



ROYAL ELECTRONIC FACTORY (THAILAND) CO., LTD.

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Environment Hazardous Substances Compliance

Royal Electronic Factory (Thailand) Co., Ltd. hereby certifies compliance to below mentioned directives & ban the usage of below environmental hazardous substances:

1. RoHS Directive (2011/65/EU) (including RoHS 2015/863)
2. PFOA/PFOS Directive (2006/122/EC)
3. REACH Directive (EC/2006/1907) (including not contains 235 candidates of sVHCs)
4. Packaging Waste Directive (94/62/EC, 2004/12/EC)
5. Halogen free (IEC 61249-2-21)
6. Chlorinated organic compounds
7. Brominated organic compounds
8. Organic tin compounds
9. Asbestos
10. Azo compounds
11. Arsenic compounds
12. Beryllium compounds
13. Benzotriazole
14. Formaldehyde
15. Substances depleting the ozone layer
16. Dimethylfumarate (DMF)
17. Phthalates
18. Cobalt dichloride
19. Hexabromocyclododecane (HBCDD)
20. Radioactive Substance
21. Gallium arsenide Directive (67/548/EEC)
22. Polycyclic Aromatic Hydrocarbons (PAHs) (restricted by entry 50 of Annex XVII to REACH Regulation (EC) No 1907/2006, paragraphs 5 and 6.)

The identified hazardous substances are not used in our products, manufacturing process and packaging materials.

1. RoHS directive 2011/65/EU: Substance List

No.	Substance Name	CAS Number	Limit (ppm)
1	Cadmium and cadmium compounds	7440-43-9	≤ 100
2	Lead and lead compounds	7439-92-1	≤ 1,000
3	Mercury and mercury compounds	7439-97-6	≤ 1,000
4	Hexavalent chromium compounds	1333-82-0	≤ 1,000
5	Polybrominated biphenyls (PBBs)	-	≤ 1,000
6	Polybrominated diphenylethers (PBDEs) (including decabromodiphenyl ether)	-	≤ 1,000
7	Bis(2-Ethylhexyl) phthalate (DEHP)	117-81-7	≤ 1,000
8	Benzyl butyl phthalate (BBP)	85-68-7	≤ 1,000
9	Dibutyl phthalate (DBP)	84-74-2	≤ 1,000
10	Diisobutyl phthalate (DIBP)	84-69-5	≤ 1,000

2. PFOA/PFOS directive 2006/122/EC

No.	Substance Name	CAS Number	Limit (ppm)
1	Perfluorooctane sulfonate (in semi-article or article or part)	-	≤ 1,000
2	Perfluorooctanoic acid (PFOA)	335-67-1	≤ 1,000

3. REACH directive (EC/2006/1907) (235 candidates of sVHCs)

No.	Substance Name	CAS Number	Limit (ppm)
1	Anthracene	120-12-7	≤ 1,000
2	4,4'- Diaminodiphenylmethane	101-77-9	≤ 1,000
3	Dibutyl phthalate (DBP)	84-74-2	≤ 1,000
4	Cobalt dichloride	7646-79-9	≤ 1,000
5	Diarsenic pentaoxide	1303-28-2	≤ 1,000
6	Diarsenic trioxide	1327-53-3	≤ 1,000
7	Sodium dichromate, dihydrate	7789-12-0, 10588-01-9	≤ 1,000
8	5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	≤ 1,000
9	Bis (2-ethyl(hexyl)phthalate) (DEHP)	117-81-7	≤ 1,000
10	Bis(tributyltin) oxide (TBTO)	56-35-9	≤ 1,000
11	Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (a - HBCDD, b-HBCDD, γ-HBCDD)	25637-99-4 and 3194-55-6	≤ 1,000
12	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8	≤ 1,000
13	Lead hydrogen arsenate	7784-40-9	≤ 1,000
14	Benzyl butyl phthalate (BBP)	85-68-7	≤ 1,000
15	Triethyl arsenate	15606-95-8	≤ 1,000
16	Anthracene oil	90640-80-5	≤ 1,000
17	Anthracene oil, anthracene paste, distn. Lights	91995-17-4	≤ 1,000
18	Anthracene oil, anthracene paste, anthracene fraction	91995-15-2	≤ 1,000
19	Anthracene oil, anthracene-low	90640-82-7	≤ 1,000
20	Anthracene oil, anthracene paste	90640-81-6	≤ 1,000

