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First Edition
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General Requirements for Food Additives and Other Added Chemicals to Halal Food



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STANDARDS DEVELOPMENT CENTRE
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MINISTRY OF SCIENCE AND TECHNOLOGY
Government of Pakistan



NATIONAL FOREWORD

0.1 This Pakistan Standard was developed by the Pakistan Standards & Quality Control Authority (PSQCA) Standards Development Centre on July 28, 2022, after the draft recommended by the Halal additives Technical Committee had been approved by the National Standards Committee on Halal.

0.2 PSQCA, under the Ministry of Science and Technology, is governed by the PSQCA Act No. VI of 1996 and establishes Pakistan Standards as per mandate given in sub section (xvi) of section 8 of the act i.e., framing, publishing, amending, revising or withdrawal of Pakistan Standards in relation to any article, product, process and also in accordance with Pakistan standard rules 2008.

0.3 To carry out the purposes of the Act it advises the government on standardization policies, programs, and activities to foster and promote standards and conformity assessment as a means of advancing the national economy, promoting industrial efficiency and development, ensuring the health and safety of the public, protecting the consumers, facilitating domestic and international trade and furthering international co-operation in relation to standards and conformity assessment.

0.4 The formulation/adoption of standards is carried out through duly constituted National standards committee and technical committees comprise of expert representatives from relevant public and private organizations for consensus-based standards to safeguard national interest, public tendencies, keeping in view the concept of quality, safety, and health efficiency as basic parameters for the sustainable advancement.

0.5 In the preparation of this standard the views of all concerned stakeholders have been taken into consideration.

0.6 It is the direct adoption of OIC/SMIIC 24-2020 in context of global Halal trade barriers to ease the cross-border trade through the unified standard of OIC/SMIIC.

Note: This Standard specifies requirements to enable an organization to demonstrate compliance with applicable statutory and regulatory requirements.

0.7 For further information on Pakistan standards development, please visit PSQCA website: www.psqca.com.pk



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General Requirements for Food Additives and Other Added Chemicals to Halal Food

The Standards and Metrology Institute for Islamic Countries
l'Institut de Normalisation et de Métrologie pour les Pays Islamiques
معهد المواصفات والمقاييس للدول الإسلامية

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FOREWORD

The Standards and Metrology Institute for Islamic Countries (SMIIC) as an intergovernmental organization, aims to set common standards to be implemented across the Organisation of the Islamic Cooperation (OIC) region and the world where the Institute aims to ensure the protection of consumers and the interoperability of products, and also to strengthen marketplace position of the OIC Member States in the global economy while fostering innovation and free trade initiatives.

This standard was developed by SMIIC Technical Committee on Halal Food Issues (TC 1) and adopted by SMIIC.

This standard is based on sources of Islamic Rules.

In this standard, Islamic Rules refer to those commonly accepted rules and schools of Islam, regardless of variations in different countries.

INTRODUCTION

The modern food industry uses many chemicals during food processing and production. These chemicals include but are not limited to food additives, processing aids, added nutrients and flavourings. The purpose of these requirements is to guide the food industrialists in selecting halal food additives and other added chemicals for producing halal foods.

For those purposes, these requirements provide a detailed list that specifies whether this additive to be used is classified as doubtful or non-halal. It also serves as a useful reference for consumers to check if the food additive mentioned on the product label is doubtful or not.

GENERAL REQUIREMENTS FOR FOOD ADDITIVES AND OTHER ADDED CHEMICALS TO HALAL FOOD

1 SCOPE

1.1 This standard sets the requirements and conditions needed for food additives and any other added chemicals (processing aids, flavourings, added nutrients, enzymes) used during food production to ensure that the final product is halal and safe to consume in OIC countries and all over the world.

It also defines the halal status of food additives in foodstuffs intended for human consumption. It sets a list of doubtful and non-halal food additives and the needed action for each of them.

1.2 These requirements do not apply to the following substances:

- a) Substances used for the protection of plants and plant products in accordance with the community rules relating to plant health;
- b) Extraction solvents used in the production of foodstuffs and food ingredients.
- c) Food contact substances and indirect food additives used in it.

2 NORMATIVE REFERENCES

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- OIC/SMIIC 1, General Requirements for Halal Food
- OIC/SMIIC 2, Conformity Assessment – Requirements for Bodies Providing Halal Certification
- CXS 192, General Standard for Food Additives
- CXG 36, Class Names and The International Numbering System for Food Additives

3 TERMS AND DEFINITIONS

For the purposes of this document, the terms and definitions given in the normative references and the following apply.

