

REGULATIONS – PRESERVATIVES AND ANTIOXIDANTS

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The Minister of Health, Welfare and Pensions has, in terms of section 15(1) of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act 54 of 1972), made the following regulation which may be applied from the date of publication hereof but shall be applied with effect from a date six months after the date of publication.

Definitions

- (1) “**Antioxidant**” means any substance which delays, retards or prevents the development in foodstuffs of rancidity or other deterioration due to oxidation but does not include substances added to foodstuffs for purposes other than antioxidation which nevertheless have an antioxidant action;

“**good manufacturing practice (GMP)**” means limited to such a maximum level that the product concerned will not be deleteriously affected or its compliance with legal requirements disturbed; and

“**preservative**” means any substance which inhibits, retards or arrests fermentation, acidification or other decomposition of foodstuffs but does not include preservatives such as common salt (sodium chloride), sugar (sucrose) lactic acid, vinegar, alcohol or potable spirits, herbs, hop extract, spices and essential oils.

- (2) (a) Any person shall be guilty of an offence if he sells any foodstuff which contains a preservative, except that each foodstuff specified in column I of Annex A or any such foodstuff which is intended to be diluted or reconstituted before consumption, when diluted or reconstituted in accordance with the instructions on the label, may, subject to the provisions of subregulation (2)(b), contain any one of the preservatives specified opposite to it in column II, in a proportion not exceeding the number of mg/kg or mg/l, as the case may be, specified in column III. The preservatives sulphur dioxide, benzoic acid, sorbic acid and propionic acid may also be used in the form of their calcium, sodium or potassium salts expressed as sulphur dioxide (SO₂), benzoic acid (C₆H₅COOH), sorbic

acid ($\text{CH}_3 - \text{CH} = \text{CH} - \text{CH} = \text{CH} - \text{COOH}$) and propionic acid ($\text{CH}_3\text{CH}_2\text{COOH}$), as the case may be.

- (b) Where the use of two or more preservatives in a foodstuff is allowed in Annex A, a mixture thereof, if compatible, may be used, provided the sum of the fractions obtained when the amount of each preservative used is divided by the maximum permitted amount of such preservative when used alone does not exceed one.
 - (c) A preservative shall not contain—
 - (i) more than 3 mg/kg of arsenic;
 - (ii) more than 10 mg/kg of lead;
 - (iii) more than 50 mg/kg of copper and zinc taken together (the zinc content, however, shall not be higher than 25 mg/kg); or
 - (iv) any other substances harmful to human health, subject always, however, to any exceptions implicit in the specific criteria laid down in Annex C. Where Specific Criteria of Purity are laid down in Annex C, these shall apply.
- (3) (a) Subject to the provisions of the regulations governing (a) wine, other fermented beverages and spirits and (b) foodstuffs for infants, young children and children, no person shall sell any foodstuff containing an antioxidant, except that each foodstuff specified in column I of Annex B or any such foodstuff which is intended to be diluted or reconstituted before consumption, when diluted or reconstituted in accordance with the instructions on the label, may, subject to the provisions of subregulation (3)(b), contain any of the antioxidants specified opposite to it in column II, in a proportion not exceeding the number of milligrams per kilogram or per litre specified in column III.
- (b) Where the use of two or more antioxidants in a foodstuff is allowed in Annex B, a mixture thereof, if compatible, may be used, provided the sum of the fractions obtained when the amount of each antioxidant used is divided by the maximum permitted amount of such antioxidant, when used alone does not exceed one.
 - (c) An antioxidant shall not contain—
 - (i) more than 3 mg/kg of arsenic
 - (ii) more than 10 mg/kg of lead;
 - (iii) more than 50 mg/kg of copper and zinc taken together (the zinc content, however, shall not be higher than 25 mg/kg); or
 - (iv) any other substances harmful to human health.
- (4) Foodstuffs prepared in part from foodstuffs in which no preservative or antioxidant is permitted, and in part from foodstuffs in which a preservative or antioxidant is permitted, shall not contain more preservative or antioxidant than results from the addition of the foodstuff in which a preservative or antioxidant is permitted.
- (5) Every package containing a preservative or antioxidant intended to be used in food shall bear a label stating clearly its composition and, in the case of sulphur dioxide compounds, the percentage of sulphur dioxide which the contents will yield.
- (6) No person shall advertise, sell or use as a preservative or antioxidant for foodstuffs any preservative or antioxidant which is not specified in column II of either Annex A or B, as the case may be.
- (7) Where the process of smoking is applied or where a smoke solution is added, the smoke or smoke solutions shall be derived from wood or ligneous vegetable matter in the natural state. Smoke or smoke solutions derived from wood or ligneous vegetable matter which has been impregnated,

coloured, gumm ed, painted, coated or treated in any manner liable to import substances harmful to human health are not permissible.

Regulation 5 of the regulations under the repealed Food, Drugs and Disinfectants Act, 1929 (Act 13 of 1929), published under Government Notice 575 of 28 March 1930, as amended, is hereby repealed with effect from the date of coming into effect of the provisions of this notice.

