#### SRI LANKA STANDARD 871: PART 2:1989

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# CODE FOR USE OF PLASTIC MATERIALS FOR FOOD CONTACT APPLICATIONS

PART 2 — POLYVINYL CHLORIDE (PVC)

SRI LANKA STANDARDS INSTITUTION

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SLS 871:Part 2:1989

Gr. 8

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SRI LANKA STANDARDS INSTITUTION

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Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This standard does not purport to include all the necessary provisions of a contract.

#### SRI LANKA STANDARD

# CODE FOR USE OF PLASTIC MATERIALS FOR FOOD CONTACT APPLICATIONS PART 2: POLYVINYL CHLORIDE (PVC)

#### FUKEWUKD

This Sri Lanka Standard was authorized for adoption and publication by the Council of the Sri Lanka Standards Institution on 1989-12-14, after the draft, finalized by the Drafting Committee on Food Packaging Materials, had been approved by the Agricultural and Food Products Divisional Committee.

Plastics are widely used in the manufacture of food packaging materials, food utencils and components of food processing equipment. It is generally accepted that the high molecular weight of polymers makes them essentially inert and insoluble in food and therefore do not pose toxic hazards. However, polymers may contain residues of monomers, low molecular weight polymers, processing aids and substances which are added to the polymer to modify its physical, mechanical or other properties during processing or usage. These residues may migrate into the food which is in contact with the polymer. Therefore, it is essential that the plastics materials and other additives used be such that any migration into the food from such materials are minimized. Even if any migration occurs it should not bring about any toxic hazard to the consumer of the food.

The extent to which the migration occurs is dependent on the type of plastic, contact area, rate of transfer of compounds, duration of contact and the type of food which is in contact with the plastic material.

Good manufacturing practices should be followed through out the manufacturing process, supply and usage of plastic materials for food contact applications.

This part is one of a series of standard codes for use of plastic materials for food contact applications.

This part covers basic polymers, processing aids and additives permitted for use in the manufacture and processing of polyvinyl chloride plastics for food contact applications. All permitted substances used shall be of high standard of purity.

The users of polyvinyl chloride plastics for food contact applications are advised that a written assurance be requested from the suppliers to ensure that the material contains only the permitted ingredients specified in this code. It should be noted that substances specified under permitted additives may have been incorporated in the polymer as supplied by the manufacturer in compliance with the specified levels. Therefore, formulators or processors intending to make additives to the polymers should do so, not to exceed the maximum level of use specified in this code.

Inclusion of additional substances to be used in the manufacture and processing of polyvinyl chloride plastics would be considered as and when required provided that the safe use of such substances are established by the toxicological and migration studies.

All standard values given in this code are in SI units.

In the preparation of this code the assistance obtained from the publications of the Standards Association of Australia, the British Industrial Biological Research Association and the British Plastics Federation is gratefully acknowledged.

#### 1 SCOPE

- 1.1 This code prescribes the homopolymers, copolymers, manufacturing aids and additives permitted in polyvinyl chloride (PVC) used for food contact purposes.
- 1.2 The permissible limits for residual monomers, processing aids and additives present in the finished polymers/final compounds are also specified.
- 1.3 Polyvinyl chloride plastics intended for contact with drugs, medical preparations, cosmetic and toiletry products and pipes and fittings for water supply are not covered by this code.

#### 2 REFERENCES

SLS 616 Glossary of terms for plastics.
SLS 871 Code for use of plastic materials for food contact applications
Part .....: Colorants\*

#### 3 DEFINITIONS

For the purpose of this code, the definitions given in SLS 616 shall apply.

<sup>\*</sup> Under preparation.

#### 4 REQUIREMENTS

#### 4.1 Composition of polyvinyl chloride

Polyvinyl chloride shall be manufactured from homopolymers or copolymers specified in 4.2 or a mixture thereof (see Note) such that the finished polymers conform to the requirements given in 4.1.1 4.1.2 and 4.1.3.

NOTE

Dispersions of homopolymers and copolymers specified in 4.2 and mixtures thereof are not permitted in the composition.