3.1 food additives

substances not normally consumed as a food by itself and not normally used as a typical ingredient of the food, whether or not it has nutritive value, the intentional addition of which to food for a technological (including organoleptic) purpose in the

manufacture, processing, preparation, treatment, packing, transport or holding of such food results, or may be reasonably expected to result (directly or indirectly), in it or its by-products becoming a component of or otherwise affecting the characteristics of such foods

Note 1 to entry: The term does not include contaminants or substances added to food for maintaining or improving nutritional qualities.

3.2

halal food additives

food additives which are derived from halal ingredients and free of any non-halal component from their manufacturing process to their packaging

Note 1 to entry: Refer to OIC/SMIIC 1 standard for various types of non-halal animals for human consumption.

3.3

doubtful food additives

food additives with two or more sources of which at least one of them is halal and other/s are questionable according to Islamic rules

Note 1 to entry: Doubtful material becomes halal or non-halal after checking its halal status, e.g. Animal-derived ingredients and ingredients obtained through fermentation.

3.4

non-halal food additives

food additives which are obtained from non-halal animal sources or where non-halal or najis materials are used during their manufacturing process

3.5

other added chemicals

substances added to food other than the main food material

Note 1 to entry: In this standard, it includes, processing aids, added nutrients and flavourings.

3.6

food ingredients

substances, excluding food additives, used in the manufacturing or preparation of food and present in the final product

3.7

indirect food additives

substances used in food-contact articles, and include adhesives and components of coatings, paper and paperboard components, polymers, and adjuvants and processing aids

Note 1 to entry: In general, these are substances that may come into contact with food as part of packaging or processing equipment, but are not intended to be added directly to food.

3.8

processing aid

substances that are added to a food for their technical or functional effect in the processing, but are either:

- a) removed in some manner before the food is packaged in its finished form,
- b) present in the finished food at insignificant levels and do not have any technical or functional effect in the finished food,
- c) or converted into constituents normally present in the food, and do not significantly increase the amount of the constituents naturally found in the food

3.9

functional class

one of the categories set out in Annex A based on the technological function that a food additive exerts in the foodstuff

3.10

carriers (extraction solvents)

food additive used to dissolve, dilute, disperse or otherwise physically modify a food additive or nutrient without altering its function (and without exerting any technological effect itself) in order to facilitate its handling, application or use of the food additives or nutrient

3.11

enzymes

naturally occurring proteins or conjugated proteins produced by living organisms and functioning as biochemical catalysts to promote desirable chemical reactions in food

Note 1 to entry: Enzymes are commonly used as processing aids in the making of various food products, for example, rennet, which is an enzyme used to form the curd in cheese making

3.12

nutrients

substances normally consumed as a constituent of food:

- a) which provide energy, or
- b) which are needed for growth, development and maintenance of life, or
- c) a deficit of which will cause characteristic biochemical or physiological changes to occur

Note 1 to entry: Vitamins and minerals are included under this definition.

3.13.

added nutrients

nutrients (essential or non-essential) added (mandatory or voluntary) to the (food or substitute food) in order to restore the food or make it a nutritional equivalence to the original food

Note 1 to entry: Nutrients added usually for:

- a) preventing/reducing the risk of, or correcting, a demonstrated deficiency of one or more essential nutrients in the population,

- b) reducing the risk of, or correcting, inadequate nutritional status or intakes of one or more essential nutrients in the population,
- c) fulfil requirements and/or recommended intakes of one or more essential nutrients,
- d) maintaining or improving health, and/or
- e) maintaining or improving the nutritional quality of foods.

3.14 flavour

sum of those characteristics of any material taken in the mouth, perceived principally by the senses of taste and smell, and also the general pain and tactile receptors in the mouth, as received and interpreted by the brain

Note 1 to entry: The perception of flavour is a property of flavourings.

3.15 flavourings

products that are added to food to impart, modify or enhance the flavour of food

Note 1 to entry: Flavourings do not include substances that have an exclusively sweet, sour, or salty taste (e.g. sugar, vinegar, and table salt). Flavourings may consist of flavouring substances, natural flavouring complexes, thermal process flavourings or smoke flavourings and mixtures of them and may contain non-flavouring food ingredients. They are not intended to be consumed as such.