ANNEXURE A

I Foodstuff	II Preservative	III Quantity permitted mg/kg or mg/P
All foodstuffs where applicable.....	Lysozyme.....	600
Coffee extract (or coffee and chicory extract), liquid.....	Methyl-p-hydroxy benzoate.... Propyl-p-hydroxy benzoate.... Sorbic acid.....	1 000 1 000 600
Coffee extract, solid.....	Sulphur dioxide.....	500
Desserts:	Sulphur dioxide.....	500
Refrigerated.....	Sorbic acid.....	1 000
Non-refrigerated table jelly.....	Benzoic acid.....	400
Desserts refrigerated.....	Sorbic acid.....	400
Dietary supplements.....	Sorbic acid.....	1 000
Essences and colour solutions for household use.....	Para-hydroxybenzoic acid and its salts..... Benzoic acid.....	*GMP 1 000
Flour confectionery.....	Para-hydroxybenzoic acid, methyl and propyl esters..... Propionic acid..... Sodium metabisulphite.....	1 000 1 000 100 (calculated as sulphur dioxide)
Fruit:	Sorbic acid.....	1 000
Crystallised glacé or cured fruit and candied peel.....	Sulphur dioxide.....	100
Dried fruit, including raisins and sultanas.....	Sulphur dioxide..... Sorbic acid.....	2 000 600

I Foodstuff	II Preservative	III Quantity permitted mg/kg or mg/p
Fresh fruit, prepared.....	Benzoic acid.....	600
	Sorbic acid.....	600
	Sulphur dioxide.....	500
Fresh fruit pulp.....	Benzoic acid.....	600
	Pimaricin.....	5
	Sorbic acid.....	600
Glazed fruit.....	Sulphur dioxide.....	1 500
	Sorbic acid.....	400
Gelatin, edible.....	Sulphur dioxide.....	1 000
Jam and marmalade:		
Artificially sweetened jam substitutes	Benzoic acid.....	400
	Sorbic acid.....	400
	Sulphur dioxide.....	40
Jam, fruit preserves and jellies.....	Sulphur dioxide.....	40
	Benzoic acid.....	400
	Parahydroxybenzoic acid, methyl and propyl esters.....	400
	Sorbic acid.....	400
	Sulphur dioxide.....	40
Citrus marmalade.....	Sorbic acid.....	250
	Benzoic acid.....	1 000
Margarine and other edible fat and oil emulsions.....	Benzoic acid.....	1 000
	Sorbic acid.....	1 000
Marine food:		
Caviar (sturgeon eggs) and other fish eggs, not smoked.....	Hexamethylenetetramine.....	1 000 when product is marketed
Fish pastes.....	Benzoic acid.....	500
	Sorbic acid.....	500
	Methyl-p-hydroxy benzoate....	1 000
	Propyl-p-hydroxy benzoate....	1 000
	Pimaricin.....	6
	Benzoic acid.....	750
Fish roe and spawn which has been cooked, cured and/or smoked.....	Pimaricin.....	6
Fish sausages.....	Benzoic acid.....	700
	Pimaricin.....	6 to be applied to the outer inedible casing only
	Sulphur dioxide.....	450
Fish, smoked and dried.....	Benzoic acid.....	200
	Sorbic acid.....	600
Fresh fish.....	Benzoic acid.....	100
	Sorbic acid.....	GMP
Manufactured fish products, with the exception of frozen fish, salted smoked and canned fish products.....	Benzoic acid.....	700
	Pimaricin.....	6
	Sulphur dioxide.....	450
Marinated fish and fish products to be kept under refrigeration.....	Benzoic acid.....	1 000
	Ethyl 4-hydroxy benzoate.....	1 000
	Hexamine.....	50
	Methyl 4-hydroxy benzoate....	1 000
	Propyl 4-hydroxy benzoate....	1 000

I Foodstuff	II Preservative	III Quantity permitted mg/kg or mg/p
Quick frozen lobsters	Sulphur dioxide..... Pimaricin.....	30 in the raw product 6
Quick frozen shrimps or prawns (raw product).....	Sulphur dioxide.....	30 in the final product
Salted snook.....	Sorbic acid.....	10 000
Mayonnaise, salad cream, salad dressing and French dressing.....	Sorbic acid..... Benzoic acid.....	600 600
Meat products:		
Biltong.....	Pimaricin.....	6
	Potassium and sodium nitrate..	200 total nitrate, expressed as sodium nitrate
	Potassium and sodium nitrite..	160 total nitrate, expressed as sodium nitrate
	Sorbic acid.....	2 000
Canned chopped meat	Potassium and sodium nitrate..	200 total nitrate, expressed as sodium nitrate
	Potassium and sodium nitrate..	50 total nitrate, expressed as sodium nitrate
	Pimaricin.....	6
Canned corned beef.....	Potassium and sodium nitrate..	200 total nitrate, expressed as sodium nitrate
	Potassium and sodium nitrate..	50 total nitrate, expressed as sodium nitrate
	Pimaricin.....	6
	Sorbic acid.....	400
Cold, smoked, manufactured sausages	Pimaricin.....	6
	Potassium and sodium nitrate..	200 total nitrate, expressed as sodium nitrate
Cooked cured hams.....	Potassium and sodium nitrate..	160 total nitrate, expressed as sodium nitrate
	Pimaricin.....	6
Cooked cured luncheon meat.....	Potassium and sodium nitrate..	200 total nitrate, expressed as sodium nitrate
	Potassium and sodium nitrate..	160 total nitrate, expressed as sodium nitrate
	Pimaricin.....	6
Cooked cured pork shoulder.....	Potassium and sodium nitrate..	200 total nitrate, expressed as sodium nitrate
	Potassium and sodium nitrate..	160 total nitrate, expressed as sodium nitrate
	Pimaricin.....	6
	Sorbic acid.....	400
Frozen cooked meat pie fillings.....	Pimaricin.....	6
	Sorbic acid.....	400
Meat pasties, frozen, raw.....	Sorbic acid.....	400
Manufactured meat products, with the exception of canned meat products...	Potassium and sodium nitrate..	160 total nitrate, expressed as sodium nitrate
	Potassium and sodium nitrate..	200 total nitrate, expressed as sodium nitrate
	Sulphur dioxide.....	450

