

Environment Hazardous Substances Compliance

Taiwan Semiconductor hereby declare that all of our product and packaging materials comply fully below directives and do not contain any of the following hazardous substances except as currently exempted RoHS directive or as impurities.

Taiwan Semiconductor is committed to meeting our corporate responsibilities for protection of the environment.

Hazardous Substance List

No.	Substance Name	CAS Number	Targets	Limit (ppm)
RoHS directive (2011/65/EU)				
1	Cadmium and cadmium compounds 鎘以及鎘化合物	7440-43-9	Plastics , Ink 塑膠 , 油墨	100
			Solders 錫料	20
			Other all applications uses 其他所有用途	100
2	Lead and lead compounds 鉛以及鉛化合物 (Note1)	7439-92-1	Plastics , Ink 塑膠 , 油墨	100
			other all applications uses 其他所有用途	1000
3	Mercury and mercury compounds 汞以及汞化合物	7439-97-6	All uses 所有用途	1000
4	Hexavalent chromium compounds 六價鉻化合物	1333-82-0	All uses 所有用途	1000
5	Polybrominated biphenyls (PBB) 多溴聯苯	-	All uses 所有用途	1000
6	Polybrominated diphenylethers (PBDE) (including decabromodiphenyl ether [DecaBDE]) 20 多溴聯苯醚 包含十溴聯苯醚	-	All uses 所有用途	1000
RoHS directive(2015/863/EU)				
7	Bis (2- ethylhexyl) phthalate (DEHP) 鄰苯二甲酸二(2-乙基己基)酯	117-81-7	All uses 所有用途	1000
8	Butyl benzyl phthalate (BBP) 鄰苯二甲酸甲苯基丁酯	85-68-7	All uses 所有用途	1000
9	Dibutyl phthalate (DBP) 鄰苯二甲酸二丁酯	84-74-2	All uses 所有用途	1000
10	Diisobutyl phthalate (DIBP) 鄰苯二甲酸二異丁酯	84-69-5	All uses 所有用途	1000

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No.	Substance Name	CAS Number	Targets	Limit (ppm)
PFOA/PFOS directive (2006/122/EC)				
11	Perfluorooctanoic acid (PFOA) 全氟辛酸	335-67-1	All uses 所有用途	1000
12	Perfluorooctane sulfonates (PFOS) 全氟辛烷硫磺酸	2795-39-3	All uses 所有用途	1000
SONY SS-00259 16th edition				
13	Cadmium and cadmium compounds 鎘以及鎘化合物	7440-43-9	Plastics , Ink 塑膠 , 油墨	100
			Solders 錫料	20
			other all applications uses 其他所有用途	100
14	Lead and lead compounds 鉛以及鉛化合物 (Note1)	7439-92-1	Plastics , Ink 塑膠 , 油墨	100
			other all applications uses 其他所有用途	1000
15	Mercury and mercury compounds 汞以及汞化合物	7439-97-6	All uses 所有用途	1000
16	Hexavalent chromium compounds 六價鉻化合物	1333-82-0	All uses 所有用途	1000
17	Polybrominated biphenyls (PBB) 多溴聯苯	-	All uses 所有用途	1000
18	Polybrominated diphenylethers (PBDE) (including decabromodiphenyl ether [DecaBDE]) 多溴聯苯醚包含十溴聯苯醚	-	All uses 所有用途	1000
19	Hexabromocyclododecane (HBCDD) 六溴環十二烷	25637-99-4	All uses 所有用途	100
20	Other brominated organic compounds 其他有機溴化合物	-	Plastics 塑膠	900
21	Polychlorinated biphenyls (PCB) 多氯聯苯	1336-36-3	All uses 所有用途	Banned 禁用
22	Polychlorinated naphthalenes (PCN) 多氯化萘	70776-03-3	All uses 所有用途	Banned 禁用
23	Polychlorinated terphenyls (PCT) 多氯三聯苯	61788-33-8	All uses 所有用途	Banned 禁用