- 4.1.1 The finished polymer shall not contain ingredients or residues of ingredients other than those specified in 4.3 and 4.4.
- 4.1.2 The finished polymer shall not contain more than 1 mg/kg of vinyl chloride monomer.
- 4.1.3 The finished polymer shall have all other residual monomers at the minimum level as far as practically possible.
- 4.2 Permitted basic homopolymers and copolymers
- 4.2.1 Homopolymers of vinyl chloride.
- 4.2.2 Copolymers of vinyl chloride containing not less than 50 per cent by mass vinyl chloride with one or more of the following monomers:
- a) Vinylidene chloride;
- b) Styrene;
- c) Styrene substituted in the benzene ring or the vinyl group by halogens or by alkyl groups;
- d) Acrylonitrile;
- e) Butadiene,
- f) Ethylene, propylene or any aliphatic mono-olefin;
- g) Divinyl bensene,
- h) Vinyl esters of monobasic aliphatic acids;
- j) Acrylic, crotonic, fumaric, itaconic, maleic or methacrylic acid up to a maximum of 8 per cent by mass of the total monomer;
- k) Esters of the acids in (j) with saturated monohydric aliphatic alcohols; and
- 1) Vinyl ethers of saturated monohydric aliphatic alcohols up to  $\mathbb{G}_{20}$  .
- 4.2.3 Post-chlorinated homopolymers of vinyl chloride containing not more than 69 per cent by mass total chlorine content.

#### 4.3 Permitted manufacturing aids

#### 4.3.2 Catalysts

The total residues of the following catalysts and their decomposition products shall be not more than 0.25 per cent by mass of the finished

a) Benzoylperoxide;

b) Aliphatic acid (C3-C16) peroxide;

c) Tert.-Butylperbenzoate;

d) Azo-bis-iso-butyronitrile, azo-bis-cyclohexyl carboxynitrile and azo-bis-2, 4-dimethyl valeronitrile;

e) p.tert,-butylperpivalate;

f) Methyl ethyl ketone peroxide;

g) Persulphates of ammonium and potassium;

h) Percarbonates of the structure  $R_1 \circ COOOOCOR_2$  where  $R_1$  and R2 are alkyl, aryl, alkylaryl, alkoxy, alkoxy alkyl or halogen substituted alkyl, aryl, alkylaryl, alkoxy or alkoxy, alkyl  $(C_{2}, -C_{10});$ 

j) Cycloalkyl (C5-C8) peroxydicarbonate;

k) Bis-4-tert.-butylcyclohexyl-peroxydicarbonate;

Acetylcyclohexyl sulphonyl peroxide; 1)

m) Peresters of the structure  ${\tt R}_1{\tt COOOR}_2$  where  ${\tt R}_1$  and  ${\tt R}_2$  are alkyl, aryl, alkylaryl, alkoxy or halogen substituted alkyl, aryl, alkylaryl or alkoxy (C2-C10);

n) Mixed peroxide percarbonates of structure  $R_1 \text{OCO000R}_2 \text{where}$ Rland R2arealkyl, aryl, alkylaryl, or alkoxy, or halogen substituted alkyl, aryl, alkylaryl, or alkoxy ( $c_2$ - $c_{10}$ ); and

p) Hydrogen peroxide.

#### 4.3.2 Polymerization inhibitors

Today Sync The total residues of polymerization inhibitors and their decomposition products shall be not more than 0.01% by mass of the finished polymer.

#### 4.3.3 Emulsifying agents

The total residues of the following emulsifying agents shall not be more than 3.0 per cent by mass of the finished polymer.

Coardian s Alkyl and alkylaryl sulphates of sodium, potassium and ammonium, the alkyl group containing  $c_{10}$ - $c_{20}$ ;

Alkyl and alkylaryl sulphonates of sodium, potassium ammonium, the alkyl group containing C10-C20;

c) Alpha hydroxy octadecane sodium sulphonate;

Sodium, potassium and ammonium salts of sulpho-succinic acid and its mono and di-esters with satuarated monohydric aliphatic alcohols C4 - C20;

Sodium, potassium and ammonium salts of saturated aliphatic acids e) above C7;

Esters of sorbitol or of sorbitan with saturated or unsaturated f) aliphatic acids above C7;

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Calcium, sodium, potassium and ammonium salts of hydroxylic fatty g) acids  $c_{12}$  -  $c_{20}$  and their sulphonyl or acetyl derivatives;