I Foodstuff	II Preservative	III Quantity permitted mg/kg or mg/p
	Benzoic acid.....	750
Processed meat products.....	Pimaricin.....	500 on the casing, 6 in the contents
Sausages and sausage meat.....	Potassium and sodium nitrate..	160 total nitrate, expressed as sodium nitrate
Milk products: Cheddar cheese, Cheshire cheese.....	Potassium and sodium nitrate..	200 total nitrate, expressed as sodium nitrate
Cheese (except as otherwise specified).....	Sulphur dioxide.....	450
	Benzoic acid.....	750
	Pimaricin.....	500 on the casing, 6 in the contents
	Pimaricin.....	2 in the rind without plastic coating; 500 in a plastic coating; 10 for application on the surface of the cheese only
	Sorbic acid.....	1 000
	Benzoic acid.....	Carried over from enzyme preparations
	Calcium sorbate.....	Carried over from enzyme preparations
	Hexamethylenetetramine.....	* GMP
	Hydrogen peroxide.....	Not specified (residue destroyed by using catalase)
	Nisin (pure).....	12,5 equivalent to 500 i.u.g finished product
	Pimaricin.....	2 in the rind without plastic coating; 500 in a plastic coating; 10 for application to the surface of the cheese only
	Potassium and sodium nitrates	200 singly or in combination calculated as sodium nitrate
Cottage cheese and cream cheese.....	Propionic acid.....	* GMP
	Sulphur dioxide.....	2 000
	Sorbic acid.....	1 000
	Pimaricin.....	10
	Pimaricin.....	2 in the rind without plastic coating; 500 in a plastic coating; 10 for application on the surface of the cheese only
Processor blended cheese including cheese spread process cheese preparations and soft cheese	Sorbic acid.....	3 000
	Benzoic acid.....	600
	Nisin (pure).....	12,5 equivalent to 500 i.u.g finished product
	Pimaricin.....	10 for application to the surface of the cheese only
	Propionic acid and its Ca. K na. salts.....	1 000
	Sodium Diacetate.....	1 500
	Sorbic acid.....	1 000

I Foodstuff	II Preservative	III Quantity permitted mg/kg or mg/p
Various cheeses (Edam, Gouda, Tilsner, Lenburger).....	Pimaricin.....	2 in the rind without plastic coating; 500 in a plastic coating 10 for application to the surface of the cheese only 200 singly or in combination calculated as sodium nitrate
Yoghurt.....	Sorbic acid.....	1 000
	Pimaricin.....	10
Pastry (dough), raw, frozen.....	Sorbic acid.....	400
Pickles, sauces and chutneys		
Pickled cucumbers.....	Benzoic acid.....	1 000
	Sorbic acid.....	1 000
Pickles (excluding pickled cucumbers), sauces, chutneys, tomato	Methyl-p-hydroxy benzoate...	1 000
ketchup paste, pulp and puree.....	Propyl-p-hydroxy benzoate....	1 000
	Sorbic acid.....	600
	Sulphur dioxide.....	500
	Benzoic acid.....	600
Table olives, including stuffed olives	Benzoic acid.....	1 000
or specialties that are either not fully	Sorbic acid.....	500
cured or are not preserved by heat		
sterilization.....	Formaldehyde.....	280
Silicon antifoam emulsion.....	Sorbic acid.....	1 000
Soft drinks and beverages:		
Beverage concentrates, prepared from	Benzoic acid.....	600
wheat and other cereals.....		
Black currant juice.....	Sulphur dioxide.....	10
	Pimaricin.....	5
Soft drinks.....	Sulphur dioxide.....	120
	Benzoic acid.....	400
	Sorbic acid.....	250
Fruit juices, not otherwise specified..	Benzoic acid.....	600
	Propyl-p-hydroxy benzoate....	1 000
	Methyl-p-hydroxy benzoate...	1 000
	Sulphur dioxide.....	450
	Sorbic acid.....	600
	Pimaricin.....	5
Pineapple juice.....	Sulphur dioxide.....	10
	Pimaricin.....	5
Sacramental wine prepared from un-	Benzoic acid.....	2 750
fermented grape juice.....	Pimaricin.....	5
Starches including modified starches	Sulphur dioxide.....	100
Sugars and syrups:		
Liquid glucose.....	Sulphur dioxide.....	400
Dextrose anhydrous.....	Sulphur dioxide.....	20
Dextrose monohydrate.....	Sulphur dioxide.....	20
Powered glucose for the manufacture		
of sugar confectionery only.....	Sulphur dioxide.....	150

