which the FEMA Expert Panel based its judgments that the substances are generally recognized as safe (GRAS)

	Rebaudioside D 95%	Rebaudioside M 95%	Buchu leaves extract	Peppermint oil terpeneless	Spearmint oil terpeneless	(Z)-8-Pentadecenal	4,7-Decadienal	2-Methylthiophene	4-Methylidene-2-(2-methylprop-1-enyl)oxane	4-Isopropoxycinnamaldehyde
CATEGORY/FEMA NO.	4921	4922	4923	4924	4925	4926	4927	4928	4929	4930
BAKED GOODS	15/32.5	10/24	1/3	140/300	1055/1320	0.001/0.1	0.1/1	0.3/10	0/0	0/0
BEVERAGES, NON-ALCOHOLIC	15/32.5	10/24	0.8/0.8	39/99	110/140	0.00002/0.002	0.1/0.5	0.1/5	0.01/0.5	0.5/25
BEVERAGES, ALCOHOLIC	15/32.5	10/24	0.2/0.4	150/240	120/155	0.00002/0.002	0.1/0.5	0.1/5	0.01/0.5	0.5/25
BREAKFAST CEREALS	15/32.5	10/24	0/0	0/0	0/0	0.0001/0.005	0.1/0.5	0.3/10	0.1/5	0/0
CHEESES	0/0	0/0	0/0	0/0	0/0	0.0002/0.02	0.1/0.5	0.1/5	0/0	0/0
CHEWING GUM	200/325	10/240	0/0	8300/8300	8000/24000	0.0001/0.01	1/5	0.1/5	0.03/1.5	2/25
CONDIMENTS AND RELISHES	15/32.5	10/24	2/10	0/0	50/250	0.0001/0.01	0.5/1	0.1/5	0/0	0/0
CONFECTIONS AND FROSTINGS	15/32.5	10/24	0/0	650/650	0/0	0.0001/0.01	0.5/1	0.3/10	0.03/1.5	0/0
EGG PRODUCTS	0/0	0/0	0/0	0/0	0/0	0.0001/0.005	0.1/0.5	0.1/5	0/0	0/0
FATS AND OILS	0/0	0/0	0/0	0/0	0/0	0.001/0.1	0.5/1	0.1/5	0/0	0/0
FISH PRODUCTS	0/0	0/0	0/0	0/0	0/0	0.0001/0.005	0.1/0.5	0.1/5	0/0	0/0
FROZEN DAIRY	15/32.5	10/24	1.8/1.8	95/110	50/131	0.0001/0.005	0.1/0.5	0.1/5	0/0	0/0
FRUIT ICES	15/32.5	10/24	0/0	0/0	0/0	0.0001/0.005	0.1/0.5	0.1/5	0.03/1.5	0/0
GELATINS AND PUDDINGS	15/32.5	10/24	1/13	75/200	90/96	0.0001/0.005	0.1/0.5	0.1/5	0.03/1.5	0/0
GRANULATED SUGAR	0/0	0/0	0/0	0/0	0/0	0/0	0.5/1	0/0	0/0	0/0
GRAVIES	0/0	0/0	0/0	0/0	0/0	0.0001/0.005	0.1/1	0.1/5	0/0	0/0
HARD CANDY	15/32.5	10/24	0/0	1200/1200	5000/10000	0.0001/0.005	0.1/0.5	0.3/10	0.1/5	0/0
IMITATION DAIRY	15/32.5	10/24	0/0	0/0	0/0	0.0005/0.05	0.1/0.5	0.3/10	0/0	0/0
INSTANT COFFEE AND TEA	15/32.5	10/24	10/20	0/0	0/0	0.00002/0.002	0.1/0.5	0.1/5	0.01/0.5	0.1/15
JAMS AND JELLIES	15/32.5	10/24	0/0	0/0	97/1900	0.0001/0.005	0.1/0.5	0.1/5	0.03/1.5	0/0
MEAT PRODUCTS	0/0	0/0	0/0	6/8	0/0	0.0001/0.005	0.1/1	0.1/5	0/0	0/0
MILK PRODUCTS	15/32.5	10/24	0/0	0/0	0/0	0.0005/0.05	0.1/0.5	0.1/5	0/0	0.2/15
NUT PRODUCTS	15/32.5	10/24	0/0	0/0	0/0	0.0001/0.005	0.5/1	0.1/5	0/0	0/0
OTHER GRAINS	15/32.5	10/24	0/0	0/0	0/0	0.0001/0.005	0.1/0.5	0.1/5	0/0	0/0
POULTRY	0/0	0/0	0/0	0/0	0/0	0.0001/0.005	0.1/0.5	0.1/5	0/0	0/0
PROCESSED FRUITS	15/32.5	10/24	0/0	0/0	0/0	0/0	0.1/0.5	0/0	0/0	0/0
PROCESSED VEGETABLES	0/0	0/0	0/0	0/0	500/550	0/0	0.1/0.5	0/0	0/0	0/0
RECONSTITUTED VEGETABLE PROTEIN	0/0	0/0	0/0	0/0	0/0	0/0	0.1/0.5	0/0	0/0	0/0
SEASONINGS AND FLAVORS	15/32.5	10/24	0/0	0/0	66670/66670	0.0001/0.005	0.1/1	0.1/5	0/0	0/0
SNACK FOODS	15/32.5	10/24	0/0	0/0	0/0	0.0001/0.005	0.1/0.5	0.3/10	0/0	0.2/10
SOFT CANDY	15/32.5	10/24	1/3	320/1200	5000/10000	0.0001/0.01	0.1/0.5	0.3/10	0.03/1.5	0/0
SOUPS	15/32.5	10/24	0/0	0/0	0/0	0.00002/0.002	0.1/0.5	0.1/5	0/0	0/0
SUGAR SUBSTITUTES	0/0	0/0	0/0	0/0	0/0	0/0	0.5/1	0/0	0/0	1/25
SWEET SAUCES	15/32.5	10/24	0/0	0/0	40/90	0.0001/0.005	0.1/0.5	0.1/5	0/0	0/0

GRAS FLAVORING SUBSTANCES 29

TABLE 2 CONTINUED - Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for new FEMA GRAS Flavoring Substances on which the FEMA Expert Panel based its judgments that the substances are generally recognized as safe (GRAS)

