

Jul.5, 2007 C-70767E

To : Hana Semiconductor(Ayutthaya) Co.,Ltd.

Certificate

We hereby certify that the hazardous substances listed on the attached sheets aren't used intentionally as ingredient(s) for the following product manufactured by Shin-Etsu Electronics(M) Sdn.Bhd. except for substances listed on the next page.

Product : KMC-3580P-14F, KMC-3580P-8

This investigation is conducted only for the product itself.

Packing materials are out of scope of the investigation.

Our liability under this Certificate shall not exceed the purchase price of the particular shipment with respect to which the claims are made and shall not include liability for special, incidental, indirect, punitive or consequential damages.



Masanori Seino
General Manager
Quality Assurance Department
Gunma Complex
Shin-Etsu Chemical Co.,Ltd.

Investigation Results

Product	Contained hazardous substances	Content(%)
KMC-3580P-8	Silica	ca. 85
	Phosphorous compound	ca. 0.2
	Zinc compound	ca. 1
	Aluminum compound	ca. 0.3
	Magnesium compound	(*A)
	Amines(*B)	ca. 0.5
KMC-3580P-14F	Silica	ca. 85
	Phosphorous compound	ca. 0.1
	Zinc compound	ca. 1
	Aluminum compound	ca. 0.3
	Magnesium compound	(*A)
	Amines(*B)	ca. 0.5

(*A) As this substance contains both Aluminum and Magnesium, it is applied to both Aluminum compound and Magnesium compound.

(*B) These substances aren't applied to amines listed on Table.20.

Other substances aren't used intentionally as ingredient(s) for KMC-3580P-8 and KMC-3580P-14F. However, regarding substances(*1) and (*2), we cannot assure their Maximum Allowable Impurity Concentrations. The reasons are as follows:

(*1) These substances cannot be analyzed.

(*2) Their detection limits by chemical analysis are more than their Maximum Allowable Impurity Concentrations.

PROHIBITED AND RESTRICTED SUBSTANCES –
SEMICONDUCTOR DEVICES AND PRODUCT PACKING MATERIALS

Table 1.

Substance or Chemical Family	Maximum Allowable Impurity Concentration (PPM)
GROUP 1	
Cadmium and Cadmium Compounds	5
Hexavalent Chromium	100
Mercury and Mercury Compounds	100
Lead and Lead Compounds – homogenous materials other than plastics	1,000
Lead and Lead Compounds – all plastics, mold compounds, wire/cable sheathing, etc.	100
Polybrominated Biphenyls (PBB)	100
Polybrominated Diphenyl Ethers (PBDE), and/or PentaBDE and OctaBDE	100
GROUP 2	
Asbestos	0/Non-Detectable
Azo-Based Colorants and Dyes (capable of forming by reductive cleavage one or more of 22 carcinogenic aromatic amines)	30 (*1)
Brominated Flame Retardants – other than PBB and PBDE (plastic and printed circuit boards less than 25 grams not restricted)	< 5,000
Class I and Class II Ozone Depleting Materials	0/Non-Detectable (1)
Ethylene-Series Glycol Ethers	5 (*1)
Formaldehyde (as residual monomer)	5 (*2)
Halogenated Aromatic Substances (as residual monomers)	100 (*1)
Halogenated Diphenyl Methanes	0/Non-Detectable (*1)
n-Propyl Bromide (1-bromopropane)	0/Non-Detectable (1) (*1)
Nickel (in parts frequently contacted/ held; nickel in stainless steel exempt)	0/Non-Detectable
Polyaromatic Hydrocarbons	0/Non-Detectable (*1)
Polyvinyl Chloride (PVC) Plastic	0/Non-Detectable
Polychlorinated Biphenyls/ Polychlorinated Terphenyls/ Polychlorinated Naphthalenes	5 (*1)
Radioactive Materials	0/Non-Detectable above (*1) background
Red Phosphorous, Inorganic Particulate (all applications)	0/Non-Detectable (*1)
Short Chain Chlorinated Paraffins [alkanes C10 – C13]	1,000
Tributyltin and Triphenyltin Compounds	5 (*2)

- (1) Prohibited in manufacturing processes and in all materials supplied except as refrigerants in industrial chillers.