I Foodstuff	II Preservative	III Quantity permitted mg/kg or mg/p
Glucose syrup and powdered glucose.	Sulphur dioxide.....	40
Liquid glucose for the manufacture of	Sulphur dioxide.....	400
sugar confectionery only.....	Sulphur dioxide.....	20 (residue resulting from the
Powdered dextrose.....	Sulphur dioxide.....	dextrose used)
Powdered sugar.....	Sulphur dioxide.....	20 (residue resulting from the
Refined sugar.....	Sulphur dioxide.....	white sugar used)
Soft sugars.....	Sulphur dioxide.....	20
Vegetables, dehydrated.....	Sulphur dioxide.....	40
Vegetables, fresh, prepared.....	Sulphur dioxide.....	2 000
Vinegar.....	Sulphur dioxide.....	500
Canned foodstuffs, not otherwise	Sulphur dioxide.....	100
specified.....	Pimaricin.....	5

*GMP means good manufacturing practice.

ANNEXURE B

I Foodstuff	II Antioxidant	III Maximum level mg/kg or mg/p
Chewing gum base.....	Butylated hydroxyanisole (BHA)....	1 000
	Butylated hydroxytoluene (BHT)....	1 000
	Propyl gallate.....	100
Dietary supplements.....	Butylated hydroxyanisole (BHA)....	*GMP
	Alpha-tocopherol.....	*GMP
Essential oils.....	Tocopherols, mixed concentrate.....	
	Butylated hydroxyanisole (BHA)....	1 000
Fat and oils:	Butylated hydroxytoluene (BHT)....	1 000
	Butylated hydroxyanisole (BHA)....	1 000
Butterfat not intended for direct consumption or use in reconstituted milk or reconstituted milk products	Butylated hydroxyanisole (BHA)....	200
	Butylated hydroxytoluene (BHT)....	200
	Propyl, octyl and dodecyl gallates...	100
	Tertiary butyl hydroquinone (TBHQ)	200
	Ascorbyl palmitate and stearate.....	200
	Butylated hydroxyanisole (BHA)....	200
	Butylated hydroxytoluene (BHT)....	200
	Propyl, octyl and dodecyl gallates...	100
	Tertiary butyl hydroquinone (TBHQ)	200
	Phosphoric acid.....	100
	Isopropyl citrate mixture (including monoisopropyl citrate).....	
	Monoglyceride citrate.....	
	Thiodipropionate, dilauryl.....	200
Citric acid, sodium citrate.....	*GMP	
Alpha-tocopherol.....		
Tocopherols, mixed concentrate.....		
Margarine.....	Ascorbyl palmitate and stearate.....	200
	Butylated hydroxyanisole (BHA)....	200
	Butylated hydroxytoluene (BHT)....	200
	Propyl, octyl and dodecyl gallates...	100
	Tertiary butyl hydroquinone (TBHQ)	200
	Isopropyl citrate mixture (including monoisopropyl citrate).....	100
	Alpha-Tocopherol, tocopherols, mixed concentrate.....	*GMP
Refined olive oil, refined olive-residue oil and blends of virgin and refined olive oils and mixtures of virgin and refined olive-residue oils.....	Alpha-Tocopherol.....	200 total alpha-tocopherol for the purposes of restoring natural tocopherol lost in processing

I Foodstuff	II Antioxidant	III Maximum level mg/kg or mg/p
Flavourants.....	Alpha-Tocopherol..... Tocopherols, mixed concentrate.....	*GMP
Fruit and fruit juices:		
Fruit juices, fruit nectars, fruit squashes, fruit drinks and imitation fruit drinks, as defined in the Marketing Act, 1968 (Act 59 of 1968) or in the specifications contained in the regulations under that Act.	Erythorbic acid/sodium erythorbate.. L-Ascorbic acid.....	*GMP *GMP
Canned apple sauce, canned fruit cocktail, canned peaches, canned tropical fruit salad, fresh prepared fruit, frozen cherries, quick frozen peaches and quick frozen strawberries.....	Erythorbic acid/sodium erythorbate.. L-Ascorbic acid.....	*GMP *GMP
Dried fruit.....	Erythorbic acid/sodium erythorbate..	*GMP
Quick frozen fruit salad.....	Citric acid..... Erythorbic acid/sodium erythorbate.. L-Ascorbic acid.....	150 *GMP *GMP
Fungi and fungus products.....	L-Ascorbic acid.....	*GMP
Jam and marmalade:		
Jams, fruit preserves and jellies..	Erythorbic acid/sodium erythorbate.. L-Ascorbic acid.....	*GMP 500
Marmalade.....	Erythorbic acid/sodium erythorbate.. L-Ascorbic acid.....	*GMP 500
Malt beverage (including ales, lagers and stouts).....	L-Ascorbic acid.....	Not greater than 20 as ascorbic acid
	Sodium ascorbate..... Sodium iso-ascorbate..... Sulphur dioxide.....	Free sulphur dioxide not to exceed 20
Marine food:		
Any edible fish species canned in tomato-based sauces.....	Sodium metabisulphite.....	30 in the final product, expressed as SO ₂ , singly or in combination with other sulphites