Products of condensation of ethylene oxide with monobasic h) aliphatic acids  $c_{12}$  -  $c_{20}$  and their sodium and ammonium sulphates;

Products of condensation of ethylene oxide with monohydric **i**) alighatic alcohols  $c_{12}$  -  $c_{20}$  and their sodium and ammonium sulphates;

Products of condensation of ethylene oxide with alkylphenols k) having alkyl groups C7 and above and their sodium and ammonium sulphates; Polyoxyethylene (20) sorbitan mono-oleate;

1)

Products of condensation of ethylene oxide with alkyl and dialkyl m) amines  $C_1 + C_{20}$ ; and

Fatty alcohols C<sub>10</sub> - C<sub>20</sub>. n)

### 4.3.4 Suspension agents

The total residues of the following suspension agents shall be not more than 1.0 per cent by mass of the finished polymer. 如胡蜂 "大学"的大家,"我们""一块","一块"的"一大","大学"的概律的"种类",由

a) Gelatine;

b) Methylcellulose;

Hydroxyethylcellulose; c)

d) Hydroxypropyl methylcellulose;
e) Sodium carboxymethylcellulose;
f) Methylethylcellulose; Poly Vinyl alcohol either having a viscosity of at least 4 centipoise at 20 octin 4 per cent aqueous solution or manufactured by the hydrolysis of polyvinyl acetate to a minimum hydrolysis level of 20 mole per cent;

Polyvinyl pyrrolidone and copolymers of vinyl pyrrolidone with h)

vinyl ethers or esters; and

Copolymers of vinyl alkyl  $(c_1 - c_{12})$  ethers with maleic acid j) read of the Asia Care or allyl alcohol.

#### 4.3.5 Chain transfer agents

The residues of the following chain transfer agents shall be reduced as far as practically possible and the total mesidues shall not be more than 0.5 per cent by mass of the finished polymer.

- a) Trichloroethylene;
  b) Perchloroethylene;
  c) Trans-Dichloroethylene;
- d) Isobutylene;
- Xylene; and Far a the same and analysis of a same and a same a same and a same a sam e)
- Chloroform. f)

#### 4.4 Permitted additives

#### 4.4.1 Colorante

Colorants used shall conform to SLS 871 Part ..... colorants\*.

#### 4.4.2 Polymeric additives

The following polymeric additives may be present provided that there shall be not less than 50 per cent by mass of polyvinyl chloride or chlorinated polyvinyl chloride in the finished polymer. Each of the polymeric additives present shall comply with any separate specification referring to that polymer;

- a) Homopolymers of monomers given in 4.2.2;
- b) Copolymers of two or more of the monomers given in 3.2.2;
- c) Chlorinated polyolefines with a chlorine content not more than 56 per cent by mass;
- d) Copolymers of butyl acrylate and vinyl pyrrolidone containing not more than 95 per cent butyl acrylate; and
- e) polyurethanes containing no free isocyanates or primary amines of molecular weight 40.000 to 100,000 made from:
  - i) 1,6 hexane diisocyanate and /or toluene diisocyanate with
  - ii) 1,4 butane diol and/or polyesters of adipic acid with ethylene glycol, 1,4 butane diol, trimethylolpropane and /or adition products of propylene oxide or ethylene oxide with ethylene glycol, propylene glycol, glycerol, trimethylolpropane, pentaerythritol or sorbitol.

#### 4.4.3 Other additives

Any additive given in Table 1 may be present upto the maximum limit specified in the table.

#### 5 MARKING

All packages containing polyvinyl chloride shall be marked legibly and indelibly with the following:

- a) The words "Polyvinyl chloride" or "PVC";
- b) The words "Food contact";
- c) Any restrictions for use;
- d) The name and address of the manufacturer and country of origin;
- e) Trade mark and/or brand name, if any; and
- f) Batch or code number.

<sup>\*</sup> Under preparation.