	Glucosylated steviol glycosides, 90%	<i>Chenomeles speciosa</i> leaf extract	<i>Erobotrya japonica</i> leaves extract	Sodium gluconate	3-Methylbutane-1,3-dithiol	Rebaudioside E ≥ 85%	Rebaudioside I 95%	5-Methyl 5-(1-ethoxyethoxy) tetradecanethioate	5-Methyl 5-(1-ethoxyethoxy) decanethioate	beta-Bisabolene ≥ 88%
CATEGORY/FEMA NO.	4931	4932	4933	4934	4935	4936	4937	4938	4939	4940
BAKED GOODS	100/100	200/400	20/100	2500/2500	0.1/1	30/45	20/30	0.2/1	0.2/2	10/50
BEVERAGES, Non-ALCOHOLIC	100/100	50/200	5/50	1500/2500	0.001/0.01	30/45	20/30	0.1/0.5	0.1/0.5	5/25
BEVERAGES, ALCOHOLIC	100/100	50/200	5/50	1500/2500	0.001/0.01	30/45	20/30	0/0	0/0	10/50
BREAKFAST CEREALS	100/100	200/400	20/100	2500/2500	0.1/1	30/45	20/30	0.05/0.5	0.05/0.5	5/25
CHEESES	100/100	100/200	5/50	2500/2500	0.01/0.1	0/0	0/0	0.05/0.5	0.05/0.5	0/0
CHEWING GUM	100/100	200/800	20/200	0/0	0.05/0.5	35/45	25/30	0/0	0.1/1	10/50
CONDIMENTS AND RELISHES	100/100	50/200	5/50	1500/2500	0.002/0.02	30/45	20/30	0/0	0/0	0/0
CONFECTIONS AND FROSTINGS	100/100	200/400	20/200	1500/2500	0.05/0.5	30/45	20/30	0.1/0.5	0.1/0.5	10/50
EGG PRODUCTS	0/0	100/400	5/50	1500/2500	0.005/0.05	0/0	0/0	0.1/0.5	0.1/0.5	0/0
FATS AND OILS	100/100	100/400	10/100	0/0	0.01/0.1	0/0	0/0	0.1/0.5	0.1/2	5/25
FISH PRODUCTS	0/0	100/400	10/100	1500/2500	0.001/0.1	0/0	0/0	0/0	0/0	0/0
FROZEN DAIRY	100/100	100/400	10/100	1500/2500	0.005/0.05	30/45	20/30	0.01/0.1	0.1/1	7/35
FRUIT ICES	100/100	50/200	5/50	1500/2500	0.001/0.01	30/45	20/30	0/0	0/0	10/50
GELATINS AND PUDDINGS	100/100	100/400	10/100	0/0	0.005/0.05	30/45	20/30	0.01/0.05	0.01/0.1	5/25
GRANULATED SUGAR	0/0	0/0	5/50	0/0	0/0	0/0	0/0	0/0	0/0	0/0
GRAVIES	100/100	100/400	20/100	2500/2500	0.01/0.1	0/0	0/0	0.1/1	0.1/1	0/0
HARD CANDY	100/100	200/400	20/200	0/0	0.1/1	30/45	20/30	0.01/0.05	0.01/0.05	10/50
IMITATION DAIRY	100/100	100/400	10/100	1500/2500	0.01/0.1	30/45	20/30	0.1/1	0.1/1	0/0
INSTANT COFFEE AND TEA	100/100	50/200	5/50	1500/2500	0.01/0.1	30/45	20/30	0.2/2	0.2/2	0/0
JAMS AND JELLIES	100/100	100/400	5/50	1000/2500	0.002/0.02	30/45	20/30	0/0	0.05/0.2	5/25
MEAT PRODUCTS	0/0	100/400	20/100	2500/2500	0.01/0.1	0/0	0/0	0.1/1	0.1/1	0/0
MILK PRODUCTS	100/100	50/200	5/50	0/0	0.005/0.05	30/45	20/30	0.1/1	0.1/1	0/0
NUT PRODUCTS	100/100	200/400	10/100	2500/2500	0.002/0.02	30/45	20/30	0/0	0/0	0/0
OTHER GRAINS	100/100	100/400	10/100	0/0	0.01/0.1	30/45	20/30	0.01/0.1	0.01/0.1	0/0
POULTRY	0/0	100/400	20/100	2500/2500	0.02/0.02	0/0	0/0	0.1/1	0.1/1	0/0
PROCESSED FRUITS	100/100	50/200	5/50	1500/2500	0.001/0.01	30/45	20/30	0/0	0/0	7/35
PROCESSED VEGETABLES	100/100	50/200	5/50	2500/2500	0.002/0.02	0/0	0/0	0/0	0/0	0/0
RECONSTITUTED VEGETABLE PROTEIN	100/100	50/200	5/50	0/0	0.002/0.02	0/0	0/0	0.03/0.1	0.03/0.1	0/0
SEASONINGS AND FLAVORS	100/100	100/400	10/200	2500/2500	0/0	30/45	20/30	0/0	0/0	0/0
SNACK FOODS	100/100	100/500	10/200	2500/2500	0.05/0.5	30/45	20/30	0.2/2	0.2/2	0/0
SOFT CANDY	100/100	200/400	20/200	0/0	0.002/0.02	30/45	20/30	0.01/0.05	0.01/0.05	10/50
SOUPS	100/100	100/400	5/100	2500/2500	0.05/0.5	30/45	20/30	0.1/1	0.1/1	0/0
SUGAR SUBSTITUTES	0/0	0/0	5/50	1500/2500	0.001/0.01	0/0	20/30	0/0	0/0	0/0
SWEET SAUCES	100/100	50/200	5/100	1500/2500	0.005/0.05	30/45	20/30	0/0	0.01/0.1	5/25

GRAS FLAVORING SUBSTANCES 29

TABLE 2 CONTINUED - Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for new FEMA GRAS Flavoring Substances on which the FEMA Expert Panel based its judgments that the substances are generally recognized as safe (GRAS)

	Nootkatone complex	Modified guaiac wood extract
CATEGORY/FEMA NO.	4941	4942
BAKED GOODS	0/0	0.1/2
BEVERAGES, Non-ALCOHOLIC	10/50	0.05/0.2
BEVERAGES, ALCOHOLIC	10/50	0.1/2
BREAKFAST CEREALS	0/0	0.1/2
CHEESES	0/0	0/0
CHEWING GUM	10/50	1/5
CONDIMENTS AND RELISHES	0/0	0/0
CONFECTIONS AND FROSTINGS	10/50	0/0
EGG PRODUCTS	0/0	0/0
FATS AND OILS	0/0	0.1/1.5
FISH PRODUCTS	0/0	0.1/0.5
FROZEN DAIRY	0/0	0.1/1.5
FRUIT ICES	0/0	0.1/1
GELATINS AND PUDDINGS	0/0	0.1/0.5
GRANULATED SUGAR	0/0	0/0
GRAVIES	0/0	0.1/1.5
HARD CANDY	0/0	0.2/1
IMITATION DAIRY	0/0	0.1/0.8
INSTANT COFFEE AND TEA	0/0	0.05/0.5
JAMS AND JELLIES	0/0	0.1/1
MEAT PRODUCTS	0/0	0.1/0.5
MILK PRODUCTS	0/0	0.1/1
NUT PRODUCTS	0/0	0/0
OTHER GRAINS	0/0	0/0
POULTRY	0/0	0.1/0.5
PROCESSED FRUITS	0/0	0.05/0.5
PROCESSED VEGETABLES	0/0	0.05/0.2
RECONSTITUTED VEGETABLE PROTEIN	0/0	0.02/0.1
SEASONINGS AND FLAVORS	0/0	0.5/2
SNACK FOODS	0/0	0.2/1
SOFT CANDY	0/0	0.1/0.8
SOUPS	0/0	0.1/0.5
SUGAR SUBSTITUTES	0/0	0/0
SWEET SAUCES	0/0	0.1/0.5

TABLE 3 – Updated Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for flavoring substances previously recognized as FEMA GRAS