I Foodstuff	II Antioxidant	III Maximum level mg/kg or mg/p
Canned lobster meat or crabmeat	Ethylene diamine tetraacetic acid, calcium disodium salt Sodium bisulphite	275 30 in the final product, expressed as SO ₂ , singly or in combination with other sulphites
Canned shrimps or prawns.....	Sodium metabisulphite	30 in the final product, expressed as SO ₂ , singly or in combination with other sulphites
Frozen blocks of hake fillets or hake mince.....	Ethylene diamine tetraacetic acid, calcium disodium salt Sodium bisulphite	250 30 in the final product, expressed as SO ₂ , singly or in combination with other sulphites
Frozen rock lobster tails.....	Sodium metabisulphite	30 in the final product, expressed as SO ₂ , singly or in combination with other sulphites
Maa s banker canned in tomato based sauces.....	Sodium metabisulphite	30 in the final product, expressed as SO ₂ , singly or in combination with other sulphites
Quick frozen fillets of cod, haddock, flat fish, hake and ocean perch.....	Ascorbic acid..... Citric acid Ethyl and propyl gallates..... L-Ascorbic acid.....	1 000 1 000 100 *GMP
Quick frozen shrimps or prawns (raw products).....	Sodium bisulphite	30 in the final product, expressed as SO ₂ , singly or in combination with other sulphites
	Erythorbic acid/sodium erythorbate..	1 000
	L-Ascorbic acid, K and/or Na salts thereof.....	1 000 in the final product, expressed as ascorbic acid (from potassium or sodium ascorbate)
	Erythorbic acid/sodium erythorbate..	*GMP
	L-Ascorbic acid.....	*GMP
	Sodium bisulphite	30 in the final product, expressed as SO ₂ , singly or in combination with other sulphites
	Sodium metabisulphite	30 in the final product, expressed as SO ₂ , singly or in combination with other sulphites

I Foodstuff	II Antioxidant	III Maximum level mg/kg or mg/p
Meat products:		
Bacon	Erythorbic acid/sodium erythorbate..	550
	L-Ascorbic acid.....	550
Bitong	Pimaricin	6
	Potassium and sodium nitrate	200 total nitrate, expressed as sodium nitrate
	Potassium and sodium nitrate	160 total nitrate, expressed as sodium nitrate
	Sorbic acid	2000
Manufactured meat products including sausages (species and mixed species)	Erythorbic acid/sodium erythorbate..	*GMP
Processed meat products	Erythorbic acid/sodium erythorbate..	*GMP
Simulated meat cuts i.e. comminuted or chopped raw meat which has been shaped to simulate certain meat cuts	Ascorbic acid.....	*GMP
Non-dairy creamer.....	Butylated hydroxyanisole (BHA)....	200
	Butylated hydroxytoluene (BHT)....	200
	Tertiary butyl hydroquinone (TBHQ)	200
Soft drinks other than fruit drinks and imitation fruit drinks as defined in the Marketing Act, 1968 (Act 59 of 1968)	Stannous chloride	25, expressed as Sn
Vegetables:		
Canned asparagus	L-Ascorbic acid.....	*GMP
Canned asparagus in glass or fully enamel-lined (lacquered) containers	Stannous chloride	25, expressed as Sn
Canned mushrooms.....	L-Ascorbic acid.....	*GMP
	Ethylenediaminetetraacetic acid, calcium disodium salt	200
Prepared fresh vegetables.....	L-Ascorbic acid.....	*GMP

* GMP means good manufacturing practice.

ANNEXURE C

SPECIFIC CRITERIA OF PURITY OF PRESERVATIVES

GENERAL OBSERVATIONS

- (a) Save as otherwise stated, quantities and percentages are calculated by mass on the anhydrous substance.
- (b) Where the relevant substance is initially not anhydrous and "volatile substances" are involved, water is included among these substances.
- (c) Where the drying period is not specified, this means "dried to constant mass".