TABLE 1 - Additives that may be used in polyvinyl chloride

S1.	Chemical name or	Maximum le-	Food	Form	Limita-
No.	type	vel of use	Type	of	tions
		in final	-	Product	(see
		compound,			Note)
ļ		% m/m			
(1)	(2)	(3)	(4)	(5)	6)
j.)	Acetyl tributyl citrate	35	A11*	Films, coat-	
				sealing gaskets	
1	Aluminium silicate	50	A11	A11**	
ii)	Aluminium stearate	3	A11	A11	
iii)	4	0.05	A11	A11	
iv)	Aluminium sulphate Behenic acid	1	A11	A11	
v)	4 · · · · · · · · · · · · · · · · · · ·	<u> </u>			
vi)	Benzyl n-butyl	33	A11	A11	
1	phathalate	] 33			
vii)	Bis(B-carbobutoxyethyl)	1		1	
	tin-bis(iso-octylthio-	2	A11	A11	
	glycollate)	2			
viii)	Bis (2,4-di-tert butyl				· .
	phenyl) pentaerythritol				
	diphosphite with up to				1
	1 per cent tri-isopropa-	0.86	All	A11	
	nolamine	0.00	***		
ix)	N,N-Bis (2-hydroxyethyl)	0.1	A11	A11	
	alkyl (C <sub>12</sub> -C <sub>18</sub> ) amine	0.05	All	All	1
x)	Butylated hydroxyanisole	0.03	All	A11	1 and 2
xi)	Butylated hydroxytoluene	5	All	A11	
xii)	Butyl lactate	,	****		
xiii)	Butyl phathalyl butyl	4	A11	A11	
1.	glicollate	5	All	A11	
xiv)	n-Butyl stearate	0.5	All	A11	
xv)	Butylthiostannous acid	0.05	All	All	
xvi)	Calcium acetate	2	All	All	
xvii)		25	A11	All	
xviii	) Calcium carbonate	2.5	V.T.	11.2.	

<sup>\* &</sup>quot;All" indicates that additive may be used to formulate materials suitable for contact with all types of food stuffs.

\*\* "All" indicates that additive may be used in formulation for the manufacture of all types of food contact products.

No.	type			,	1
	cype	vel of use	type	of	tions
1		in final		product	(see
1		compound,			Notes)
		% m/m			
(1)	(2)	(3)	(4)	(5)	(6)
xix)	Calcium chloride	GMP***	A11	A11	
1	Calcium hydroxide	0.1	A11	A11	
	Calcium laurate	5	A11	A11	
1 -2	Calcium octoate	1.5	A11	A11	
1	Calcium oleate	3	A11	Bottles	
XXIII)	Calcium Ofeate	, 3		contai-	
				ners,	
				films	
	0.1.1	10	A11	All	
1	Calcium oxide	10	<b>₽</b> ++	4.1	
1	Calcium oxide	20	A 7 7	A11	
	dispersion	20	All	All	
	Calcium palmitate	5	All		
xxvii)	Calcium phosphate	0.05	A11	A11	
xxviii)	Calcium ricinoleate	3	A11	A11	
xxix)	Calcium stearate	5	A11	A11	
xxx)	B(Carbobutoxyethyl) tin				
	tris (iso-octylthiogly		:		
	collate)	2	A11	A11	
xxxi)	Carbon black	5	A11	A11	
xxxii)	Citric acid monohydrate	0.01	A11	A11	
xxxiii)	Diatomaceous earth	GMP	A11	All	
xxxiv)	Di-n-butyl phathalate	10	Dry	Films,	3
AAATV,	Di ii bacy i pianiana		produ-	coati-	
			cts	ngs,	
				sealing	,
1		·		gaskets	
	Di ion-huevi - hoeboloto	2	A11	A11	3
xxxv)	Di-iso-butyl phathalate		*	. नेट्स व	_
	nt a target askerske	10	Dry	Films,	3
xxxvi)	Di-n-butyl sebacate	1 10	produ-	coati-	
1			-		
		10	cts	ngs	3
		10	A11	sea-	J
				ling	
				gaskets	
(xxxvii)	Di-iso-decyl phathalate	40	A11	A11	4
xxxviii)	Di-(2-ethylhexyl)				_
1	adipate	35	A11	A11	3
xxxix)	Di-(2-ethylhexyl)		Non-		
***************************************	phathalate	40	fatty	A11	. 4

<sup>\*\*\* &</sup>quot;GMP" stands for good manufacturing practice and requires that the minimum amount of the additive be used to produce the desired effect.