21	Diisobutyl phthalate (DIBP)	84-69-5	≤ 1,000
22	2,4-Dinitrotoluene	121-14-2	≤ 1,000
23	Coal tar pitch, high temperature	65996-93-2	≤ 1,000
24	Tris(2-chloroethyl)phosphate (TCEP)	115-96-8	≤ 1,000
25	Lead sulfochromate yellow (C.I. Pigment Yellow 34)	1344-37-2	≤ 1,000
26	Lead chromate molybdate sulfate red (C.I. Pigment Red 104)	12656-85-8	≤ 1,000
27	Lead chromate	7758-97-6	≤ 1,000
28	Acrylamide	79-06-1	≤ 1,000
29	Trichloroethylene	79-01-6	≤ 1,000
30	Boric acid	10043-35-3, 11113-50-1	≤ 1,000
31	Disodium tetraborate, anhydrous	1330-43-4, 12179-04-3, 1303-96-4	≤ 1,000
32	Tetraboron disodium heptaoxide, hydrate	12267-73-1	≤ 1,000
33	Sodium chromate	7775-11-3	≤ 1,000
34	Potassium chromate	7789-00-6	≤ 1,000
35	Ammonium dichromate	7789-09-5	≤ 1,000
36	Potassium dichromate	7778-50-9	≤ 1,000
37	Cobalt(II) sulfate	10124-43-3	≤ 1,000
38	Cobalt(II) dinitrate	10141-05-6	≤ 1,000
39	Cobalt(II) carbonate	513-79-1	≤ 1,000
40	Cobalt(II) diacetate	71-48-7	≤ 1,000
41	2-Methoxyethanol	109-86-4	≤ 1,000
42	2-Ethoxyethanol	110-80-5	≤ 1,000
43	Chromium trioxide	1333-82-0	≤ 1,000
44	Acids generated from chromium trioxide and their oligomers	7738-94-5 13530-68-2	≤ 1,000
45	2-Ethoxyethyl acetate	111-15-9	≤ 1,000
46	Strontium chromate	7789-06-2	≤ 1,000
47	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4	≤ 1,000
48	Hydrazine	302-01-2, 7803-57-8	≤ 1,000
49	1-Methyl-2-pyrrolidone	872-50-4	≤ 1,000
50	1,2,3-Trichloropropane	96-18-4	≤ 1,000
51	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	71888-89-6	≤ 1,000
52	Lead styphnate	15245-44-0	≤ 1,000
53	Lead diazide, Lead azide	13424-46-9	≤ 1,000
54	Lead dipicrate	6477-64-1	≤ 1,000
55	Phenolphthalein	77-09-8	≤ 1,000