BENZOIC ACID

Appearance.....	White crystalline powder.
Melting range.....	121,5 – 123,5 °C, after vacuum drying in a sulphuric acid desiccator.
Content.....	Not less than 99,5 per cent.
Sulphated ash.....	Not more than 0,05 per cent.
Polycyclic acids.....	On fractional acidification of a neutralised solution of benzoic acid, the first precipitate shall not have a different melting point from that of benzoic acid.
Organic chlorine.....	Not more than 0,07 per cent corresponding to 0,3 per cent expressed as monochlorobenzoic acid.
Readily oxidisable substances.....	Pink colour maintained with not more than 0,5 ml of KMnO_4 (0,1N) per g in sulphuric acid solution (0,1N) after one hour, at room temperature.
Sulphuric acid test.....	A cold solution of 0,5 g of benzoic acid in 5 ml of 94,5–95,5 per cent sulphuric acid should not show a stronger colouring than that of a reference liquid containing 0,2 ml of cobalt chloride TSC*, 0,3 ml of ferric chloride TSC \cong , 0,1 ml of copper sulphate TSCA and 4,4 ml of water.

*Cobalt chloride TSC: Dissolve approximately 65 g of cobalt chloride $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$ in a sufficient quantity of a mixture of 25 ml hydrochloric acid and 975 ml of water to give a total volume of 1P. Place exactly 5 ml of this solution in a 250 ml round-bottomed iodine flask, add 5 ml of 3 per cent hydrogen peroxide, then 15 ml of a 20 percent solution of sodium hydroxide. Boil for 10 minutes, allow to cool, add 2 g of potassium iodide and 20 ml of 25 per cent sulphuric acid. After the precipitate is completely dissolved, titrate the liberated iodine with sodium thiosulphate (0,1N) in the presence of starch TS. § 1 ml of sodium thiosulphate (0,1N) corresponds to 23,80 mg of $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$. Adjust final volume of solution by the addition of a sufficient quantity of the hydrochloric acid/water mixture to give a solution containing 59,5 mg of $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$ per ml.

\cong Ferric chloride TSC: Dissolve approximately 55 g of ferric chloride in a sufficient quantity of a mixture of 25 ml of hydrochloric acid and 975 ml of water to give a total volume of 1P. Place 10 ml of this solution in a 250 ml round-bottomed iodine flask, add 15 ml of water and 3 g of potassium iodide: leave the mixture to stand for 15 minutes. Dilute with 100 ml of water then titrate the liberated iodine with sodium thiosulphate (0,1N) in the presence of starch TS. § 1 ml of sodium thiosulphate (0,1N) corresponds to 27,03 mg $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$. Adjust the final volume of the solution by the addition of a sufficient quantity of the hydrochloric acid/water mixture to give a solution containing 45,0 mg of $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ per ml.

ACopper sulphate TSC: Dissolve approximately 65 g of copper sulphate $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ in a sufficient quantity of a mixture of 25 ml of hydrochloric acid and 975 ml of water to give a total volume of 1P. Place 10 ml of this solution in a 250 ml round-bottomed iodine flask, add 40 ml of water, 4 ml of acetic acid and 3 g of potassium iodide. Titrate the liberated iodine with sodium thiosulphate (0,1N) in the presence of starch

T.S. § 1 ml of sodium thiosulphate (0,1N) corresponds to 24,97 mg of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$. Adjust the final volume of the solution by the addition of a sufficient quantity of the hydrochloric acid water mixture to give a solution containing 62,4 mg of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ per ml.

§ Starch TS: Triturate 0,5 g starch (potato, maize or soluble starch) with 5 ml of water; to the resulting paste add a sufficient quantity of water to give a total volume of 100 ml stirring all the time. Boil for a few minutes, allow to cool, filter. The starch solution should be freshly prepared.

CALCIUM BENZOATE

Appearance.....	White crystalline powder.
Melting range of benzoic acid isolated by acidification and not recrystallised.....	121,5 – 123,5 °C after vacuum drying in a sulphuric acid desiccator.
Content.....	Not less than 99 per cent, after drying at 105 °C.
Volatile substances.....	Not more than 17,5 per cent, determined by drying at 105 °C.
Polycyclic acids.....	On fractional acidification of a (neutralised) solution of calcium benzoate, the first precipitate shall not have a different melting range from that of benzoic acid.
Organic chlorine.....	Not more than 0,06 per cent, corresponding to 0,25 per cent expressed as mono-chlorobenzoic acid.
Readily oxidisable substances.....	Pink colour maintained with not more than 0,5 ml of KMnO_4 (0,1N) per g in sulphuric acid solution (0,1N) after one hour, at room temperature.
Degree of acidity or alkalinity.....	Neutralisation of 1 g of calcium benzoate in the presence of phenolphthalein shall not require more than 0,25 ml of NaOH (0,1N) or HCl (0,1N).

CALCIUM METABISULPHITE

Appearance.....	White powder or yellowish lumps.
Content.....	Not less than 95 per cent of CaS_2O_5 and not less than 66 per cent of SO_2 .
Iron.....	Not more than 35 mg/kg of Fe.
Selenium.....	Not more than 10 mg/kg based on the SO_2 content.

CALCIUM PROPIONATE

Appearance.....	White crystalline powder.
Content.....	Not more than 99 per cent, after drying for two hours at 105 °C.
Volatile substances.....	Not more than 4 per cent, determined by drying for two hours at 105 °C.
Water insolubles.....	Not more than 0,3 per cent.
Readily oxidisable substances.....	No trace.
Iron.....	Not more than 30 mg/kg.