S1.	"Chemical" nam	e or will all	Maximum le-1	Food	Form of	HI. LINILLE A.
	type		vel of use	Туре	product	ridita
			in final			
Carrier Country		1	compound,			
1.5	/ 4	"你"\你	% m/m		(=)	(16.)
(1)	(2)		(3)	(4)	(5)	(10.)
				73	Films,	3
A\$1, 1	Di-ethyl hexyl	sebacate	10	Dry-	1	
				produ-	coati-	
	nile a l	· • • • • • • • • • • • • • • • • • • •		cts	ngs, sealing	
8		1, .,			gaskets	4
				Ti a de de un	Films	
xli)	Di-n-hexyl azel	ate	24	Fatty		
i.	Jeste		1	(fat/	BROWN A	
	Ly, i i i	6.0		oil		•
		3.5		content	I .	
					2-3110	\$
		, <b>3</b> : (			1 5 200.	
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	**************************************	7.9 (A)	than	president.	
		χ		30%	ήε .'σ !	
1		T.		m/m)		
xlii)	Dihydro-1,4 di		0.3	A11	Ald	5
	dicarbododecyl	oxy -3,5			3850	
	pyridine			1	90 7 9	( in
xliii)	Dilauryl thiod	ipropio-	1		A11:	I To see
	nate		le de la constant	1	Glycer,	( )
xliv)	2,4-Dimethoxy-	6-(1-pyre-		1.48	Siyee	
	nyl)-S-triazin		0.01		- All	(
xlv)	Dimethyl phath	alatè	11	AII		e i i i i i i i i i i i i i i i i i i i
xlvi)	Dimethyltin/mo	nomethyl-	2.5	A11		
	tin iso-octylt	hiogly	66 86			
	collate			, i d		,
xlvii)	Di-iso-octyl p	hathalate	40 7 1			
			Her eil .	1	· ·	\$
			1.2		ng gas	
				1	kets	
xlviii)	Di-n-octyltin	dinonyl	~ v (2 · · · · )			5,6
	maleate		- 46 843 - FEE 8	latty	(12 (X0)	
xlix)	Di(n-octyl) t	in S,S'bis	1.5	A11 * 6	ALL	and 7
	(iso-octyl me	reaptbace-	11000	A CXIII	81 2 2 12	SXIX
	tate) or Di(n	-octyl)	.; Aasge;	A tan - 1	fright	
	tin bis (iso	octyl thio	410505			
	glycollate)	t U	ાં મિલ્લીટ કહેલ	1	3	i (jest
1)	Di-n-octyl ti	n thio-		A11 0		5
	glycollate	100	11	1 3 - p - 1 x		3 e
1i)	N.N'+Distearo	yl ethyle-	5	Alles		
TI'	nediamine	1 - V XI - T	(1) Objections	1 July 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		A Care Co
lii)	Distearyl pen	taerythri-	1	All	A11	1 : 1
1 ****	tol diphosphi				D. Assertan	
liii)	n-Dodecanol	i v		Allan.		1446
1 *****/	Dolomite	f		Non- acidi		1.32
liv)						