56	2,2'-Dichloro-4,4'-methylenedianiline	101-14-4	≤ 1,000
57	N,N-dimethylacetamide	127-19-5	≤ 1,000
58	Trilead diarsenate	3687-31-8	≤ 1,000
59	Calcium arsenate	7778-44-1	≤ 1,000
60	Arsenic acid	7778-39-4	≤ 1,000
61	Bis(2-methoxyethyl) ether	111-96-6	≤ 1,000
62	1,2-Dichloroethane	107-06-2	≤ 1,000
63	4-(1,1,3,3-Tetramethylbutyl)phenol; 4-tert-octyl phenol	140-66-9	≤ 1,000
64	2-Methoxyaniline; o-Anisidine	90-04-0	≤ 1,000
65	Bis(2-methoxyethyl) phthalate	117-82-8	≤ 1,000
66	Formaldehyde	25214-70-4	≤ 1,000
67	Zirconia Aluminosilicate Refractory Ceramic Fibres	-	≤ 1,000
68	Aluminosilicate Refractory Ceramic Fibres	-	≤ 1,000
69	Pentazinc chromate octahydroxide	49663-84-5	≤ 1,000
70	Potassium hydroxyoctaoxodizincatedichromate	11103-86-9	≤ 1,000
71	Dichromium tris(chromate)	24613-89-6	≤ 1,000
72	1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme)	112-49-2	≤ 1,000
73	1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	110-71-4	≤ 1,000
74	Diboron trioxide	1303-86-2	≤ 1,000
75	Formamide	75-12-7	≤ 1,000
76	Lead(II) bis(methanesulfonate)	17570-76-2	≤ 1,000
77	1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (TGIC)	2451-62-9	≤ 1,000
78	1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (β-TGIC)	59653-74-6	≤ 1,000
79	4,4'-bis(dimethylamino)benzophenone (Michler's ketone)	90-94-8	≤ 1,000
80	N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)	101-61-1	≤ 1,000
81	4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methylene]cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride	2580-56-5	≤ 1,000
82	[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride	548-62-9	≤ 1,000
83	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol	561-41-1	≤ 1,000
84	α,α-Bis[4-(dimethylamino)phenyl]-4(phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4)	6786-83-0	≤ 1,000
85	Bis(pentabromophenyl) ether	1163-19-5	≤ 1,000
86	Pentacosafuorotridecanoic acid	72629-94-8	≤ 1,000
87	Tricosafuorododecanoic acid	307-55-1	≤ 1,000
88	Henicosafuoroundecanoic acid	2058-94-8	≤ 1,000
89	Heptacosafuorotetradecanoic acid	376-06-7	≤ 1,000
90	4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated	-	≤ 1,000

91	4-Nonylphenol, branched and linear - substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof	-	≤ 1,000
92	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))	123-77-3	≤ 1,000
93	Hexahydro-2-benzofuran-1,3-dione (HHPA), cis-cyclohexane-1,2-dicarboxylic anhydride, trans-cyclohexane-1,2-dicarboxylic anhydride	85-42-7, 13149-00-3, 14166-21-3	≤ 1,000
94	Hexahydromethylphthalic anhydride, Hexahydro-4-methylphthalic anhydride, Hexahydro-1-methylphthalic anhydride, Hexahydro-3-methylphthalic anhydride	25550-51-0, 19438-60-9, 48122-14-1, 57110-29-9	≤ 1,000
95	Methoxy acetic acid	625-45-6	≤ 1,000
96	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	84777-06-0	≤ 1,000
97	Diisopentylphthalate	605-50-5	≤ 1,000
98	N-pentyl-isopentylphthalate	776297-69-9	≤ 1,000
99	1,2-Diethoxyethane	629-14-1	≤ 1,000
100	N,N-dimethylformamide; dimethyl formamide	68-12-2	≤ 1,000
101	Dibutyltin dichloride (DBT)	683-18-1	≤ 1,000
102	Acetic acid, lead salt, basic	51404-69-4	≤ 1,000
103	Trilead bis(carbonate)dihydroxide (basic lead carbonate)	1319-46-6	≤ 1,000
104	Lead oxide sulfate	12036-76-9	≤ 1,000
105	[Phthalato(2-)]dioxotrilead	69011-06-9	≤ 1,000
106	Dioxobis(stearato)trilead	12578-12-0	≤ 1,000
107	Fatty acids, C16-18, lead salts	91031-62-8	≤ 1,000
108	Lead bis(tetrafluoroborate)	13814-96-5	≤ 1,000
109	Lead cyanamidate	20837-86-9	≤ 1,000
110	Lead dinitrate	10099-74-8	≤ 1,000
111	Lead oxide (lead monoxide)	1317-36-8	≤ 1,000
112	Lead tetroxide (orange lead)	1314-41-6	≤ 1,000
113	Lead titanium trioxide	12060-00-3	≤ 1,000
114	Lead Titanium Zirconium Oxide	12626-81-2	≤ 1,000
115	Pentalead tetraoxide sulphate	12065-90-6	≤ 1,000
116	Pyrochlore, antimony lead yellow	8012-00-8	≤ 1,000
117	Silicic acid, barium salt, lead-doped	68784-75-8	≤ 1,000
118	Silicic acid, lead salt	11120-22-2	≤ 1,000
119	Sulfurous acid, lead salt, dibasic	62229-08-7	≤ 1,000
120	Tetraethyllead	78-00-2	≤ 1,000