THIS DOCUMENT IS UNCONTROLLED UNLESS OTHERWISE STAMPED. It is the user's responsibility to ensure this is the latest revision prior to using or referencing this document.	Page	SPEC. NO.	REV.
Microchip Technology (Thailand)	Form Q001 Rev. B Refer Spec SPI-91003	10 of 30	SPI-91060 D

**PROHIBITED AND RESTRICTED SUBSTANCES –
SEMICONDUCTOR DEVICES AND PRODUCT PACKING MATERIALS**

APPENDIX C

**Reportable Substances in Raw Materials, Finished or Semi-Finished
Semiconductor Devices, and Product Packing Materials**

Table 4. Reporting Threshold \geq 100 PPM

Substance or Chemical Family
Antimony and its compounds
Arsenic and its compounds
Beryllium and Compounds
Brominated Flame Retardants – other than PBB, PBDE, pentaBDE, and octaBDE
Chromium Metal and Trivalent Chromium Compounds
Cobalt and its compounds
Copper and its compounds
Gold and its compounds
Iron and its compounds
Magnesium and its compounds
Manganese and its compounds
Nickel and its compounds
Palladium and its compounds
Phosphorous and its compounds
Phthalates and Phthalate Esters
Selenium and its compounds
Silica/Silicon Dioxide/Quartz
Silicon
Silver and its compounds
Tin and its compounds
Vinyl Chloride – as residual monomer
Zinc and its compounds

Table 5. Reporting Threshold \geq 1,000 PPM

Substance or Chemical Family
Acrylonitrile – as residual monomer
Aluminum and Compounds
Amines
Aniline
Barium and Compounds
Bismuth and Compounds
Chlorinated Organic Compounds – other than those compounds in Tables 1, 9, 12, 13, and 19
Cyanide Compounds

THIS DOCUMENT IS UNCONTROLLED UNLESS OTHERWISE STAMPED. It is the user's responsibility to ensure this is the latest revision prior to using or referencing this document.	Page	SPEC. NO.	REV.
Microchip Technology (Thailand)	Form Q001 Rev. B Refer Spec SPI-91003	14 of 30	SPI-91060 D

**PROHIBITED AND RESTRICTED SUBSTANCES –
SEMICONDUCTOR DEVICES AND PRODUCT PACKING MATERIALS**

APPENDIX F

CAS Numbers for Certain Prohibited, Restricted, and Reportable Substances, The Tables are intended to be representative rather than all-inclusive.

Table 7. Asbestos and its Compounds.

Example Compounds	CAS #
Asbestos	1332-21-4
Actinolite	77536-66-4
Amosite (Grunerite)	12172-73-5
Anthophyllite	77536-67-5
Chrysotile	12001-29-5
Tremolite	77536-68-6

Table 8. Cadmium and its Compounds.

Example Compounds	CAS #
Cadmium	7440-43-9
Cadmium oxide	1306-19-0
Cadmium sulfide	1306-23-6
Cadmium chloride	10108-64-2
Cadmium sulfate	10124-36-4

Table 9. Chlorofluorocarbons (CFC's).

Example Compounds	CAS #
Trichlorofluoromethane	75-69-4
Dichlorodifluoromethane (CFC12)	75-71-8
Chlorotrifluoromethane (CFC 13)	75-72-9
Pentachlorofluoroethane (CFC 111)	354-56-3
Tetrachlorodifluoroethane (CFC 112)	76-12-0
Trichlorotrifluoroethane (CFC 113)	354-58-5
1,1,2-trichloro-1,2,2-trifluoroethane	76-13-1
Dichlorotetrafluoroethane (CFC 114)	76-14-2
Monochloropentafluoroethane (CFC 115)	76-15-3
Heptachlorofluoropropane (CFC 211)	422-78-6 135401-87-5
Hexachlorodifluoropropane (CFC 212)	3182-26-1
Pentachlorotrifluoropropane (CFC 213)	2354-06-5 134237-31-3
Tetrachlorotetrafluoropropane (CFC 214)	29255-31-0
1,1,1,3-tetrachlorotetrafluoropropane	2268-46-4

THIS DOCUMENT IS UNCONTROLLED UNLESS OTHERWISE STAMPED. It is the user's responsibility to ensure this is the latest revision prior to using or referencing this document.	Page	SPEC. NO.	REV.
Microchip Technology (Thailand)	Form Q001 Rev. B Refer Spec SPI-91003	17 of 30	SPI-91060 D

**PROHIBITED AND RESTRICTED SUBSTANCES –
SEMICONDUCTOR DEVICES AND PRODUCT PACKING MATERIALS**

Example Compounds	CAS #
Trichloropentafluoropropane (CFC 215)	1599-41-3
1,1,1-trichloropentafluoropropane	4259-43-2
1,2,3-trichloropentafluoropropane	76-17-5
Dichlorohexafluoropropane (CFC 216)	661-97-2
Monochloroheptafluoropropane (CFC 217)	422-86-6
Bromochlorodifluoromethane (Halon 1211)	353-59-3
Bromotrifluoromethane (Halon 1301)	75-63-8
Dibromotetrafluoroethane (Halon 2402)	124-73-2
Carbon tetrachloride (Tetrachloromethane)	56-23-5
1,1,1,-trichloroethane (methyl chloroform) and its isomers except 1,1,2,-trichloroethane	71-55-6
Bromomethane (Methyl Bromide)	74-83-9
Bromodifluoromethane and isomers (HBFC's)	1511-62-2

Table 10. Chromium VI and its Compounds.