S1. No.	Chemical name or Type	Maximum le- vel of use in final compound, %, m/m	Food Type	Form of Product	Limita- tions (see Notes)
(1)	(2)	(3)	(4)	(5)	(6)
1v)	Epoxidised soyabean oil	11	A11	A11	8
		40	A11	Sealing gaskets	
lvi)	Erucamide	6	A11	Sealing gaskets	
		0.2	A11	All	
lvii)	2-Ethoxy-2'-ethyloxalic	0.5	A11	A11	5
******	acid bisanilid				
lviii)	2-Ethylhexyl diphenyl phosphate	35	A11	A11	3
lix)	Ethyl palmitate	3	A11	A11	
1x)	Fumaric acid	2.5	All	A11	
lxi)	Gelatine	GMP	All	A11	
lxii)	Glycerin	3.5	All	All	
lxiii)	Glyceryl oleate	3	All	A11	
lxiv)	Glyceryl ricinoleate	3	A11	A11	
lxv)	Glyceryl stearate	3	All	A11	
lxvi)	Glyceryl triacetate	30	A11	A11	
lxvii)	2, 8, 14, 18, 24, 30-	3	A11	All	
	Hexao-xa-6, 10, 22, 26-				
	tetra-thio-7, 9, 23, 25-			1	
	tetra-stanna-7, 7-9, 9-				
	23, 23, 25, 25-octa'				
	(n-dodecyl) spiro [15,15]			}	
	-hentria- contane-3, 13,			1	1.
	19, 29- tetraoxide -Hydro- hydroxy poly-	0.2	A11	A11	
lxviii)	(oxyethylene) poly (oxy-	1			
	propylene)				
lxix)	2(2'-Hydroxy-3'-tert,	0.5	A11	A11	1
TXTX)	butyl -5'-methylphenyl)	* * * * * * * * * * * * * * * * * * * *			
	-5-chloro-benzotriazole			.	
lxx)	2(2'-Hydroxy-5'-methyl-	0.5	All	A11	
1001	phenyl)benzotriazole				
lxxi)	2-Hydroxy-4-n-octoxy-	3.5	All	A11	
1	benzophenone				_
lxxii)	Lauric diethanolamide	0.5	All	All	1
lxxiii)	Liquid paraffin	GMP	A11	A11	
			4.7.7	,,,,	
lxxiv)	Magnesium benzoate	2	A11	All All	
lxxv)	Magensium stearate	1 0 05	A11	All	1
lxxvi)	Magnesium sulphate	0.05	All	All	
lxxvii)	Mannitol	2.5	WTT	wrr	1

S1. No.	Onemicat frame	Maximum level of use in final compound, %, m/m (3)	Food type	Form of product	Limita- tions (see Notes)
(1)	(2)		-		
lxxviii)	Modified polybutylene adipate	33	All conta- ining less than 8% al-	Coati- ngs, films	3
		35	cohol Non- fatty	A11	3
lxxix)	Mono-n-octyltin-tris [(C <sub>10</sub> -C <sub>16</sub> ) n-alkyl thioglycollate]+Di-n- octyltin-bis[(C <sub>10</sub> - C <sub>16</sub> )n-alkyl thiogly	1.5	A11	A11	5
lxxx)	collate Mono-n-octyltin-tris- (iso-octylthioglycollate)	1.5	All except		5, 6 and 7
lxxxi)	7,[2h Naptho (1,2-d) tria zol-2-y1]-3-phenyl-	0.1	lic All	A11	
lxxxii)	coumarin n-octadecyl- 4'-hydroxy- 3',5'-di-tert.butyl phenyl) propionate	0.5	A11	A11	
lxxxiii)	Oleamide	0.2	A11	A11 '	1
lxxxiv)	Organo polysiloxanes	0.05	A11	A11	
lxxxv)	Pentaerythritol	3	A11	A11	
lxxxvi)	Phosphoric acid	0.05	A11	A11	
lxxxvii)	Poly(1,3-butylene glycol	24	All	All	3
	adipate)	35	Non- fatty	A11	3
		35	A11	Sealin gasket pipes, conva- yor belts	8
lxxxviii	Polydimethyl siloxane	5	A11	A11	
lxxxix)	Polyoxyethylene (20)	3	A11	All	
xc)	sorbitan monolaurate Polyoxyethylene (20)	3	A11	A11	
xci)	sorbitan mono-oleate Poloxyethylene(20) sor-	3	A11	A11	,
xcii)	bitan monopalmitate polyoxyethylene (20) som bitan monostearate	r- 3	A11	A11	