CALCIUM SORBATE

Appearance.....	Fine white crystalline powder showing no change in colour after heating for ninety minutes at 105 °C.
Melting range of sorbic acid isolated by acidification and not recrystallised ...	133 – 135 °C, after vacuum drying in a sulphuric acid desiccator.
Content.....	Not less than 98 per cent, after vacuum drying for four hours in a sulphuric acid desiccator.
Volatile substances.....	Not more than 2 per cent, determined by vacuum drying in a sulphuric acid desiccator.

Aldehydes..... Not more than 0,1 per cent, calculated as formaldehyde.

HEXAMETHYLENETETRAMINE

Appearance..... Colourless or white crystalline powder.
Content..... Not less than 99 per cent $C_4H_{12}N_4$.
Loss on drying..... Not more than 0,5 per cent after drying at 105 °C in vacuum over phosphorous pentoxide for two hours.
Sublimation point..... Sublimes at about 260 °C.
Sulphated ash..... Not more than 0,05 per cent.
Sulphates..... Not more than 0,005 per cent, expressed as SO_4 .
Chlorides..... Not more than 0,005 per cent expressed as Cl.

LYSOZYME

Appearance..... White odourless powder with a somewhat sweet taste.
Solubility..... Freely soluble in water; insoluble in common organic solvents.
Specifications:
Nitrogen..... 16 – 17 per cent.
Chloride..... not more than 0,3 per cent.
Humidity..... not more than 4 per cent.
Ash..... not more than 0,3 per cent.
Activity..... not less than 22 500 units/mg.
Bacterial count..... not more than 100 viable organisms/g.
Heavy metals..... not more than 5 mg/kg.
Arsenic..... not more than 2 mg/kg.

N-PROPYL P-HYDROXYBENSOATE

Appearance..... White crystalline powder.
Melting point..... 95 – 97 °C after drying for two hours at 80 °C.
Content..... Not less than 99,5 per cent, after drying for two hours at 80 °C.
Sulphate ash..... Not more than 0,05 per cent.
Free acids..... Not more than 0,35 per cent, expressed as p-hydroxybenzoic acid.

POTASSIUM BENZOATE

Appearance..... White crystalline powder.
Melting range of benzoic acid isolated by acidification and not recrystallised 121,5 – 123,5 °C, after vacuum drying in a sulphuric acid desiccator.
Content..... Not less than 99 per cent, after drying at 105 °C.
Volatile substances..... Not more than 26,5 per cent, determined by drying at 105 °C.
Polycyclic acids..... On fractional acidification of a (neutralised) solution of potassium benzoate the first precipitate shall not have a different melting range from that of benzoic acid.
Organic chlorine..... Not more than 0,06 per cent, corresponding to 0,25 per cent expressed as mono-chlorobenzoic acid.
Readily oxidisable substances..... Pink colour maintained with not more than 0,5 ml of $KMnO_4$ (0,1N) per g in sulphuric acid solution (0,1N) after one hour, at room temperature.
Degree of acidity or alkalinity..... Neutralisation of 1 g of potassium benzoate in the presence of phenolphthalein shall not require more than 0,25 ml of NaOH (0,1N) or HCl (0,1N).

POTASSIUM METABISULPHITE

Appearance.....	Colourless crystals or white crystalline powder.
Content.....	Not less than 95 per cent of $K_2S_2O_5$, and not less than 54,7 per cent of SO_2 .
Iron.....	Not more than 30 mg/kg of Fe.
Selenium.....	Not more than 10 mg/kg based on the SO_2 content.

POTASSIUM NITRATE

Appearance.....	White or slightly yellow deliquescent granules.
Content.....	Not less than 95 per cent after drying for four hours over silica gel.
pH (5 per cent solution in carbon dioxide-free and ammonia-free water).	Not less than 6,0 and not more than 9,0.

POTASSIUM SORBATE

Appearance.....	White crystalline powder showing no change in colour after heating for 90 minutes at 105 °C.
Melting range of sorbic acid isolated by acidification and not recrystallised..	133 – 135 °C, after vacuum drying in a sulphuric acid desiccator.
Content.....	Not less than 99 per cent, after vacuum drying for four hours in a sulphuric acid desiccator.
Volatile substances.....	Not more than 1 per cent, determined by vacuum drying in a sulphuric acid desiccator.
Aldehydes.....	Not more than 0,1 per cent, calculated as formaldehyde.

PROPIONIC ACID*

Appearance.....	Colourless or slightly yellowish liquid.
Content.....	Not less than 99 per cent.
Non-volatile substances.....	Not more than 0,05 per cent.
Aldehydes.....	Not more than 0,1 per cent, expressed as formaldehyde.
Iron.....	Not more than 30 mg/kg.