^a represents a change from previous FEMA GRAS publications

	Acetal	Acetic acid	Isoamyl alcohol	Anisyl propanoate	Isobutyl alcohol	Butyric acid	Isobutyric acid	Caffeine	Citric acid	dl-Citronellol
FEMA NO.	2002	2006	2057	2102	2179	2221	2222	2224	2306	2309
GRAS PUBLICATION	3	25	3	3	25	25	25	3	25	3
CATEGORY										
BAKED GOODS	65/120	0.1/38	17/27	17/30	20/31	44/106	20/41	0/0	2/3	6/20
BEVERAGES, NON-ALCOHOLIC	5/11	0.06/39	4/17	5/7	8/17	9/16	2/4	120/150 ^a	2/3	1/4
BEVERAGES, ALCOHOLIC	109 ^a /154 ^a	500 ^a /2000 ^a	500 ^a /4500 ^a	3/5	518 ^a /6500 ^a	3.5 ^a /30 ^a	2 ^a /10 ^a	0/0	800 ^a /20000 ^a	1/4
BREAKFAST CEREALS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0.1/0.1	0/0
CHEESES	0/0	0/0	0/0	0/0	1/1	0/0	0/0	0/0	0.4/0.9	0/0
CHEWING GUM	155/155	400/5000	594/594	0/0	50/500	60/270	25/110	0/0	10000/25400	8/9
CONDIMENTS AND RELISHES	0/0	136/5900	0/0	0.45 ^a /0.68 ^a	0/0	125/200	0/0	0/0	0.4/0.8	0.3 ^a /0.45 ^a
CONFECTIONS AND FROSTINGS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0.3/1	0/0
EGG PRODUCTS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0.6/0.6	0/0
FATS AND OILS	2/3	15/31	0/0	0.45 ^a /0.68 ^a	0/0	9/26	2/30	0/0	0.5/0.8	0.3 ^a /0.45 ^a
FISH PRODUCTS	0/0	0/0	0/0	0.45 ^a /0.68 ^a	0/0	0/0	0/0	0/0	0.3/0.4	0.3 ^a /0.45 ^a
FROZEN DAIRY	36/73	0.03/32	5/10	6/11	19/19	9/14	6/12	0/0	1/3	1/40
FRUIT ICES	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/2	0/0
GELATINS AND PUDDINGS	36/67	0.04/15	12/46	5/9	24/35	13/45	11/20	0/0	174/210	2/6
GRANULATED SUGAR	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
GRAVIES	0/0	2/12	0/0	0.45 ^a /0.68 ^a	0/0	0/0	0/0	0/0	1/2	0.3 ^a /0.45 ^a
HARD CANDY	4/39	0.2/52	158/168	0.6/16	30/30	39/103	8/41	0/0	950/1000	2/2
IMITATION DAIRY	0/0	0.1/0.1	0/0	0/0	0/0	101/183	0/0	0/0	2/2	0/0
INSTANT COFFEE AND TEA	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	5/5	0/0
JAMS AND JELLIES	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	2/6	0/0
MEAT PRODUCTS	0/0	8/16	0/0	0.45 ^a /0.68 ^a	0/0	7/7	0/0	0/0	0.8/0.9	0.3 ^a /0.45 ^a
MILK PRODUCTS	0/0	0.8/1	0/0	0/0	0/0	15/15	100/200	0/0	0.8/1	0/0
NUT PRODUCTS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0.3 ^a /0.45 ^a
OTHER GRAINS	0/0	0/0	0/0	0.45 ^a /0.68 ^a	0/0	0/0	0/0	0/0	0.4/0.4	0.3 ^a /0.45 ^a
POULTRY	0/0	0/0	0/0	0.45 ^a /0.68 ^a	0/0	0/0	0/0	0/0	1/1	0.3 ^a /0.45 ^a
PROCESSED FRUITS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	13/16	0/0
PROCESSED VEGETABLES	0/0	0/0	0/0	0.45 ^a /0.68 ^a	0/0	0/0	0/0	0/0	0.5/1	0.3 ^a /0.45 ^a
RECONSTITUTED VEGETABLE PROTEIN	0/0	0/0	0/0	0.45 ^a /0.68 ^a	0/0	0/0	0/0	0/0	33/33	0.3 ^a /0.45 ^a
SEASONINGS AND FLAVORS	0/0	0/0	0/0	0.45 ^a /0.68 ^a	0/0	0/0	0/0	0/0	0/0	0.3 ^a /0.45 ^a
SNACK FOODS	0/0	2/2	0/0	0.45 ^a /0.68 ^a	0/0	24/48	0/0	0/0	0.4/1	0.3 ^a /0.45 ^a
SOFT CANDY	33/56	0.05/0.07	8/14	12/23	25/34	32/42	21/47	0/0	2/14	142/181
SOUPS	0/0	0/0	0/0	0.45 ^a /0.68 ^a	0/0	0/0	0/0	0/0	0.2/0.2	0.3 ^a /0.45 ^a
SUGAR SUBSTITUTES	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SWEET SAUCES	0/0	0.1/0.1	0/0	0/0	0/0	9/9	62/124	0/0	3/3	0/0

GRAS FLAVORING SUBSTANCES 29

TABLE 3 CONTINUED - Updated Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for flavoring substances previously recognized as FEMA GRAS