3.16 flavouring substances

chemically-defined substances either formed by chemical synthesis or obtained from materials of plant or animal origin

Note 1 to entry: Flavouring substances can be classified as follows:

- a) **Natural flavouring substances** are flavouring substances obtained by physical processes that may result in unavoidable but unintentional changes in the chemical structure of the components of the flavouring (e.g. distillation and solvent extraction), or by enzymatic or microbiological processes, from a material of plant or animal origin. Such material may be unprocessed or processed for human consumption by traditional food-preparation processes (e.g. drying, torrefaction (roasting) and fermentation). This means substances that have been identified/detected in a natural material of animal or vegetable origin.
- b) **Synthetic flavouring substances** are flavouring substances formed by chemical synthesis.

4 REQUIREMENTS

4.1 Requirements for food additives and other added chemicals

4.1.1 Given the fact that non-safe foods would not be considered as halal, the food additives and other added chemicals which are proved to be carcinogenic or harmful to the human body are considered as non-halal and shall not be used. This includes all delisted additives with respect to scientific reports.

4.1.2 Only additives that are authorized by the Codex Alimentarius shall be adopted for halal food if they are complying with OIC/SMIIC 1 and Islamic rules.

NOTE See "CXS 192, General Standard for Food Additives" (GSFA) online database for the additives authorized by Codex Alimentarius.

4.1.3 Food additives and other added chemicals which may cause harm to the human body shall be under the maximum allowed limits. The maximum use limit shall comply with the national regulations and/or the CXS 192.

4.1.4 The maximum allowed use limit shall be considered as a halal critical point in all halal inspection and certification activities.

4.1.5 Producers who intend to obtain a halal certificate shall check the sources of food additives and other added chemicals used in the production of halal foods. This can be done by showing proof of conformity to the halal requirements of OIC/SMIIC 1 such as a valid halal certificate or a laboratory test analysis report...etc. for any chemicals used during the manufacturing of the food additives and other added chemicals.

4.1.6 In case of use of a halal certificate as a proof of conformity, the certificate shall be a valid certificate issued from a halal certification body which conforms to OIC/SMIIC 2 standard.

4.1.7 The halal certification body shall ensure that all chemicals used in and during the manufacturing processes of the food additives and other added chemicals are halal according to OIC/SMIIC 1.

4.1.8 The halal status of the food additives is given in Annex B. If a food additive is described as doubtful then a proof of conformity to the halal requirements of OIC/SMIIC 1 is compulsory. Food additives which are described as non-halal shall not be used under any circumstance.

4.1.9 It is the responsibility of the halal certification body to check the halal status for all non-mentioned materials and record them in the most appropriate way.

4.1.10 Some food additives (usually colourants) and any other added chemicals need an organic solvent to dissolve them. It is permissible to use alcohol¹ under the following conditions:

- a) the food additives (usually colourants) and the other added chemicals cannot be dissolved in any other solvent which does not cause intoxication,
- b) alcohol shall be used in the minimum amount required to dissolve the chemical,
- c) the alcohol amount shall not cause euphoria to the person who consumes it (less than 0.05 BAC) this means that the alcohol limit shall not exceed the 0.5% w/v or w/w of the final product.

NOTE 1 BAC is Blood Alcohol Concentration measured by g/100ml

NOTE 2 The alcohol shall not be derived from grapes and dates.

¹ Wherever used in the document, the term "Alcohol" refers to ethyl alcohol (ethanol)

4.1.11 Enzymes, flavours and other chemicals produced by using biotechnology techniques shall be produced on halal culture media and all enzymes and/or GMO used shall be free from non-halal and Najis materials.

4.2 Specific requirements for flavourings

4.2.1 The use of flavourings in food shall not lead to unsafe levels of their intake according to national regulation.

4.2.2 Flavourings should be of a purity suitable for use in food. Unavoidable impurities shall not be present in the final food at levels that would pose an unacceptable risk to health.

4.2.3 The use of flavourings is justified only where they impart or modify flavour to food, provided that such use does not mislead the consumer about the nature or quality of food.

4.2.4 Flavourings should be used under conditions of good manufacturing practice, which includes limiting the quantity used in food to the lowest level necessary to accomplish the desired flavouring effect.

4.2.5 Flavourings may contain other substances which are necessary for their production, storage, handling, and use. Such substances may also be used to facilitate the dilution, dissolution, or dispersion of flavourings in food. Such non-flavouring substances should be:

- a) Limited to the lowest level required to ensure the safety and quality of the flavourings, and to facilitate their storage and ease of use,
- b) the maximum use limit shall comply with the national regulations or the CXS 192 if there are no such regulations,
- c) the non-flavouring food ingredients shall fulfil the halal requirements for the food additives given in the clauses 4.1.1 – 4.1.10.