SI. No.	Chemical name of Type	Maximum le- vel of use in final compound,	Food Type	Form of Product	Limita- tions (see Notes)
(1)	(2)	%, m/m (3)	(4)	(5)	(6)
	(00)				
șcii)	Polyoxyethylene(20) sorbitan tristearate	3	A11	A11	
xciv)	Propylene glycol	0.5	A11	A11	
xcv)	Silicon dioxide	10	A11	A11	
xcvi)	Sodium alkylsulphonate	2.5	All	A11	
xcvii)	Sodium bicarbonate	GMP	A11	A11	
xcviii)	Sodium bisulphite	GMP	A11	A11	
xcix)	Sodium carbonate	GMP	A11	A11	
c)	Sodium chloride	0.05	A11	A11	
cî)	Sodium citrate	0,1	A11	Sealing gaskets	•
cii)	Sodium dialkyl sulphoni- mides	0.05	A11	A11	
ciii)	Sodium phosphates	0.05	All	A11	
civ)	Sodium sulphate	0.05	A11	A11	
cv)	Sodium sulphite	0.05	All	A11	
cvi)	Sodium hydrogen sulphite	0.05	A11	A11	
cvii)	Sorbitan monolaurate	3	A11	A11	
cviii)	Sorbitan mono-oleate	3	All	A11	
cix)	Sorbitan mono-palmitate	3	A11	A11	
cx)	Sorbitan monostearate	3	All	A11	
скі)	Sorbitan trioleate	3	A11	A11	
cxii)	Sorbitan tristearate	3	A11	A11	
cxiii)	Sorbitol	1	A11	A11	
cxiv)	2-stearamido-ethyl		A11	A11	
·	stearate	3			
exv)	Stearic/palmitic acid	5	A11	A11	
cxvi)	Stearoylbenzoyl methane	1	A11	Unplas-	
•				ticised	
				bottles	
				films	
				sheets	
cxvii)	Tetrakis [methylene 3-		A11	A11	
•	(3'5'-di-tert-butyl-4'-				
1	hydroxyphenyl) propiona-				
	te] methane	0.5			
cxviii)	Thio-bis-(ethyleneglycol-		A11	A11	
	aminocrotonate)	3			
cxix)	Thiodipropionic acid	0.1	A11	A11	
cxx)	Titanium dioxide	20	A11	A11	
cxxi)	Triethylene-glycol bis-3-	1	A11	A11	
· · · · · · · · · · · · · · · · · · ·	(3-tert.butyl-4-hydroxy-				
	5-methylphenyl) propio-	-n 1			
	nate	0.1	A11	A11	
cxxii)	Tri(mixed mono-and dino- nyl phenyl) phosphite	1	WII	WII	

S1. No.	Chemical name or Type (2	Maximum level of use in final compound, %, m/m (3)	food type	Form of product	Limita- tions (see Notes)
cxxiii)	1,1,3-Tris (2-methyl- 4-hydroxy-5-tert.butyl phenyl) butane	0.25	Non- fatty	A11	
CXXIV)	Zinc benzoate Zinc di (2-ethyl- hexanoate)	0.1 2 1.5	Fatty All All	A11 A11 A11	
cxxvi)	Zinc oxide Zinc palmitate	2	Non- fatty All	Sealing gaskets All	
cxxviii)	Zinc stearate	3 3	All	All	

#### NOTES

- 1. Users are recommended to consult the Food Act No. 26 of 1980 to ensure compliance with the appropriate regulations.
- 2. This additive shall not be used in materials for packaging food intended for babies and young children unless it can be demonstrated that migration does not occur under the appropriate conditions of use.
- 3. Total plasticisers in the finished polymer shall not exceed 35 per cent by mass.
- 4. Total plasticisers in the finished polymer shall not exceed 40 per cent by mass.
- 5. This additive shall be used only in unplasticised PVC.
- 6. Migration of tin from the finished polymer to the following aqueous simulant when in contact for a period of 10 days at 40°C shall not be more than 5 ugydm<sup>2</sup>.
  - a) Distilled water;
  - b) Acetic acid 3 per cent, m/m; and
  - c) Ethenol 10 per cent, V/V.
- 7. Migration of tin from the finished polymer to fat simulant (test fat) when in contact for a period of 10 days at 40  $^{\circ}$ C shall not be more than 10  $\mu g/dm^2$ .
- 8. Oxirane oxygen content shall be not more than 8 per cent and iodine number shall not be greater than 6.

#### SRI LANKA STANDARDS INSTITUTION

The Sri Lanka Standards Institution (SLSI) is the National Standards Organization of Sri Lanka established under the Sri Lanka Standards Institution Act No. 6 of 1984 which repealed and replaced the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Science & Technology.

The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

The Institution is financed by Government grants, and by the income from the sale of its publications and other services offered for Industry and Business Sector. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

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The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI which includes surveillance inspection of the factory, testing of both factory and market samples.

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