121	Tetralead trioxide sulphate	12202-17-4	≤ 1,000
122	Trilead dioxide phosphonate	12141-20-7	≤ 1,000
123	Furan	110-00-9	≤ 1,000
124	Propylene oxide; 1,2-epoxypropane; methyloxirane	75-56-9	≤ 1,000
125	Diethyl sulphate	64-67-5	≤ 1,000
126	Dimethyl sulphate	77-78-1	≤ 1,000
127	3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2	≤ 1,000
128	Dinoseb	88-85-7	≤ 1,000
129	4,4'-methylenedi-o-toluidine	838-88-0	≤ 1,000
130	4,4'-oxydianiline and its salts	101-80-4	≤ 1,000
131	4-Aminoazobenzene; 4-Phenylazoaniline	60-09-3	≤ 1,000
132	4-methyl-m-phenylenediamine (2,4-toluene-diamine)	95-80-7	≤ 1,000
133	6-methoxy-m-toluidine (p-cresidine)	120-71-8	≤ 1,000
134	Biphenyl-4-ylamine	92-67-1	≤ 1,000
135	o-aminoazotoluene	97-56-3	≤ 1,000
136	o-Toluidine; 2-Aminotoluene	95-53-4	≤ 1,000
137	N-methylacetamide	79-16-3	≤ 1,000
138	1-bromopropane	106-94-5	≤ 1,000
139	Cadmium	7440-43-9	≤ 1,000
140	Ammonium pentadecafluorooctanoate (APFO)	3825-26-1	≤ 1,000
141	Pentadecafluorooctanoic acid (PFOA)	335-67-1	≤ 1,000
142	Dipentyl phthalate (DPP)	131-18-0	≤ 1,000
143	4-Nonylphenol, branched and linear, ethoxylated [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, ethoxylated covering UVCB- and well-defined substances, polymers and homologues, which include any of the individual isomers and/or combinations thereof]		≤ 1,000
144	Cadmium oxide	1306-19-0	≤ 1,000
145	Cadmium sulphide	1306-23-6	≤ 1,000
146	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	573-58-0	≤ 1,000
147	Disodium 4-amino-3-[[4'-[(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo] -5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate (C.I. Direct Black 38)	1937-37-7	≤ 1,000
148	Dihexyl phthalate	84-75-3	≤ 1,000
149	Imidazolidine-2-thione (2-imidazoline-2-thiol)	96-45-7	≤ 1,000
150	Lead di(acetate)	301-04-2	≤ 1,000
151	Trixylyl phosphate	25155-23-1	≤ 1,000
152	Cadmium chloride	10108-64-2	≤ 1,000
153	Sodium peroxometaborate	7632-04-4	≤ 1,000
154	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	68515-50-4	≤ 1,000