4.2.6 Flavouring agents which mimic non-halal products are considered as non-halal even it is produced from halal material, example: different pig meat flavours, liquor and champagne flavours... etc.

4.2.7 Flavours shall not come from non-halal sources and process.

4.2.8 Natural meat and chicken flavours and stocks shall only be produced from the halal animals slaughtered according to Islamic rules as stated in OIC/SMIIC 1.

5 LABELING

5.1 All food additives shall be listed in descending order of ingoing weight (m/m) at the time of the manufacture of the food.

5.2 Where an ingredient is itself the product of two or more ingredients, such a compound ingredient may be declared, as such, in the list of ingredients, provided that it is immediately accompanied by a list, in brackets, of its ingredients in descending order of proportion (m/m).

5.3 For food additives falling in the respective classes and appearing in lists of food additives permitted for use in foods, the functional classes given in Annex A shall be used together with the specific name or recognized numerical identification such as the Codex International Numbering System for Food Additives (CXG 36) as required by national legislation.

5.4 The expression “flavours” may be qualified by “natural”, “nature identical”, “synthetic” or a combination of these words as appropriate.

5.5 All food additives including processing aids shall be clearly declared and shall not be exempted from label declarations at any circumstances-

5.6 All food additives including processing aids used in food additive production shall be clearly declared in the label or the material specification data sheet (MSDS) wherever more appropriate.

Annex A
(normative)
Functional classes of halal food additives in foods

A.1 Functional classes of halal food additives are as follows:

- 1) “**Acids**” are substances which increase the acidity of a foodstuff and/or impart a sour taste to it,
- 2) “**Acidity regulators**” are substances which alter or control the acidity or alkalinity of a foodstuff,
- 3) “**Anticaking agents**” are substances which reduce the tendency of individual particles of a foodstuff to adhere to one another,
- 4) “**Antifoaming agents**” are substances which prevent or reduce foaming,
- 5) “**Antioxidants**” are substances which prolong the shelf-life of foods by protecting them against deterioration caused by oxidation, such as fat rancidity and colour changes,
- 6) “**Bleaching agents**” are substances (non – flour use), which are used to decolourize food. Bleaching agents do not include pigments,
- 7) “**Bulking agents**” are substances which contribute to the volume of a foodstuff without contributing significantly to its available energy value,
- 8) “**Carbonating agents**” are substances which are used to provide carbonation in a food,
- 9) “**Carriers**” are substances used to dissolve, dilute, disperse or otherwise physically modify a food additive or a flavouring, food enzyme, nutrient and/or other substance added for nutritional or physiological purposes to a food without altering its function (and without exerting any technological effect themselves) in order to facilitate its handling, application or use of the food additive or nutrient carrier,
- 10) “**Colours**” are substances which add or restore colour in a food,
- 11) “**Colour retention agents**” are substances which stabilize, retain or intensify the colour of a food,
- 12) “**Emulsifiers**” are substances which make it possible to form or maintain a homogenous mixture of two or more immiscible phases such as oil and water in a foodstuff,
- 13) “**Emulsifying salts**” are substances convert proteins contained in cheese into a dispersed form and thereby bring about homogenous distribution of fat and other components,

- 14) **“Firming agents”** are substances which make or keep tissues of fruit or vegetables firm or crisp, or interact with gelling agents to produce or strengthen a gel,
- 15) **“Flavour enhancers”** are substances which enhance the existing taste and/or odour of a foodstuff,
- 16) **“Flour treatment agents”** are substances, other than emulsifiers, which are added to flour or dough to improve its baking quality or colour,
- 17) **“Foaming agents”** are substances which make it possible to form a homogenous dispersion of a gaseous phase in a liquid or solid foodstuff,
- 18) **“Gelling agents”** are substances which give a foodstuff texture through the formation of a gel,
- 19) **“Glazing agents”** (including lubricants) are substances which, when applied to the external surface of a foodstuff, impart a shiny appearance or provide a protective coating,
- 20) **“Modified starches”** are substances obtained by one or more chemical treatments of edible starches, which may have undergone a physical or enzymatic treatment, and may be acid or alkali thinned or bleached,
- 21) **“Humectants”** are substances which prevent foods from drying out by counteracting the effect of an atmosphere having a low degree of humidity, or promote the dissolution of powder in an aqueous medium,
- 22) **“Packaging gases”** are gases other than air, introduced into a container before, during or after the placing of a foodstuff in that container with the intention to protect the food, for example, from oxidation or spoilage,
- 23) **“Preservatives”** are substances which prolong the shelf-life of foods by protecting them against deterioration caused by microorganisms,
- 24) **“Propellants”** are gases other than air which expel a foodstuff from a container,
- 25) **“Raising agents”** are substances or combinations of substances which liberate gas and thereby increase the volume of a dough or a batter,
- 26) **“Sequestrants”** are substances which control the availability of a cation by forming chemical complexes with metallic ions, which can prevent the oxidation of the fats in the food,
- 27) **“Stabilisers”** are substances which make it possible to maintain the Physico-chemical state of a foodstuff; stabilisers include substances which enable the maintenance of a homogenous dispersion of two or more immiscible substances in a foodstuff, substances which stabilise, retain or intensify an existing colour of a foodstuff and substances which increase the binding capacity of the food, including