^a represents a change from previous FEMA GRAS publications

	<i>delta</i> -Decalactone	Decanoic acid	Dihydrocoumarin	Ethyl acetate	Ethyl palmitate	Eugenol	Glycerol	Guaiacol	Hexanoic acid
FEMA NO.	2361	2364	2381	2414	2451	2467	2525	2532	2559
GRAS PUBLICATION	25	3	25	3	25	3	3	3	25
CATEGORY									
BAKED GOODS	14/26	10/30 ^a	141/165	154/211	20/20	15/33	18/1300	2/3	19/65
BEVERAGES, NON-ALCOHOLIC	5/14	1/10	25/28	42/67	0/0	1/2	0.7/570	0.8/1	2/3
BEVERAGES, ALCOHOLIC	15 ^a /20 ^a	3 ^a /15 ^a	0.3 ^a /2 ^a	100 ^a /200 ^a	0.3 ^a /5 ^a	1.5 ^a /40 ^a	20000 ^a /20000 ^a	1/15 ^a	3 ^a /50 ^a
BREAKFAST CEREALS	0/0	3 ^a /30 ^a	0/0	0/0	0/0	0/0	0/0	0/0	0/0
CHEESES	0/0	11/30 ^a	0/0	0/0	0/0	0/0	0/0	0.1/0.1	2/5
CHEWING GUM	15/100	5 ^a /30 ^a	20/250	1190/10000 ^a	0.1/0.1	400 ^a /2320 ^a	17/6000	0.01/0.01	100/1000
CONDIMENTS AND RELISHES	0/0	3 ^a /30 ^a	10/15	0/0	0/0	50/100	0/0	0/0	448/510
CONFECTIONS AND FROSTINGS	0.5/5	3 ^a /30 ^a	0/0	0/0	0/0	625/750	70/23000	0/0	0/0
EGG PRODUCTS	0/0	3 ^a /30 ^a	0/0	0/0	0/0	0/0	0/0	0/0	0/0
FATS AND OILS	9/20	4/140	0/0	0/0	0/0	0/0	0.2/0.2	0/0	36/36
FISH PRODUCTS	0/0	3 ^a /30 ^a	0/0	0/0	0/0	0/0	0/0	0/0	0/0
FROZEN DAIRY	19/37	3 ^a /30 ^a	95/104	66/110	20/20	2/4	0.3/500	0.7/2	10/24
FRUIT ICES	0/0	3 ^a /30 ^a	0/0	0/0	0/0	0/0	0/0	0/0	0/0
GELATINS AND PUDDINGS	15/30	3 ^a /30 ^a	116/132	73/200	0/0	2/3	26/360	0.9/2	2/6
GRANULATED SUGAR	0/0	3 ^a /30 ^a	0/0	0/0	0/0	0/0	0/0	0/0	0/0
GRAVIES	4/8	3 ^a /30 ^a	0/0	20/40	0/0	0/0	0.2/0.2	0/0	2/4
HARD CANDY	0.3/5	5/30 ^a	8/44	149/7500 ^a	40/40	700 ^a /700 ^a	22/980	1/1	3/28
IMITATION DAIRY	0/0	7/30 ^a	0/0	0/0	0/0	0/0	0/0	0/0	5/10
INSTANT COFFEE AND TEA	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
JAMS AND JELLIES	0/0	3 ^a /30 ^a	0/0	0/0	0/0	0/0	42/54	0/0	0/0
MEAT PRODUCTS	0/0	3 ^a /30 ^a	0/0	0.1/0.1	0/0	51/2000	1/40	3/6	6/26
MILK PRODUCTS	0/0	3 ^a /30 ^a	0/0	0/0	0/0	0/0	84/84	0/0	0/0
NUT PRODUCTS	0/0	0/0	0/0	0/0	3/5	0/0	0/0	0/0	0/0
OTHER GRAINS	0/0	3 ^a /30 ^a	0/0	0/0	0/0	0/0	0/0	0/0	0/0
POULTRY	0/0	5 ^a /50 ^a	0/0	0/0	0/0	0/0	0/0	0/0	0/0
PROCESSED FRUITS	0/0	0/0	0/0	8/15	0/0	0/0	0.02/0.07	0/0	0/0
PROCESSED VEGETABLES	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	150/176
RECONSTITUTED VEGETABLE PROTEIN	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SEASONINGS AND FLAVORS	0/0	200 ^a /2000 ^a	0/0	0/0	0/0	0/0	400000/400000	0/0	0/0
SNACK FOODS	0/0	3 ^a /30 ^a	0/0	0/0	0/0	0/0	22/24	0/0	10/20
SOFT CANDY	13/26	2/6	111/131	113/5000 ^a	0/0	10/15	2/4	0.8/2	5/9
SOUPS	0/0	3 ^a /30 ^a	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SUGAR SUBSTITUTES	0/0	3 ^a /30 ^a	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SWEET SAUCES	0.1/0.1	3 ^a /30 ^a	0/0	0/0	0/0	0/0	74/74	0/0	0/0

TABLE 3 CONTINUED - Updated Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for flavoring substances previously recognized as FEMA GRAS

^a represents a change from previous FEMA GRAS publications

	4-(p-Hydroxyphenyl)-2-butanone	Lactic acid	Lauric acid	Lauryl alcohol	Limanol	L-Malic acid	Maltol	4-Methyl-2-methoxyphenol	2-Methoxy-4-vinylphenol	3-Methylbutylaldehyde
FEMA NO.	2588	2611	2614	2617	2635	2655	2656	2671	2675	2692
GRAS PUBLICATION	3	25	25	3	3	25	3	25	25	25
CATEGORY										
BAKED GOODS	13/54	2/89	86/86	9/14	12/18	0.6/2	107/320	4/11	20/24	21/29
BEVERAGES, NON-ALCOHOLIC	3/16	0.02/34	11/15	2/3	4/7	90/380	78/182	10/21	2/3	2/4
BEVERAGES, ALCOHOLIC	250 ^a /300 ^a	3000 ^a /11000 ^a	0.6 ^a /2 ^a	1 ^a /10 ^a	10 ^a /50 ^a	1200 ^a /10000 ^a	70 ^a /350 ^a	0.6 ^a /10 ^a	20 ^a /40 ^a	0.4 ^a /10 ^a
BREAKFAST CEREALS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
CHEESES	0/0	19/37	53/53	0/0	0/0	0/0	0/0	0/0	0/0	0/0
CHEWING GUM	71/320	5000 ^a /5000 ^a	2/5	24/27	41/200 ^a	6000/25000	53/192	15/25	2/5	760/5000
CONDIMENTS AND RELISHES	0/0	1200/24000	0/0	0/0	5/40	0/0	0/0	0/0	0/0	0/0
CONFECTIONS AND FROSTINGS	0/0	0.3/300	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
EGG PRODUCTS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
FATS AND OILS	0/0	1/2	6/315	0/0	0/0	0/0	0.4/18	0/0	0/0	0/0
FISH PRODUCTS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
FROZEN DAIRY	9/34	0.03/66	18/21	4/7	6/10	25/390	121/287	1/2	4/11	8/12
FRUIT ICES	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
GELATINS AND PUDDINGS	14/50	14/25	18/25	4/7	7/10	0/0	112/244	7/18	4/6	8/11
GRANULATED SUGAR	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
GRAVIES	0/0	2/2	0/0	0/0	0/0	0/0	0/0	0/0	3/6	0/0
HARD CANDY	17/44	20000 ^a /20000 ^a	2/2	6/6	3/400 ^a	420/420	6/31	0.8/0.8	1/8	3/3
IMITATION DAIRY	0/0	0.8/1	7/14	0/0	0/0	0/0	0/0	0/0	0/0	0/0
INSTANT COFFEE AND TEA	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
JAMS AND JELLIES	0/0	0/0	0/0	0/0	0/0	0/0	15/15	0/0	0/0	0/0
MEAT PRODUCTS	0/0	4/4	0/0	0.03/0.03	19/46	0/0	0.1/0.1	12/35	3/7	0.1/0.5
MILK PRODUCTS	0/0	0.9/1	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
NUT PRODUCTS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
OTHER GRAINS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
POULTRY	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
PROCESSED FRUITS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
PROCESSED VEGETABLES	0/0	0.02/0.03	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
RECONSTITUTED VEGETABLE PROTEIN	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SEASONINGS AND FLAVORS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SNACK FOODS	0/0	0.3/0.4	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SOFT CANDY	13/36	14000 ^a /14000 ^a	25/27	5/8	6/10	25/420	114/267	4/10	8/9	12/17
SOUPS	0/0	0.1/0.1	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SUGAR SUBSTITUTES	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SWEET SAUCES	0.9/1	0.5/0.5	0/0	7/7	0/0	0/0	0.3/0.4	0/0	0/0	0/0

TABLE 3 CONTINUED - Updated Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for flavoring substances previously recognized as FEMA GRAS