155	Sodium perborate; perboric acid, sodium salt	-	≤ 1,000
156	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	25973-55-1	≤ 1,000
157	Cadmium sulphate	10124-36-4, 31119-53-6	≤ 1,000
158	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	3846-71-7	≤ 1,000
159	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	15571-58-1	≤ 1,000
160	reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE and MOTE)	-	≤ 1,000
161	Cadmium fluoride	7790-79-6	≤ 1,000
162	5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2] [covering any of the individual stereoisomers of [1] and [2] or any combination thereof]	-	≤ 1,000
163	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate	68515-51-5, 68648-93-1	≤ 1,000
164	Perfluorononan-1-oic-acid and its sodium and ammonium salts Perfluorononan-1-oic-acid	375-95-1, 21049-39-8, 4149-60-4	≤ 1,000
165	Nitrobenzene	98-95-3	≤ 1,000
166	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	36437-37-3	≤ 1,000
167	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	3864-99-1	≤ 1,000
168	1,3-propanesultone	1120-71-4	≤ 1,000
169	Benzo[def]chrysene(Benzo[a]pyrene)	50-32-8	≤ 1,000
170	4,4'-isopropylidenediphenol (bisphenol A; BPA)	80-05-7	≤ 1,000
171	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts	335-76-2, 3830-45-3, 3108-42-7	≤ 1,000
172	p-(1,1-dimethylpropyl)phenol	80-46-6	≤ 1,000
173	4-heptylphenol, branched and linear [substances with a linear and/or branched alkyl chain with a carbon number of 7 covalently bound predominantly in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]	-	≤ 1,000
174	Perfluorohexane-1-sulphonic acid and its salts	-	≤ 1,000
175	Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP)	-	≤ 1,000
176	Chrysene	218-01-9, 1719-03-5	≤ 1,000
177	Cadmium nitrate	10022-68-1, 10325-94-7	≤ 1,000
178	Cadmium hydroxide	21041-95-2	≤ 1,000
179	Cadmium carbonate	513-78-0	≤ 1,000

180	Benz[a]anthracene	56-55-3, 1718-53-2	≤ 1,000
181	1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo[12.2.1.16.9.02,13.05,10]octadeca-7,15-diene ("Dechlorane Plus" TM)	-	≤ 1,000
182	Octamethylcyclotetrasiloxane	556-67-2	≤ 1,000
183	Decamethylcyclopentasiloxane	541-02-6	≤ 1,000
184	Dodecamethylcyclohexasiloxane	540-97-6	≤ 1,000
185	Lead	7439-92-1	≤ 1,000
186	Disodium octaborate	12008-41-2	≤ 1,000
187	Benzo[ghi]perylene	191-24-2	≤ 1,000
188	Terphenyl hydrogenated	61788-32-7	≤ 1,000
189	Ethylenediamine (EDA)	107-15-3	≤ 1,000
190	Benzene-1,2,4-tricarboxylic acid 1,2 anhydride (trimellitic anhydride) (TMA)	552-30-7	≤ 1,000
191	Dicyclohexyl phthalate (DCHP)	84-61-7	≤ 1,000
192	2,2-bis(4'-hydroxyphenyl)-4-methylpentane	6807-17-6	≤ 1,000
193	Benzo[k]fluoranthene	207-08-9	≤ 1,000
194	Fluoranthene	206-44-0	≤ 1,000
195	Phenanthrene	85-01-8	≤ 1,000
196	Pyrene	129-00-0	≤ 1,000
197	1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1]heptan-2-one	15087-24-8	≤ 1,000
198	2-methoxyethyl acetate	110-49-6	≤ 1,000
199	Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with ≥ 0.1% w/w of 4-nonylphenol, branched and linear (4-NP)	-	≤ 1,000
200	2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides (covering any of their individual isomers and combinations thereof)	-	≤ 1,000
201	4-tert-butylphenol	98-54-4	≤ 1,000
202	2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone	119313-12-1	≤ 1,000
203	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	≤ 1,000
204	Diisohexyl phthalate	71850-09-4	≤ 1,000
205	Perfluorobutane sulfonic acid (PFBS) and its salts	-	≤ 1,000
206	Dibutylbis(pentane-2,4-dionato-O,O')tin	22673-19-4	≤ 1,000
207	Butyl 4-hydroxybenzoate	94-26-8	≤ 1,000
208	2-methylimidazole	693-98-1	≤ 1,000
209	1-vinylimidazole	1072-63-5	≤ 1,000
210	Bis(2-(2-methoxyethoxy)ethyl)ether	143-24-8	≤ 1,000