the formation of cross-links between proteins enabling the binding of food pieces into re-constituted food,

28)“**Sweeteners**” are substances (other than a mono- or disaccharide sugar), used to impart a sweet taste to foods or in table-top sweeteners,

29)“**Thickeners**” are substances which increase the viscosity of a foodstuff.

Annex B
(normative)
The halal status of some food additives

INS #	Name of the food additive	Function	Halal status
100	curcumins	colour	doubtful
100(i)	curcumin	colour	doubtful
100(ii)	turmeric yellow	colour	doubtful
101(i),(ii),(iii)	– riboflavin, synthetic (101(i)) – riboflavin 5'-phosphate sodium (101(ii)) – riboflavin from <i>Bacillus subtilis</i> (101(iii))	colour	doubtful
102	tartrazine	colour	doubtful
104	quinoline yellow	colour	doubtful
110	sunset yellow FCF	colour	doubtful
120	<i>cochineal carmine, carminic acid, carmines</i> ^{1,2,3}	colour	<i>non-halal</i>
122	azorubine, carmoisine	colour	doubtful
123	amaranth	colour	doubtful
124	ponceau 4R, cochineal red A	colour	doubtful
127	erythrosine	colour	doubtful
128	red 2g	colour	doubtful
129	allura red AC	colour	doubtful
131	patent blue v	colour	doubtful
132	indigotine, indigo carmine	colour	doubtful
133	brilliant blue FCF	colour	doubtful
140	chlorophylls	colour	doubtful
141(i),(ii)	– chlorophylls, copper complexes (141(i)) – chlorophyllin copper complexes, potassium and sodium salts (141(ii))	colour	doubtful
142	green s	colour	doubtful
150a,b,c,d	– caramels, caramel I - plain caramel (150a) – caramel II - sulfite caramel (150b) – caramel III - ammonia caramel (150c) – caramel IV - sulfite ammonia caramel (150d)	colour	doubtful
151	brilliant black, black PN	colour	doubtful
153	vegetable carbon	colour	doubtful
155	brown HT	colour	doubtful

¹ Until now the great majority of carmine produced around the world has been extracted from insects. Recently, there are few research projects and scientific reports that describe the chemical synthesis of carminic acid yet this method is not fully applied, hence, still without economic value. It is a very critical study to follow since using the synthetic carminic acid is halal.

² There is no plant source of carmine, there are different colouring materials which can give the same colouring index but they are not classified as carmine or E120. e.g. Carotenoids (E160), anthocyanins (E163), and betalains (E162).

³ If the Islamic authority in an OIC country follows the school of thoughts or fatwa which allows the consumption of insects, then the name of carmine shall be written clearly by the producer (not its e number or code) on the product label with its source. e.g. (Carmine extracted from insects).