No.	Substance Name	CAS Number	Targets	Limit (ppm)
24	Short-chain chlorinated paraffins (SCCP) 短鍊型氯代烷烴	-	All uses 所有用途	1000
25	Tris(2-chloroethyl) phosphate (TCEP) 磷酸三(2-氯乙基)酯	115-96-8	Flame retardants use in plastics and resins. 塑膠,樹脂阻燃劑	1000
26	Tris(2-chloro-1 methylethyl) phosphate (TCPP) 磷酸三(2-氯丙基)酯	13674-84-5	Flame retardants use in plastics and resins. 塑膠,樹脂阻燃劑	1000
27	Tris(1,3-dichloro-2-propyl) phosphate (TDCPP) 磷酸三(2,3-二-氯丙基)酯	13674-87-8	Flame retardants use in plastics and resins. 塑膠,樹脂阻燃劑	1000
28	Perchlorates 高氯酸鹽	-	All uses 所有用途	0.006
29	Polyvinyl chloride (PVC) and PVC blends 聚氯乙烯以及聚氯乙烯混合物	9002-86-2	All uses 所有用途	1000
30	Other chlorinated organic compounds 其他有機氯化物	-	Plastics 塑膠	900
31	Hydrofluorocarbon (HFC) 氫氟碳化合物, Perfluorocarbon (PFC) 全氟化碳 Sulfur hexafluoride(SF6) 六氟化硫	- 75-73-0 2551-62-4	All uses 所有用途	Banned 禁用
32	Ozone depleting substances (ODS) 臭氧層破壞物質	-	All uses 所有用途	Banned 禁用
33	Hydrochlorofluorocarbons (HCFC) 氫氯氟烴	-	All uses 所有用途	Banned 禁用
34	Perfluorooctane sulfonates (PFOS) 全氟辛烷硫磺酸	2795-39-3	All uses 所有用途	1000
35	Perfluorooctanoic acid (PFOA) 全氟辛酸	335-67-1	All uses 所有用途	1000
36	Trisubstituted organotin compounds (including tributyltin (TBT) 三丁基錫化合物	-	All uses 所有用途	Banned 禁用
37	Dibutyltin (DBT) compounds 二丁基錫化合物	-	All uses 所有用途	1000
38	Diocetyl tin (DOT) compounds 二辛基錫化合物	-	All uses 所有用途	1000
39	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetra decanoate (DOTE) 硫代甘醇酸異辛酯二正辛基錫	15571-58-1	All uses 所有用途	1000

No.	Substance Name	CAS Number	Targets	Limit (ppm)
40	Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetra decanoate 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) 以硫代甘醇酸異辛酯二正辛基錫和甲基錫三(巰基乙酸異 辛酯)為組成要素的物質(以 DOTE 和 MOTE 為組成要素 的物質)	-	All uses 所有用途	1000
41	Beryllium oxide 氧化鈹	1304-56-9	All uses 所有用途	Banned 禁用
42	Beryllium copper 鈹青銅	-	All uses 所有用途	Banned 禁用
43	Cobalt dichloride 二氯化鈷	7646-79-9	All uses 所有用途	Banned 禁用
44	Diarsenic trioxide 三氧化二砷	1327-53-3	All uses 所有用途	1000
45	Diarsenic pentaoxide 五氧化二砷	1303-28-2	All uses 所有用途	1000
46	Bis (2- ethylhexyl) phthalate (DEHP) 鄰苯二甲酸二(2-乙基己基)酯	117-81-7	All uses 所有用途	1000
47	Dibutyl phthalate (DBP) 鄰苯二甲酸二丁酯	84-74-2	All uses 所有用途	1000
48	Butyl benzyl phthalate (BBP) 鄰苯二甲酸甲基丁酯	85-68-7	All uses 所有用途	1000
49	Diisobutyl phthalate (DIBP) 鄰苯二甲酸二異丁酯	84-69-5	All uses 所有用途	1000
50	Di-isononyl phthalate (DINP) 鄰苯二甲酸二異壬酯	28553-12-0 68515-48-0	All uses 所有用途	1000
51	Di-isodecyl phthalate (DIDP) 鄰苯二甲酸二異癸酯	26761-40-0 68515-49-1	All uses 所有用途	1000
52	Di-n-octyl phthalate (DNOP) 鄰苯二甲酸二異辛酯	117-84-0	All uses 所有用途	1000
53	Dihexyl phthalate (DNHP) 鄰苯二甲酸二乙酯	84-75-3	All uses 所有用途	1000
54	(1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) 鄰苯二甲酸二(C6-8 支鏈)烷基酯富 C7	71888-89-6	All uses 所有用途	1000
55	(1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters) (DHNUP) 鄰苯二甲酸二(C7-11 支鏈與直鏈)烷基酯	68515-42-4	All uses 所有用途	1000
56	Bis(2-methoxyethyl) phthalate (DMEP) 鄰苯二甲酸二甲氧乙酯	117-82-8	All uses 所有用途	1000