211	Dioctyltin dilaurate, stannane, dioctyl-, bis(coco acyloxy) derivs., and any other stannane, dioctyl-, bis(fatty acyloxy) derivs. wherein C12 is the predominant carbon number of the fatty acyloxy moiety	-	≤ 1,000
212	1,4-dioxane	123-91-1	≤ 1,000
213	2,2-bis(bromomethyl)propane-1,3-diol (BMP); 2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis(bromomethyl)-1-propanol (TBNPA); 2,3-dibromo-1-propanol (2,3-DBPA)	-	≤ 1,000
214	2-(4-tert-butylbenzyl)propionaldehyde and its individual stereoisomers	-	≤ 1,000
215	4,4'-(1-methylpropylidene)bisphenol	77-40-7	≤ 1,000
216	glutaral	111-30-8	≤ 1,000
217	Medium-chain chlorinated paraffins (MCCP)	-	≤ 1,000
218	orthoboric acid, sodium salt	-	≤ 1,000
219	Phenol, alkylation products (mainly in para position) with C12-rich branched alkyl chains from oligomerisation, covering any individual isomers and/ or combinations thereof (PDDP)	-	≤ 1,000
220	6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol	119-47-1	≤ 1,000
221	tris(2-methoxyethoxy)vinylsilane	1067-53-4	≤ 1,000
222	(±)-1,7,7-trimethyl-3-[(4-methylphenyl)methylene]bicyclo[2.2.1]heptan-2-one covering any of the individual isomers and/or combinations thereof (4-MBC)	-	≤ 1,000
223	S-(tricyclo(5.2.1.0 ^{2,6})deca-3-en-8(or 9)-yl O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate	255881-94-8	≤ 1,000
224	N-(hydroxymethyl)acrylamide	924-42-5	≤ 1,000
225	1,1'-[ethane-1,2-diylbis(oxy)]bis[2,4,6-tribromobenzene]	37853-59-1	≤ 1,000
226	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol	79-94-7	≤ 1,000
227	4,4'-sulphonyldiphenol	80-09-1	≤ 1,000
228	Barium diboron tetraoxide	13701-59-2	≤ 1,000
229	Bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof	-	≤ 1,000
230	Isobutyl 4-hydroxybenzoate	4247-02-3	≤ 1,000
231	Melamine	108-78-1	≤ 1,000
232	Perfluoroheptanoic acid and its salts	-	≤ 1,000
233	reaction mass of 2,2,3,3,5,5,6,6-octafluoro-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)morpholine and 2,2,3,3,5,5,6,6-octafluoro-4-(heptafluoropropyl)morpholine	-	≤ 1,000
234	Diphenyl(2,4,6- trimethylbenzoyl)phosphine oxide	75980-60-8	≤ 1,000
235	Bis(4-chlorophenyl) sulphone	80-07-9	≤ 1,000

4. Packaging Waste directive (94/62/EC, 2004/12/EC)			
No.	Substance Name	CAS Number	Limit (ppm)
1	Packaging material (Pb+Cd+Hg+Cr ⁺⁶)	-	≤ 80 (Cd ≤ 5, Pb ≤ 50)
5. Halogen free (IEC 61249-2-21)			
No.	Substance Name	CAS Number	Limit (ppm)
1	Chlorine (Cl)	22537-15-1	≤ 900
2	Bromine (Br)	10097-32-2	≤ 900
3	Chlorine (Cl) + Bromine (Br)	-	≤ 1,500
6. Chlorinated organic compounds			
No.	Substance Name	CAS Number	Limit (ppm)
1	Polychlorinated biphenyls (PCB)	1336-36-3	Banned
2	Polychlorinated naphthalenes PCN	70776-03-3	Banned
3	Polychlorinated terphenyls (PCT)	61788-38-8	Banned
4	Short-chain chlorinated paraffins (SCCP)	-	≤ 100
5	Polyvinyl chloride (PVC) and PVC blends	9002-86-2	Packaging materials, Heat shrink Binding, tube, Wood, Plastic case/cover ≤ 1000ppm
6	Other chlorinated organic compounds 其他有機氯化化合物	-	≤ 900
7. Brominated organic compounds			
No.	Substance Name	CAS Number	Limit (ppm)
1	Brominated organic compounds	-	≤ 900
8. Organic tin compounds			
No.	Substance Name	CAS Number	Limit (ppm)
1	Trisubstituted organotin compounds (including tributyltin (TBT))	-	≤ 1,000
2	Dibutyltin (DBT)	-	≤ 1,000
3	Dioctyltin (COT) compounds	-	≤ 1,000
9. Asbestos			
No.	Substance Name	CAS Number	Limit (ppm)
1	Asbestos	1332-21-4	Banned
10. Azo compounds			
No.	Substance Name	CAS Number	Limit (ppm)
1	Specific azo compounds	-	≤ 30