160a(i),(ii), (iii),(iv)	– beta-carotenes, synthetic (160a(i)) – beta-carotenes, vegetable (160a(ii)) – beta-carotenes, blakeslea trispora (160a(iii)) – β -Carotene-rich extract from Dunaliella Salina (160a(iv))	colour	doubtful
160b(i),(ii)	– annatto extracts, bixin-based (160b(i)) – annatto extracts, norbixin-based (160b(ii))	colour	doubtful
160c(ii)	paprika extract	colour	doubtful
160e	carotenal, beta-apo-8'-	colour	doubtful
160f	carotenoic acid, ethyl ester, beta-apo-8'-	colour	doubtful
161b(i),(iii)	– lutein from tagetes erecta (161b(i)) – lutein esters from tagetes erecta (161b(iii))	colour	doubtful
161g	canthaxanthin	colour	doubtful
170(i)	calcium carbonate	colour	doubtful
171	titanium dioxide	colour	doubtful
202	potassium sorbate	preservative	doubtful
210	benzoic acid	preservative	doubtful
211	sodium benzoate	preservative	doubtful
227	calcium bisulfite, calcium hydrogen sulfite	preservative	doubtful
234	nisin	preservative	doubtful
235	natamycin (pimaricin)	preservative	doubtful
250	sodium nitrite	colour retention agent, preservative	doubtful
261(i)	potassium acetate	acidity regulator, preservative	doubtful
262(i),(ii)	– sodium acetate (262(i)) – sodium diacetate (262(ii))	acidity regulator, preservative, sequestrant	doubtful
263	calcium acetate	acidity regulator, preservative, stabilizer	doubtful
270	lactic acid, L-, D- and DL	acidity regulator	doubtful
280	propionic acid	preservative	doubtful
281	sodium propionate	preservative	doubtful
282	calcium propionate	preservative	doubtful
283	potassium propionate	preservative	doubtful
296	malic acid, DL	acidity regulator, sequestrant	doubtful
297	fumaric acid	acidity regulator	doubtful
300	ascorbic acid, L-	acidity regulator, antioxidant, flour treatment agent, sequestrant	doubtful
301	sodium ascorbate	antioxidant	doubtful
302	calcium ascorbate	antioxidant	doubtful
304	ascorbyl palmitate	antioxidant	doubtful

307a,b,c	– tocopherols, d-alpha-Tocopherol (307a) – tocopherol concentrate, mixed (307b) – dl-alpha-Tocopherol (307c)	antioxidant	doubtful
308	gamma-tocopherol	antioxidant	doubtful
309	delta-tocopherol	antioxidant	doubtful
319	tertiary butylhydroquinone (TBHQ)	antioxidant	doubtful
320	butylated hydroxyanisole (BHA)	antioxidant	doubtful
321	butylated hydroxytoluene (BHT)	antioxidant	doubtful
322(i),(ii)	– lecithin (322(i)) – lecithin, partially hydrolysed (322(ii))	antioxidant, emulsifier	doubtful
325	sodium lactate	acidity regulator, antioxidant, bulking agent, emulsifier, emulsifying salt, humectant, thickener	doubtful
326	potassium lactate	acidity regulator, antioxidant, emulsifier, humectant	doubtful
327	calcium lactate	acidity regulator, emulsifying salt, firming agent, flour treatment agent, thickener	doubtful
331(i),(iii)	– sodium dihydrogen citrate (331(i)) – trisodium citrate (331(iii))	acidity regulator, emulsifier, emulsifying salt, sequestrant, stabilizer	doubtful
332(i),(ii)	– potassium dihydrogen citrate (332(i)) – tripotassium citrate (332(ii))	acidity regulator, emulsifying salt, sequestrant, stabilizer	doubtful
333(iii)	tricalcium citrate	acidity regulator, emulsifying salt, firming agent, sequestrant, stabilizer	doubtful
334	L(+)-tartaric acid	acidity regulator, antioxidant, flavour enhancer, sequestrant	doubtful
335(ii)	sodium L(+) tartrate	acidity regulator, emulsifying salt, sequestrant, stabilizer	doubtful
336	potassium tartrate	acidity regulator, emulsifying salt, sequestrant, stabilizer	doubtful

337	potassium sodium I(+)-tartrate	acidity regulator, emulsifying salt, sequestrant, stabilizer	doubtful
340(i),(ii),(iii)	– potassium dihydrogen phosphate (340(i)) – dipotassium hydrogen phosphate (340(ii)) – tripotassium phosphate (340(iii))	acidity regulator, emulsifier, humectant, sequestrant, stabilizer, thickener	doubtful
341(i),(ii),(iii)	– calcium dihydrogen phosphate (341(i)) – calcium hydrogen phosphate (341(ii)) – tricalcium phosphate (341(iii))	acidity regulator, anticaking agent, emulsifying salt, firming agent, flour treatment agent, humectant, raising agent, sequestrant, stabilizer, thickener	doubtful
343(i),(ii),(iii)	– magnesium dihydrogen phosphate (343(i)) – magnesium hydrogen phosphate (343(ii)) – trimagnesium phosphate (343(iii))	acidity regulator, anticaking agent, emulsifying salt, stabilizer, thickener	doubtful
350(i),(ii)	– sodium hydrogen DL-malate (350(i)) – sodium DL-malate (350(ii))	acidity regulator, humectant	doubtful
351	potassium malate	acidity regulator	doubtful
352(ii)	calcium malates D, L-	acidity regulator	doubtful
353	metatartaric acid	acidity regulator, emulsifier	doubtful
354	calcium tartrate	acidity regulator, emulsifier	doubtful
355	adipic acid	acidity regulator	doubtful
401	sodium alginate	bulking agent, carrier, emulsifier, foaming agent, gelling agent, glazing agent, humectant, sequestrant, stabilizer, thickener	doubtful