^a represents a change from previous FEMA GRAS publications

	5-Methylfurfural	Myristic acid	Nerol	Octanoic acid	Palmitic acid	2,3-Pentanedione	Phenethyl alcohol	Phosphoric acid	alpha-Pinene
FEMA NO.	2702	2764	2770	2799	2832	2841	2858	2900	2902
GRAS PUBLICATION	25	25	3	3	25	3	3	3	25
CATEGORY									
BAKED GOODS	1/2	3/5	15/25	0.01/18	3/3	5/11	27/33	0.3/1500	35/160
BEVERAGES, NON-ALCOHOLIC	1/2	2/5	3/5	3/3	0/0	1/2	13/18	0.5/510	16/54
BEVERAGES, ALCOHOLIC	0.02 ^a /2 ^a	0.002 ^a /4 ^a	1 ^a /2 ^a	5 ^a /10 ^a	0.001 ^a /3 ^a	3 ^a /10 ^a	250 ^a /250 ^a	100 ^a /2000 ^a	10 ^a /100 ^a
BREAKFAST CEREALS	0/0	0/0	0/0	1 ^a /10 ^a	0/0	12/12	0/0	0.08/0.08	0/0
CHEESES	0/0	2/2	0/0	1 ^a /10 ^a	0/0	0/0	0/0	3/5	0/0
CHEWING GUM	20/500	6/10	27/300 ^a	15 ^a /30 ^a	1/1	0.04/0.04	25/80	0/0	175/1300
CONDIMENTS AND RELISHES	0/0	0/0	0/0	12/12	1/1	0/0	0/0	0/0	47/150
CONFECTIONS AND FROSTINGS	0/0	0/0	0/0	1 ^a /10 ^a	0/0	0.3/0.3	0/0	0.7/0.8	0/0
EGG PRODUCTS	0/0	0/0	0/0	1 ^a /10 ^a	0/0	0/0	0/0	0/0	0/0
FATS AND OILS	0/0	0/0	0/0	1 ^a /10 ^a	0/0	0/0	0.05/0.1	0/0	0/0
FISH PRODUCTS	0/0	0/0	0/0	1 ^a /10 ^a	0/0	0/0	0/0	0/0	0/0
FROZEN DAIRY	1/3	3/10	14/21	2/10 ^a	0/0	4/10	19/23	0.3/660	13/64
FRUIT ICES	0/0	0/0	0/0	2 ^a /10 ^a	0/0	0/0	0/0	0/0	0/0
GELATINS AND PUDDINGS	1/2	1/2	5/8	1 ^a /10 ^a	0/0	4/8	6/10	0.4/0.5	6/12
GRANULATED SUGAR	0/0	0/0	0/0	1 ^a /10 ^a	0/0	0/0	0/0	0/0	0/0
GRAVIES	2/4	0.3/0.6	0/0	1 ^a /10 ^a	0/0	0.2/0.4	0/0	0/0	0/0
HARD CANDY	0.03/0.1	4/4	1/16	13/13	0/0	40/58	2/12	5000/5000	253/265
IMITATION DAIRY	0/0	0/0	0/0	1 ^a /10 ^a	0/0	0/0	0/0	1/2	0/0
INSTANT COFFEE AND TEA	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0.3/0.4	0/0
JAMS AND JELLIES	0/0	0/0	0/0	1 ^a /10 ^a	0/0	0/0	0/0	0.05/0.05	0/0
MEAT PRODUCTS	5/10	1/2	0/0	1 ^a /10 ^a	4/9	4/6	0/0	0.02/0.02	10/20
MILK PRODUCTS	0/0	0/0	0/0	1 ^a /10 ^a	0/0	0/0	0/0	0/0	0/0
NUT PRODUCTS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
OTHER GRAINS	0/0	0/0	0/0	1 ^a /10 ^a	0/0	0/0	0/0	0.04/0.04	0/0
POULTRY	0/0	0/0	0/0	2 ^a /20 ^a	0/0	0/0	0/0	0/0	0/0
PROCESSED FRUITS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
PROCESSED VEGETABLES	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0.02/0.02	0/0
RECONSTITUTED VEGETABLE PROTEIN	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0.02/1	0/0
SEASONINGS AND FLAVORS	0/0	0/0	0/0	50 ^a /500 ^a	0/0	0/0	0/0	0/0	0/0
SNACK FOODS	0.05/0.1	0/0	0/0	1 ^a /10 ^a	0/0	0/0	0/0	0/0	0/0
SOFT CANDY	1/2	2/3	0/0	13 ^a /13 ^a	0/0	4/11	26/30	0.1/0.3	31/63
SOUPS	0/0	0/0	0/0	1 ^a /10 ^a	0/0	0/0	0/0	0/0	0/0
SUGAR SUBSTITUTES	0/0	0/0	0/0	1 ^a /10 ^a	0/0	0/0	0/0	0/0	0/0
SWEET SAUCES	0/0	0/0	0/0	1 ^a /10 ^a	0/0	0.3/0.6	0/0	0.2/0.2	0/0

TABLE 3 CONTINUED - Updated Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for flavoring substances previously recognized as FEMA GRAS