11. Arsenic compounds			
No.	Substance Name	CAS Number	Limit (ppm)
1	Diarsenic trioxide	1327-53-3	≤ 1,000
2	Diarsenic pentaoxide	1303-28-2	≤ 1,000
12. Beryllium compounds			
No.	Substance Name	CAS Number	Limit (ppm)
1	Beryllium oxide	1304-56-9	Banned
2	Beryllium copper	11108-64-8	Banned
13. Benzotriazole			
No.	Substance Name	CAS Number	Limit (ppm)
1	Specific benzotriazole	3846-71-7	Banned
14. Formaldehyde			
No.	Substance Name	CAS Number	Limit (ppm)
1	Formaldehyde	50-00-0	Banned
15. Substances depleting the ozone layer			
No.	Substance Name	CAS Number	Limit (ppm)
1	Ozone depleting substances (ODS)	-	Banned
2	Hydrofluorocarbon (HFC)	-	Banned
3	Perfluorocarbon (PFC)	-	Banned
16. Dimethylfumarate (DMF)			
No.	Substance Name	CAS Number	Limit (ppm)
1	Dimethylfumarate	624-49-7	≤ 0.1
17. Phthalates			
No.	Substance Name	CAS Number	Limit (ppm)
1	Specific phthalates (DEHP, DBP, BBP, DIBP, DINP, DIDP, DNOP, DNHP, DIHP, DMEP)	-	≤ 1,000
18. Cobalt dichloride			
No.	Substance Name	CAS Number	Limit (ppm)
1	Cobalt dichloride	7646-79-9	Banned
19. Hexabromocyclododecane (HBCDD)			
No.	Substance Name	CAS Number	Limit (ppm)
1	Hexabromocyclododecane	25637-99-4	≤ 1,000
20. Radioactive Substance			
No.	Substance Name	CAS Number	Limit (ppm)
1	Radioactive Substance	-	Banned

21. Gallium arsenide			
No.	Substance Name	CAS Number	Limit (ppm)
1	Gallium arsenide	1303-00-0	Banned
22. Polycyclic Aromatic Hydrocarbons (PAHs)			
No.	Substance Name	CAS Number	Limit (ppm)
1	Benzo[a]pyrene (BaP)	50-32-8	$\leq 1,000$
2	Benzo[e]pyrene (BeP)	192-97-2	$\leq 1,000$
3	Benzo[a]anthracene (BaA)	56-55-3	$\leq 1,000$
4	Chrysen (CHR)	218-01-9	$\leq 1,000$
5	Benzo[b]fluoranthene (BbFA)	205-99-2	$\leq 1,000$
6	Benzo[j]fluoranthene (BjFA)	205-82-3	$\leq 1,000$
7	Benzo[k]fluoranthene (BkFA)	207-08-9	$\leq 1,000$
8	Dibenzo[a,h]anthracene (DBAhA)	53-70-3	$\leq 1,000$

Royal Electronic Factory (Thailand) Co., Ltd. will update developments related to substances per above table.

Company : Royal Electronic Factory (Thailand) Co., Ltd.

Title : Quality Manager

Signed by : Mr. Polthanasan Suppanol

Signature :

Date : June 28th, 2023