402	potassium alginate	bulking agent, carrier, emulsifier, foaming agent, gelling agent, glazing agent, humectant, sequestrant, stabilizer, thickener	doubtful
407, 407a	– carrageenan (407) – processed eucheuma seaweed (PES) (407a)	bulking agent, carrier, emulsifier, gelling agent, glazing agent, humectant, stabilizer, thickener	doubtful
410	carob bean gum, locust bean gum	thickener, stabilizer, emulsifier	doubtful
412	guar gum	thickener, stabilizer, emulsifier	doubtful
415	xanthan gum	emulsifier, foaming agent, stabilizer, thickener	doubtful
420(i),(ii)	– sorbitol (420(i)) – sorbitol syrup (420(ii))	bulking agent, humectant, sequestrant, stabilizer, sweetener, thickener	doubtful
421	mannitol	anticaking agent, bulking agent, humectant, stabilizer, sweetener, thickener	doubtful
422	glycerol	humectant, thickener	doubtful
430	polyoxyethylene (8) stearate	emulsifier	doubtful
431	polyoxyethylene (40) stearate	emulsifier	doubtful
432	polyoxyethylene (20) sorbitan monolaurate	emulsifier, stabilizer monolaurate	doubtful
433	polyoxyethylene (20) sorbitan monooleate	emulsifier, stabilizer	doubtful
434	polyoxyethylene (20) sorbitanmonopalmitate	Emulsifier,	doubtful
435	polyoxyethylene (20) sorbitan monostearate	emulsifier, stabilizer	doubtful
436	polyoxyethylene (20) sorbitan tristearate	emulsifier, stabilizer	doubtful

440	pectins	emulsifier, gelling agent, glazing agent, stabilizer, thickener	doubtful
442	ammonium salts of phosphatidic acid	emulsifier	doubtful
444	sucrose acetate isobutyrate	emulsifier, stabilizer,	doubtful
445(iii)	glycerol esters of wood rosins	emulsifier	doubtful
459	cyclodextrin, beta-	carrier, stabilizer, thickener	doubtful
470(i),(ii),(iii)	– salts of myristic, palmitic and stearic acids with ammonia, calcium, potassium and sodium (470(i)) – salts of oleic acid with calcium, potassium and sodium (470(ii)) – magnesium stearate (470(iii))	anticaking agent, emulsifier, stabilizer	doubtful
471	mono- and di-glycerides of fatty acid	antifoaming agent, emulsifier, glazing agent, stabilizer	doubtful
472a	acetic and fatty acid esters of glycerol	emulsifier, sequestrant, stabilizer	doubtful
472b	lactic and fatty acid esters of glycerol	emulsifier, sequestrant, stabilizer	doubtful
472c	citric and fatty acid esters of glycerol	emulsifier, sequestrant, stabilizer	doubtful
472e	diacetyltartaric and fatty acid esters of glycerol	emulsifier, sequestrant, stabilizer	doubtful
472f	mixed acetic and tartaric acid esters of mono- and diglycerides of fatty acids	emulsifier, sequestrant, stabilizer	doubtful
473	sucrose esters of fatty acids	emulsifier, foaming agent, glazing agent, stabilizer	doubtful
474	sucroglycerides	emulsifier	doubtful
475	polyglycerol esters of fatty acids	emulsifier, stabilizer	doubtful
476	polyglycerol esters of interesterified ricinoleic acid	emulsifier	doubtful
477	propylene glycol esters of fatty acids	emulsifier	doubtful
479	thermally oxidized soya bean oil interacted with mono- and diglycerides of fatty acids	emulsifier	doubtful
481(i)	sodium stearyl lactylate	emulsifier, flour treatment agent, foaming agent, stabilizer	doubtful