No.	Substance Name	CAS Number	Targets	Limit (ppm)
57	Diisopentylphthalate (DIPP) 鄰苯二甲酸二異戊酯	605-50-5	All uses 所有用途	1000
58	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear 支鏈與直鏈的鄰苯二甲酸二戊酯	84777-06-0	All uses 所有用途	1000
59	N-pentyl-isopentylphthalate 鄰苯二甲酸正戊基異戊基酯	776297-69-9	All uses 所有用途	1000
60	Dipentyl phthalate (DPP) 鄰苯二甲酸二戊酯	131-18-0	All uses 所有用途	1000
61	Asbestos 石棉	1332-21-4 132207-32-0 132207-33-1	All uses 所有用途	Banned 禁用
62	Specific azo compounds 特定偶氮化合物	-	All uses 所有用途	30
63	Formaldehyde 甲醛	50-00-0	All uses 所有用途	Banned 禁用
64	1,2-Benzenedicarboxylic acid, dihexylester, branched and linear 支鏈和直鏈鄰苯二甲酸二庚酯	68515-50-4	All uses 所有用途	1000
65	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328) 2-(2'-羥基-3',5'-二叔戊基苯基)苯並三唑	25973-55-1	All uses 所有用途	1000
66	Specific benzotriazole 特定苯並三氮唑	3846-71-7	All uses 所有用途	Banned 禁用
67	Dimethyl fumarate (DMF) 富馬酸二甲酯	624-49-7	All uses 所有用途	0.1
68	Polycyclic aromatic hydrocarbons(PAHs) 多環芳香烴化合物	-	Plastics 塑膠	0.1
69	Boric acid, specific sodium borates 硼酸、特定硼酸鈉	-	All uses 所有用途	1000
70	4-(1,1,3,3-tetramethylbutyl) phenol 4-(1,1,3,3-四甲基丁基)苯酚	140-66-9	All uses 所有用途	1000
71	Bis(2-methoxyethyl) ether 二乙二醇二甲醚	111-96-6	All uses 所有用途	1000
72	N,N-dimethylacetamide(DMAC) N,N-二甲基乙醯胺	127-19-5	All uses 所有用途	1000
73	Ethylene glycol dimethyl ether (EGDME) 乙二醇二甲醚	110-71-4	All uses 所有用途	1000
74	Trixylyl phthalate (TXP) 磷酸三(二甲苯)酯	25155-23-1	All uses 所有用途	1000
75	Nickel 鎳	7440-02-0	All uses 所有用途	Declarable 宣告

No.	Substance Name	CAS Number	Targets	Limit (ppm)
76	Brominated flame retardants 溴系阻燃劑 (BFR)	-	Non-metallic category, plastics 非金屬, 塑膠	900
77	Chlorinated flame retardants 氯系阻燃劑 (CFR)	-	Non-metallic category, plastics 非金屬, 塑膠	900
78	Radioactive substances 放射性物質	-	All uses 所有用途	Banned 禁用
Halogen 鹵素 (IEC 61249-2-21 definition)				
79	Total Bromine (Br) 總溴	10097-32-2	Non-metallic category, plastics 非金屬, 塑膠	900
80	Total Chlorine (Cl) 總氯	22537-15-1	Non-metallic category, plastics 非金屬, 塑膠	900
81	Br+Cl 總溴+總氯	-	Non-metallic category, plastics 非金屬, 塑膠	1500
Packaging and Packaging Waste directive (94/62/EC)				
82	Packaging 包裝材 (Pb+Cd+Hg+Cr+6)	-	Packaging Materials 包裝材	<100
PAHs directive				
83	Sum of 18 PAHs (多環芳香烴)	-	Plastics 塑膠	0.1
Other Hazardous Substances				
84	Phosphorus 磷	7723-14-0	Plastics 塑膠	1000
85	Red Phosphorus 紅磷	7723-14-0	Plastics 塑膠	Banned 禁用
86	Sb ₂ O ₃ 三氧化二銻	1309-64-4	Non-metallic category, plastics 非金屬, 塑膠	1000
87	Beryllium 鈹	7440-41-7	All uses 所有用途	1000

Notes:

1. It is apply to Compliant 2011/534/EU the exemption term:

符合 RoHS 指令 2011/534/EU 的排外條款:

1.1 7a. Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)

7a. 高熔點焊料中的鉛(例如, 含鉛重量為 85%或以上的鉛基合金焊料)

1.2 7(C)-I. Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound.

7(C)-I. 電子電氣元件中玻璃或陶瓷中的鉛(例如壓電電子裝置), 或玻璃或陶瓷複合材料中的鉛

2. Halogen (Cl / Br) only direct against Halogen free products.

無鹵 (氯/溴) 只針對無鹵素產品。

Smile Chung

Quality Reliability Assurance

Taiwan Semiconductor Co., Ltd.

Jun 25, 2019

Signature: Smile Chung