^a represents a change from previous FEMA GRAS publications

	beta-Pinene	Piperine	Potassium acetate	Propionic acid	Tartaric acid (D-, L-, DL-, Meso-)	alpha-Terpineol	Vanillin	2,6-Dimethoxyphenol	4-Hydroxy-2,5-dimethyl-3(2H)-furanone	2,4-Noradienal
FEMA NO.	2903	2909	2920	2924	3044	3045	3107	3137	3174	3212
GRAS PUBLICATION	3	3	3	25	25	3	3	4	25	25
CATEGORY										
BAKED GOODS	48/600	1.37 ^a /2.1 ^a	0/0	200 ^a /500 ^a	0.9/1300	16/20	74/220	1.5/5	4/10	2/7
BEVERAGES, NON-ALCOHOLIC	11/21	0.6/0.7	0.3/2	50 ^a /500 ^a	1/960	3/5	40/97	2/5	5/80	0.9/4
BEVERAGES, ALCOHOLIC	10/50 ^a	0.9/1	350 ^a /3000 ^a	0.01/0.01	5000 ^a /10000 ^a	1.5 ^a /10 ^a	30/450 ^a	0.05 ^a /10 ^a	43 ^a /180 ^a	0.01 ^a /2 ^a
BREAKFAST CEREALS	0/0	0/0	0/0	50 ^a /500 ^a	0/0	0/0	353/353	0/0	0/0	0.2/0.2
CHEESES	0/0	0/0	0/0	100 ^a /600 ^a	0/0	0/0	0/0	0/0	0/0	0/0
CHEWING GUM	17/23	0/0	0/0	100/300	500/5000	13/1000 ^a	82/445	0/0	100/1000	5/10
CONDIMENTS AND RELISHES	20/40	1.5 ^a /2.25 ^a	0/0	100 ^a /500 ^a	2/10000	26/45	0/0	0/0	0/0	1/2
CONFECTIONS AND FROSTINGS	0/0	0/0	0/0	0/0	0/0	0/0	597/970	0/0	0/0	0/0
EGG PRODUCTS	0/0	0/0	0/0	50 ^a /500 ^a	0/0	0/0	0/0	0/0	0/0	0/0
FATS AND OILS	0/0	0/0	0/0	50 ^a /500 ^a	0/0	0/0	96/100	0/0	0.1/0.5	0/0
FISH PRODUCTS	0/0	1.5 ^a /2.25 ^a	0/0	50 ^a /500 ^a	0/0	0/0	0/0	2/2	0/0	0/0
FROZEN DAIRY	20/64	1/1	0/0	50 ^a /500 ^a	2/570	9/16	27/95	2/5	5/10	2/7
FRUIT ICES	0/0	0/0	0/0	0/0	3/5	0/0	0/0	0/0	0/0	0/0
GELATINS AND PUDDINGS	10/15	1/1	0/0	0/0	3/60	12/16	48/120	2/5	10/80	1/5
GRANULATED SUGAR	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
GRAVIES	0/0	1.5 ^a /2.25 ^a	0/0	100 ^a /500 ^a	0.8/0.8	3/6	0/0	0/0	0/0	0.5/2
HARD CANDY	48/600	0/0	0/0	14/14	10/5400	11/17	26/200	0/0	10/10	0/0
IMITATION DAIRY	0/0	0/0	0/0	50 ^a /500 ^a	0/0	0/0	0/0	0/0	0/0	0/0
INSTANT COFFEE AND TEA	0/0	0/0	0/0	100 ^a /500 ^a	0/0	0/0	0/0	0/0	0/0	0/0
JAMS AND JELLIES	0/0	0/0	0/0	0/0	2/4	0/0	0/0	0/0	0.6/0.6	0/0
MEAT PRODUCTS	9/18	2/3	0/0	50 ^a /500 ^a	0.01/0.02	5/11	2/3	4/18	0/0	3/18
MILK PRODUCTS	0/0	0/0	0/0	50 ^a /500 ^a	0/0	0/0	221/314	0/0	0/0	0.2/0.2
NUT PRODUCTS	0/0	0.8 ^a /1.2 ^a	0/0	50 ^a /500 ^a	0/0	0/0	0/0	0/0	0/0	0/0
OTHER GRAINS	0/0	2.04 ^a /3.1 ^a	0/0	0/0	0.2/0.2	0/0	0/0	0/0	0/0	0/0
POULTRY	0/0	1.5 ^a /2.25 ^a	0/0	50 ^a /500 ^a	0/0	0/0	0/0	0/0	0/0	0/0
PROCESSED FRUITS	0/0	0/0	0/0	0/0	10/10	0/0	0/0	0/0	0/0	0/0
PROCESSED VEGETABLES	0/0	1.5 ^a /2.25 ^a	0/0	50 ^a /500 ^a	0/0	0/0	0/0	0/0	0/0	0/0
RECONSTITUTED VEGETABLE PROTEIN	0/0	0.8 ^a /1.2 ^a	0/0	50 ^a /500 ^a	0/0	0/0	0/0	0/0	0/0	0/0
SEASONINGS AND FLAVORS	0/0	2.04 ^a /3.1 ^a	0/0	50 ^a /500 ^a	0/0	0/0	0/0	0/0	1/10	0/0
SNACK FOODS	0/0	1.5 ^a /2.25 ^a	0/0	50 ^a /500 ^a	0/0	0/0	200/200	0/0	0/0	0/0
SOFT CANDY	20/74	1/1	0/0	0.01/0.01	10/10	13/500 ^a	247/408	2/5	20/60	2/8
SOUPS	0/0	1.5 ^a /2.25 ^a	0/0	50 ^a /500 ^a	2/2	0/0	0/0	0.1/0.8	0/0	0.2/0.2
SUGAR SUBSTITUTES	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SWEET SAUCES	0/0	0/0	0/0	0/0	3/4	0/0	358/1000 ^a	0/0	5/40	0/0

TABLE 3 CONTINUED - Updated Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for flavoring substances previously recognized as FEMA GRAS

^a represents a change from previous FEMA GRAS publications

	2-Nonenal	4-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-4-one	2,3-Dimethylpyrazine	2,6-Dimethylpyrazine	2-Methoxy-3(5 and 6)-isopropylpyrazine	3-(Methylthio)propanol	1-(2,6,6-Trimethylcyclohexa-1,3-dienyl)-2-buten-1-one	3-Methylpentanoic acid	o-Cresol
FEMA NO.	3213	3243	3271	3273	3358	3415	3420	3437	3480
GRAS PUBLICATION	25	25	25	5	6	25	25	8	10
CATEGORY									
BAKED GOODS	2/3	5/10	10/10	10/10	0/0	0.1/0.1	0.05/0.2	2/5	0/0
BEVERAGES, NON-ALCOHOLIC	1/2	2/10	10/10	10/10	0/0	0.05/0.05	0.05/0.2	2/2	0/0
BEVERAGES, ALCOHOLIC	0.01 ^a /2 ^a	0.01 ^a /0.1 ^a	0.002 ^a /2 ^a	0.1 ^a /5 ^a	0.001 ^a /0.01 ^a	0.3 ^a /2 ^a	0.01 ^a /2 ^a	0.2 ^a /100 ^a	0.8 ^a /20 ^a
BREAKFAST CEREALS	0.2/0.2	0/0	0.1 ^a /1 ^a	10/10	0/0	0/0	0/0	0/0	0.1/0.5
CHEESES	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0/0	0/0	0/0
CHEWING GUM	1000/5000	10/100	1/1	0/0	0/0	1/5	100/300	0/0	0/0
CONDIMENTS AND RELISHES	0.1/0.5	0/0	0.1 ^a /1 ^a	10/10	0.05/0.2	0/0	0.05/0.2	0/0	0.1/0.5
CONFECTIONS AND FROSTINGS	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0/0	5/5	0/0
EGG PRODUCTS	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0/0	0/0	0/0
FATS AND OILS	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0/0	0/0	0/0
FISH PRODUCTS	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0/0	0/0	0/0
FROZEN DAIRY	2/2	2/10	10/10	10/10	0/0	0/0	0.05/0.2	2/2	0/0
FRUIT ICES	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
GELATINS AND PUDDINGS	2/2	2/10	10/10	10/10	0.05/0.05	0/0	0.05/0.2	2/2	0/0
GRANULATED SUGAR	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0/0	0/0	0/0
GRAVIES	0/0	0/0	10/10	10/10	0/0	0/0	0/0	0/0	0.1/0.5
HARD CANDY	0/0	10/10	10/10	10/10	0/0	0.1/0.1	0.2/0.2	0/0	0/0
IMITATION DAIRY	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0/0	0/0	0/0
INSTANT COFFEE AND TEA	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0/0	0/0	0/0
JAMS AND JELLIES	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0.05/0.2	0/0	0/0
MEAT PRODUCTS	2/4	0/0	10/10	10/10	0.2/0.2	0/0	0/0	0/0	0.1/0.5
MILK PRODUCTS	0.2/0.2	0/0	0.1 ^a /1 ^a	10/10	0/0	0/0	0/0	0/0	0/0
NUT PRODUCTS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
OTHER GRAINS	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0/0	0/0	0/0
POULTRY	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0/0	0/0	0/0
PROCESSED FRUITS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
PROCESSED VEGETABLES	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
RECONSTITUTED VEGETABLE PROTEIN	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0.3/3	0/0
SEASONINGS AND FLAVORS	0/0	0/0	1 ^a /10 ^a	0/0	0/0	0/0	0/0	0/0	0.1/0.5
SNACK FOODS	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0/0	0/0	0/0
SOFT CANDY	1/2	2/5	10/10	10/10	0/0	0/0	0.05/0.2	1/5	0/0
SOUPS	0.2/0.2	0/0	0.1 ^a /1 ^a	10/10	0/0	0/0	0/0	0/0	0.1/0.5
SUGAR SUBSTITUTES	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0/0	0/0	0/0
SWEET SAUCES	0/0	0/0	0.1 ^a /1 ^a	0/0	0/0	0/0	0/0	0/0	0/0

TABLE 3 CONTINUED - Updated Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for flavoring substances previously recognized as FEMA GRAS