SODIUM BENZOATE

Appearance.....	White crystalline powder.
Melting range of benzoic acid isolated by acidification and not recrystallised	121,5 – 123,5 °C, after vacuum drying in a sulphuric acid desiccator.
Content.....	Not less than 99,5 per cent, after drying for four hours at 105 °C.
Volatile substances.....	Not more than 1 per cent, determined by drying for four hours at 105 °C.
Polycyclic acids.....	On fractional acidification of a (neutralised) solution of sodium benzoate, the first precipitate shall not have a different melting range from that of benzoic acid.
Organic chlorine.....	Not more than 0,06 per cent, corresponding to 0,25 per cent, expressed as mono-chlorobenzoic acid.
Readily oxidisable substances.....	Pink colour maintained with not more than 0,5 ml of $KMnO_4$ (0,1N) per g in sulphuric acid solution (0,1N) after one hour, at room temperature.
Degree of acidity or alkalinity.....	Neutralisation of 1 g of sodium benzoate, in the presence of phenolphthalein, shall not require more than 0,25 ml of NaOH (0,1N) or HCl (0,1N).

SODIUM METABISULPHITE

Appearance.....	Colourless crystals or white crystalline powder.
Content.....	Not less than 95 per cent of $\text{Na}_2\text{S}_2\text{O}_5$ and not less than 64 per cent of SO_2 .
Iron.....	Not more than 35 mg/kg of Fe.
Selenium.....	Not more than 10 mg/kg, based on the SO_2 content.

SODIUM NITRATE

Appearance.....	White crystalline slightly hygroscopic powder.
Content.....	Not less than 99 per cent, after drying at 105 °C.
Volatile substances.....	Not more than 1 per cent, determined by drying at 105 °C.
Nitrites.....	Not more than 30 mg/kg, expressed as NaNO_2 .

SODIUM NITRITE

Appearance.....	White crystalline powder or yellowish lumps.
Content.....	Not less than 98 per cent, after vacuum drying in a sulphuric acid desiccator, the remainder shall consist almost entirely of sodium nitrite.
Water.....	Not more than 1 per cent.

SODIUM N-PROPYL P-HYDROXYBENZOATE

Appearance.....	White or almost white crystalline hygroscopic powder.
Melting range of ester isolated by acidification and not recrystallised....	94 – 97 °C, after vacuum drying in a sulphuric acid desiccator.
Content: Propyl ester of p-hydroxybenzoic acid.....	Not less than 85 per cent, after vacuum drying in a sulphuric acid desiccator.
Volatile substances.....	Not more than 5 per cent, determined by vacuum drying in a sulphuric acid desiccator.
Sulphated ash.....	34 per cent to 36 per cent.
pH.....	pH of 0,1 per cent aqueous solution shall be between 9,8 and 10,2.
Salicydic acid.....	Not more than 0,1 per cent.

SODIUM PROPIONATE

Appearance.....	White crystalline powder.
Content.....	Not less than 99 per cent, after drying for two hours at 105 °C.
Volatile substances.....	Not more than 4 per cent, determined by drying for two hours at 105 °C.
Water insolubles.....	Not more than 0,3 per cent.
Readily oxidisable substances.....	No trace.
Iron.....	Not more than 30 mg/kg.

SODIUM SORBATE

Appearance.....	White crystalline powder showing no change after heating for 90 minutes at 105 °C.
Melting range of sorbis acid isolated by acidification and not recrystallised..	133 – 135 °C, after vacuum drying in a sulphuric acid desiccator.
Content.....	Not less than 99 per cent, after vacuum drying for four hours in a sulphuric acid desiccator.

Volatile substances.....	Not more than 1 per cent, determined by vacuum drying in a sulphuric acid desiccator.
Aldehydes.....	Not more than 0,1 per cent, calculated as form aldehyde.

SODIUM SULPHITE
(anhydrous or heptahydrate)

Appearance.....	White crystalline powder or colourless crystals.
Content: Anhydrous.....	Not less than 95 per cent of NaS_2O_3 and not less than 48 per cent of SO_2 .
Heptahydrate.....	Not less than 48 per cent of NaS_2O_3 and not less than 24 per cent of SO_2 .
Thiosulphate.....	Not more than 0,1 per cent of NaS_2O_3 based on the SO_2 content.
Iron.....	Not more than 50 mg/kg expressed as Fe, based on the SO_2 content.
Selenium.....	Not more than 10 mg/kg, based on the SO_2 content.

SORBIC ACID

Appearance.....	White crystalline powder showing no change in colour after heating for 90 minutes at 105 °C.
Melting range.....	133 – 135 °C, after vacuum drying for four hours in a sulphuric acid desiccator.
Content.....	Not less than 99 per cent, after vacuum drying for four hours in a sulphuric acid desiccator.
Volatile substances.....	Not more than 3 per cent determined by drying for 24 hours in a sulphuric acid desiccator.
Sulphated ash.....	Not more than 0,2 per cent.
Aldehydes.....	Not more than 0,1 per cent calculated as form aldehyde.

SULPHUR DIOXIDE

Appearance.....	Colourless gas.
Content.....	Not less than 99 per cent.
Non-volatile substances.....	Not more than 0,01 per cent.
Sulphur trioxide.....	Not more than 0,1 per cent.
Other gases not normally present in the air.....	No trace.
Selenium.....	Not more than 10 mg/kg.

* The specification refers to anhydrous propionic acid; for aqueous solutions calculate values corresponding to their propionic acid content.