482(i)	calcium stearoyl lactylate	emulsifier, flour treatment agent, foaming agent, stabilizer	doubtful
483	stearyl tartrate	flour treatment agent	doubtful
491	sorbitan monostearate	emulsifier, stabilizer	doubtful
492	sorbitan tristearate	emulsifier, stabilizer	doubtful
493	sorbitan monolaurate	emulsifier, stabilizer	doubtful
494	sorbitan monooleate	emulsifier, stabilizer	doubtful
495	sorbitan monopalmitate	emulsifier	doubtful
500(i),(ii),(iii)	– sodium carbonate (500(i)) – sodium hydrogen carbonate (500(ii)) – sodium sesquicarbonate (500(iii))	acidity regulator, anticaking agent, emulsifying salt, raising agent, stabilizer, thickener	doubtful
501(i),(ii)	– potassium carbonate (501(i)) – potassium hydrogen carbonate (501(ii))	acidity regulator, stabilizer, raising agent	doubtful
504(i),(ii)	– magnesium carbonate (504(i)) – magnesium hydroxide carbonate (504(ii))	acidity regulator, anticaking agent, colour retention agent, carrier	doubtful
508	potassium chloride	firming agent, flavour enhancer, stabilizer, thickener	doubtful
509	calcium chloride	firming agent, stabilizer, thickener	doubtful
511	magnesium chloride	colour retention agent, firming agent, stabilizer	doubtful
514(i),(ii)	– sodium sulfate (514(i)) – sodium hydrogen sulfate (514(ii))	acidity regulator	doubtful
516	calcium sulfate	acidity regulator, firming agent, flour treatment agent, sequestrant, stabilizer	doubtful
524	sodium hydroxide	acidity regulator	doubtful
525	potassium hydroxide	acidity regulator	doubtful
527	ammonium hydroxide	acidity regulator	doubtful
542	bone phosphate	anticaking agent, Emulsifier, Humectant	doubtful

551	silicon dioxide, amorphous	anticaking agent, antifoaming agent, carrier	doubtful
556	calcium aluminium silicate	anticaking agent	doubtful
575	glucono delta-lactone	acidity regulator, raising agent, sequestrant	doubtful
576	sodium gluconate	sequestrant, stabilizer, thickener	doubtful
577	potassium gluconate	acidity regulator, sequestrant	doubtful
578	calcium gluconate	acidity regulator, firming agent, sequestrant	doubtful
579	ferrous gluconate	colour retention agent	doubtful
620	glutamic Acid, L(+)	flavour enhancer	doubtful
621	monosodium L-glutamate	flavour enhancer	doubtful
622	monopotassium L-glutamate	flavour enhancer	doubtful
623	calcium di-L-glutamate	flavour enhancer	doubtful
624	monoammonium L-glutamate	flavour enhancer	doubtful
625	magnesium di-L-glutamate	flavour enhancer	doubtful
627	disodium 5'-guanylate	flavour enhancer	doubtful
630	inosinic acid, 5'-	flavour enhancer	doubtful
631	disodium 5'-inosinate	flavour enhancer	doubtful
632	potassium 5'-inosinate	flavour enhancer	doubtful
633	calcium 5'-inosinate	flavour enhancer	doubtful
634	calcium 5'-ribonucleotides	flavour enhancer	doubtful
635	disodium 5'-ribonucleotides	flavour enhancer	doubtful
640	glycine and its sodium salt	flavour enhancer	doubtful
641	L-leucine	flavour enhancer	doubtful
904	shellac, bleached	glazing agent	doubtful
907	hydrogenated poly-1-decenes	glazing agent	doubtful
920	L-cysteine	flour treatment agent	doubtful
950	acesulfame potassium	flavour enhancer, sweetener	doubtful
951	aspartame	flavour enhancer, sweetener	doubtful
952(i),(ii),(iv)	– cyclamic acid (952(i)) – calcium cyclamate (952(ii)) – sodium cyclamate (952(iv))	sweetener	doubtful
953	isomalt (Hydrogenated isomaltulose)	anticaking agent, bulking agent, glazing agent, stabilizer, sweetener, thickener	doubtful

954(i),(ii),(iii), (iv)	– saccharin (954(i)) – calcium saccharin (954(ii)) – potassium saccharin (954(iii)) – sodium saccharin (954(iv))	sweetener	doubtful
955	sucralose (Trichlorogalactosucrose)	flavour enhancer, sweetener	doubtful
966	lactitol	emulsifier, sweetener, thickener	doubtful
967	xylitol	emulsifier, humectant, stabilizer, sweetener, thickener	doubtful
1103	invertases	stabilizer	doubtful
1105	lysozyme	preservative	doubtful
1200	polydextroses	bulking agent, glazing agent, humectant, stabilizer, thickener	doubtful
1413	phosphated distarch phosphate	emulsifier, stabilizer, thickener	doubtful
1518	triacetin	carrier emulsifier humectant	doubtful
1520	propylene glycol	carrier, emulsifier, glazing agent, humectant	doubtful