^a represents a change from previous FEMA GRAS publications

	<i>m</i> -Cresol	4-Propyl-2-methoxyphenol	2-Ethyl-4-hydroxy-5-methyl-3(2H)-furanone	4,5-Dimethyl-3-hydroxy-2,5-dihydrofuran-2-one	Mono-menthyl succinate	Sodium diacetate	(+/-)-2-Methyl-1-butanol	Grape seed extract	1,6-Hexalactam	2-Acetyl-1-pyrroline
FEMA NO.	3530	3598	3623	3634	3810	3900	3998	4045	4235	4249
GRAS PUBLICATION	11	12	12	25	22	25	20	21	22	22
CATEGORY										
BAKED GOODS	0.5/1	0.015/0.15	1/2	10/20	300/900	40 ^a /1000 ^a	2/9	0/0	5 ^a /20 ^a	0.01 ^a /0.1 ^a
BEVERAGES, NON-ALCOHOLIC	0/0	0.005/1.5	1/2	0/0	50/150	40 ^a /500 ^a	0.1/2	100/200	5 ^a /20 ^a	0.001 ^a /0.01 ^a
BEVERAGES, ALCOHOLIC	0.3 ^a /1 ^a	0.02 ^a /1 ^a	0.4 ^a /2 ^a	0.01 ^a /5 ^a	50/150	0/0	400 ^a /1100 ^a	1242 ^a /2000 ^a	5 ^a /20 ^a	0.001 ^a /0.01 ^a
BREAKFAST CEREALS	0.5 ^a /5 ^a	0/0	0/0	0/0	0/0	40 ^a /1000 ^a	0/0	0/0	5 ^a /20 ^a	0.01 ^a /0.1 ^a
CHEESES	0.1 ^a /0.5 ^a	0/0	0/0	0/0	0/0	100 ^a /2000 ^a	0/0	100/200	5 ^a /20 ^a	0.002 ^a /0.02 ^a
CHEWING GUM	0.1 ^a /0.5 ^a	0.1/15	10/20	1/5	1250/4000	100 ^a /2000 ^a	2/15	0/0	50 ^a /200 ^a	0/0
CONDIMENTS AND RELISHES	0.1 ^a /0.5 ^a	0/0	0/0	2.5/10	0/0	40 ^a /1000 ^a	0/0	100/200	5 ^a /20 ^a	0.01 ^a /0.2 ^a
CONFECTIONS AND FROSTINGS	0.1 ^a /0.5 ^a	0.01/1.5	0.25/0.5	0/0	200/600	40 ^a /500 ^a	0.3/2	0/0	10 ^a /40 ^a	0.01 ^a /0.1 ^a
EGG PRODUCTS	0.1 ^a /0.5 ^a	0/0	0/0	0/0	0/0	100 ^a /1000 ^a	0.3/2	0/0	5 ^a /20 ^a	0.005 ^a /0.05 ^a
FATS AND OILS	0.1 ^a /0.5 ^a	0/0	0/0	0.1/10	0/0	100 ^a /1000 ^a	0.5/15	0/0	5 ^a /20 ^a	0.002 ^a /0.1 ^a
FISH PRODUCTS	0.5 ^a /5 ^a	0/0	0/0	2/10	0/0	100 ^a /1000 ^a	0/0	0/0	5 ^a /20 ^a	0.005 ^a /0.1 ^a
FROZEN DAIRY	0.1 ^a /0.5 ^a	0/0	0/0	0/0	70/210	0/0	1.5/8	100/200	5 ^a /20 ^a	0.001 ^a /0.01 ^a
FRUIT ICES	0.1 ^a /0.5 ^a	0.007/0.07	0/0	0/0	70/210	0/0	0.8/5	0/0	5 ^a /20 ^a	0 ^a /0 ^a
GELATINS AND PUDDINGS	0.1 ^a /0.5 ^a	0.01/0.1	1.5/3	0/0	150/450	0/0	0.2/2	100/200	5 ^a /20 ^a	0.001 ^a /0.01 ^a
GRANULATED SUGAR	0.1 ^a /0.5 ^a	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
GRAVIES	0.3/0.5	0.5/1	0.5/1	2/10	0/0	100 ^a /1000 ^a	0.3/2.5	0/0	5 ^a /20 ^a	0.005 ^a /0.1 ^a
HARD CANDY	0.1 ^a /0.5 ^a	0.025/0.25	1/2	0/0	300/1000	40 ^a /1000 ^a	0.3/3	0/0	10 ^a /40 ^a	0.004 ^a /0.04 ^a
IMITATION DAIRY	0.1 ^a /0.5 ^a	0/0	0.25/1	0/0	0/0	0/0	0/0	100/200	5 ^a /20 ^a	0.001 ^a /0.01 ^a
INSTANT COFFEE AND TEA	0.3/0.5	0/0	0/0	0/0	0/0	0/0	0.1/1	100/200	5 ^a /20 ^a	0.01 ^a /0.1 ^a
JAMS AND JELLIES	0.1 ^a /0.5 ^a	0.01/1.5	0/0	0/0	150/450	0/0	0.4/4	0/0	10 ^a /40 ^a	0/0
MEAT PRODUCTS	0.3/1 ^a	0/0	0.5/1	2/10	0/0	1500/2500	0/0	0/0	0.2/1.0	0.005 ^a /0.1 ^a
MILK PRODUCTS	0.1 ^a /0.5 ^a	0/0	0.25/0.5	0/0	60/180	0/0	0.1/1	100/200	5 ^a /20 ^a	0.001 ^a /0.01 ^a
NUT PRODUCTS	0.3/0.5	0/0	0/0	0/0	0/0	15000/30000	0/0	0/0	5 ^a /20 ^a	0.002 ^a /0.02 ^a
OTHER GRAINS	0.5 ^a /5 ^a	0/0	0/0	0/0	0/0	0/0	0/0	0/0	5 ^a /20 ^a	0.001 ^a /0.01 ^a
POULTRY	0.5 ^a /5 ^a	0/0	0/0	2/10	0/0	1500/2500	0/0	0/0	5 ^a /20 ^a	0.01 ^a /0.1 ^a
PROCESSED FRUITS	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0.4/2	0 ^a /0 ^a
PROCESSED VEGETABLES	0/0	0/0	0/0	0/0	0/0	50 ^a /500 ^a	0/0	0/0	0/0	0/0
RECONSTITUTED VEGETABLE PROTEIN	0/0	0.2/0.5	0/0	0/0	0/0	50 ^a /500 ^a	0/0	0/0	5 ^a /20 ^a	0/0
SEASONINGS AND FLAVORS	1 ^a /10 ^a	0/0	0/0	0.1/20	0/0	15000/30000	0.3/2.5	100/200	5 ^a /20 ^a	0.005 ^a /0.1 ^a
SNACK FOODS	0.3/0.5	1/1.5	0/0	0/0	300 ^a /1000 ^a	15000/30000	0.4/4	0/0	5 ^a /20 ^a	0.005 ^a /0.1 ^a
SOFT CANDY	0/0	0.01/0.1	0/0	0/0	200/600	40 ^a /2000 ^a	0.4/4	0/0	10 ^a /40 ^a	0.002 ^a /0.02 ^a
SOUPS	0.3/0.5	0.5/1	0/0	2/10	0/0	100 ^a /1000 ^a	0.2/2	100/200	5 ^a /20 ^a	0.001 ^a /0.01 ^a
SUGAR SUBSTITUTES	0.1 ^a /0.5 ^a	0/0	0/0	0/0	0/0	0/0	0/0	100/200	0/0	0/0
SWEET SAUCES	0.1 ^a /0.5 ^a	0/0	0/0	2.5/10	0/0	0/0	0/0	0/0	5 ^a /20 ^a	0/0

GRAS FLAVORING SUBSTANCES 29

TABLE 3 CONTINUED - Updated Average Usual Use Levels/Average Maximum Use Levels

Average Usual Use Levels (ppm)/Average Maximum Use Levels (ppm) for flavoring substances previously recognized as FEMA GRAS

^a represents a change from previous FEMA GRAS publications

	Ammonia (also includes ammonium chloride)	4-Amino-5,6-dimethylthieno[2,3-D]pyrimidin-2(1H)-one and 4-Amino-5,6-dimethylthieno[2,3-D]pyrimidin-2(1H)-one hydrochloride	3-[(4-Amino-2,2-dioxido-1H-2,1,3-benzothiazin-5-yl)oxy]-2,2-dimethyl-N-propylpropanamide	Glutamyl-valyl-glycine	N-[N-(3-(3-Hydroxy-4-methoxyphenyl)propyl)-L-alpha-aspartyl]-L-phenylalanine 1-methyl ester, monohydrate	(E)-3-Benzo[1,3]dioxol-5-yl-N,N-diphenyl-2-propanamide	Glucosylated Ribus saivissimus extract, 20-30% glucosylated rubusoside glycosides	Erythritol	(E)-3-(3,4-Dimethoxyphenyl)-N-[2-(4-methoxyphenyl)-ethyl]-acrylamide
FEMA NO.	4494	4669	4701	4709	4716	4788	4800	4819	4877
GRAS PUBLICATION	24	26	28	27	25	27	28	28	28
CATEGORY									
BAKED GOODS	282 ^a /423 ^a	5/10	10/22	15/30	20 ^a /20 ^a	0 ^a /0 ^a	150 ^a /400 ^a	0/0	0/0
BEVERAGES, NON-ALCOHOLIC	150 ^a /225 ^a	7.5/15	5 ^a /22 ^a	20/50	1.35/1.5	0.02/0.2	150/350	5000/12500	0/0
BEVERAGES, ALCOHOLIC	200 ^a /300 ^a	7.5/15	5/22	20 ^a /50 ^a	3 ^a /3 ^a	0.04/2	75/200	5000 ^a /12500 ^a	0/0
BREAKFAST CEREALS	0/0	10/20	10 ^a /22	80/160	0/0	0 ^a /0 ^a	150/400	12500 ^a /17500 ^a	15/30
CHEESES	0/0	0/0	0/0	20/50	0/0	0/0	0/0	0/0	20/50
CHEWING GUM	0/0	10/50	30/300	10/30	40/50	150 ^a /500 ^a	400/1000	0/0	0/0
CONDIMENTS AND RELISHES	420 ^a /630 ^a	10 ^a /20 ^a	5 ^a /22	30/60	3 ^a /3 ^a	0/0	300 ^a /400 ^a	0/0	25/50
CONFECTIONS AND FROSTINGS	500/1500	10/25	10/22	0/0	3.75 ^a /3.75 ^a	10 ^a /150 ^a	150/300	0/0	0/0
EGG PRODUCTS	1000/3000	0/0	0/0	15/45	0/0	0 ^a /0 ^a	0/0	0/0	0/0
FATS AND OILS	200 ^a /300 ^a	0/0	0/0	30/60	3 ^a /3 ^a	0 ^a /0 ^a	0/0	0/0	20/50
FISH PRODUCTS	1000/3000	0/0	5 ^a /22	15/45	0/0	0/0	0/0	0/0	15/50
FROZEN DAIRY	0/0	7.5/15	5/22	20/50	0.9/1	0 ^a /0 ^a	200/300	12500 ^a /17500 ^a	0/0
FRUIT ICES	0/0	7.5/15	5/22	20/50	0/0	0 ^a /0 ^a	100/300	5000/12500	0/0
GELATINS AND PUDDINGS	0/0	5/10	5/22	0/0	3.75 ^a /3.75 ^a	0 ^a /0 ^a	150/300	0/0	0/0
GRANULATED SUGAR	0/0	0/0	0/0	0/0	0/0	0 ^a /0 ^a	0/0	0/0	0/0
GRAVIES	420 ^a /630 ^a	0/0	0/0	30/60	0/0	0/0	100/150	0/0	20/50
HARD CANDY	1000/3000	10/25	15/75	0/0	0/0	40 ^a /400 ^a	400/1000	0/0	0/0
IMITATION DAIRY	0/0	7.5/15	5/22	20/50	0.75 ^a /0.75 ^a	0 ^a /0 ^a	0/0	12500 ^a /17500 ^a	20 ^a /25 ^a
INSTANT COFFEE AND TEA	0/0	7.5/15	5/22	10/30	0/0	0 ^a /0 ^a	150/350	5000/12500	0/0
JAMS AND JELLIES	0/0	10/25	10/22	0/0	0/0	0 ^a /0 ^a	150/300	0/0	0/0
MEAT PRODUCTS	1000/3000	0/0	5 ^a /22	15/45	0/0	0/0	100/150	0/0	20/50
MILK PRODUCTS	1000/3000	7.5/15	5 ^a /22	15/45	0.9/1	0 ^a /0 ^a	200/300	12500 ^a /17500 ^a	20 ^a /25 ^a
NUT PRODUCTS	420 ^a /630 ^a	0/0	0/0	0/0	0/0	0/0	200 ^a /400 ^a	12500 ^a /17500 ^a	0/0
OTHER GRAINS	420 ^a /630 ^a	0/0	0/0	0/0	0/0	0/0	200 ^a /400 ^a	12500 ^a /17500 ^a	0/0
POULTRY	420 ^a /630 ^a	0/0	5 ^a /22	15/45	0/0	0/0	0/0	0/0	15/50
PROCESSED FRUITS	0/0	0/0	0/0	0/0	0/0	0 ^a /0 ^a	0/0	5000/12500	0/0
PROCESSED VEGETABLES	325 ^a /488 ^a	0/0	0/0	15/45	0/0	0/0	0/0	0/0	0/0
RECONSTITUTED VEGETABLE PROTEIN	400 ^a /630 ^a	0/0	0/0	15/45	0/0	0/0	0/0	0/0	20/50
SEASONINGS AND FLAVORS	1000/3000	5/15	10/22	80/160	0/0	0/0	100/150	0/0	50/80
SNACK FOODS	420 ^a /630 ^a	5/15	0/0	80/160	0/0	0/0	0/0	0/0	50/80
SOFT CANDY	0/0	10/25	15/75	0/0	3.75 ^a /3.75 ^a	20 ^a /200 ^a	400/1000	0/0	0/0
SOUPS	420 ^a /630 ^a	0/0	0/0	20/50	0/0	0 ^a /0 ^a	100/150	0/0	20/50
SUGAR SUBSTITUTES	0/0	300/600	0/0	80/160	0/0	0 ^a /0 ^a	0/0	0/0	0/0
SWEET SAUCES	0/0	10/25	10/22	30/60	0/0	0/0	0/0	0/0	0/0