Example Compounds	CAS #
Chromium (VI) oxide	1333-82-0
Barium chromate	10294-40-3
Calcium chromate	13765-19-0
Chromic acetate	1066-30-4
Chromium trioxide	1333-82-0
Lead (II) chromate	7758-97-6
Sodium chromate	7775-11-3
Sodium dichromate	10588-01-9
Strontium chromate	7789-06-2
Potassium dichromate	7778-50-9
Potassium chromate	7789-00-6
Zinc chromate	13530-65-9

Table 11. Ethylene-Series Glycol Ethers.

Example Compounds	CAS #
Ethylene glycol monomethyl ether	109-86-4
Ethylene glycol monomethyl ether acetate	110-49-6
Ethylene glycol monoethyl ether	110-80-5
Ethylene glycol monomethyl ether acetate	111-15-9
Diethylene glycol dimethyl ether	111-96-6

Table 12. Halogenated Diphenyl Methanes.

Example Compounds	CAS #
--------------------------	--------------

THIS DOCUMENT IS UNCONTROLLED UNLESS OTHERWISE STAMPED. It is the user's responsibility to ensure this is the latest revision prior to using or referencing this document.	Page	SPEC. NO.	REV.
Microchip Technology (Thailand)	Form Q001 Rev. B Refer Spec SPI-91003	18 of 30	SPI-91060 D

**PROHIBITED AND RESTRICTED SUBSTANCES –
SEMICONDUCTOR DEVICES AND PRODUCT PACKING MATERIALS**

Monomethyltetrachloro Diphenyl Methane	76253-60-6
Monomethyldichloro Diphenyl Methane	81161-70-8
Monomethyldibromo Diphenyl Methane	99788-47-8

Table 13. Hydrochlorofluorocarbons (HCFC's).

Example Compounds	CAS #
Dichlorofluoromethane (HCFC 21)	75-43-4
Chlorodifluoromethane (HCFC 22)	75-45-6
Chlorofluoromethane (HCFC 31)	593-70-4
Tetrachlorofluoroethane (HCFC 121)	134237-32-4
1,1,1,2-tetrachloro-2-fluoroethane (HCFC 121A)	354-11-0
1,1,2,2-tetracloro-1-fluoroethane	354-14-3
Trichlorodifluoroethane (HCFC 122)	41834-16-6
1,2,2-trichloro-1,1-difluoroethane	354-21-2
Dichlorotrifluoroethane (HCFC 123)	34077-87-7
Dichloro-1,1,2-trifluoroethane	90454-18-5
2,2-dichloro-1,1,1-trifluoroethane	306-83-2
1,2-dichloro-1,1,2-trifluoroethane (HCFC-123A)	354-23-4
1,1-dichloro-1,2,2-trifluoroethane (HCFC-123B)	812-04-4
2,2-dichloro-1,1,2-trifluoroethane (HCFC-123b)	812-04-4
Chlorotetrafluoroethane (HCFC 124)	63938-10-3
2-chloro-1,1,1,2-tetrafluoroethane	2837-89-0
1-chloro-1,1,2,2-tetrafluoroethane (HCFC 124a)	354-25-6
Trichlorofluoroethane (HCFC 131)	27154-33-2; (134237-34-6)
1-fluoro-1,2,2-trichloroethane	359-28-4
1,1,1-trichloro-2-fluoroethane (HCFC131b)	811-95-0
Dichlorodifluoroethane (HCFC 131)	25915-78-0
1,2-dichloro-1,1-difluoroethane (HCFC 132b)	1649-08-7
1,1-dichloro-1,2-difluoroethane (HFCF 132c)	1842-08-7
1,1-dichloro-2,2-difluoroethane	471-43-2
1,2-dichloro-1,2-difluoroethane	431-06-1
Chlorotrifluoroethane (HCFC 133)	1330-45-6
1-chloro-1,2,2-trifluoroethane	1330-45-6
2-chloro-1,1,-trifluoroethane (HCFC-133a)	75-88-7
Dichlorofluoroethane (HCFC 133)	1717-00-6; (25167-88-8)
1,1-dichloro-1-fluoroethane (HCFC-141b)	1717-00-6
1,2-dichloro-1-fluoroethane	430-57-9
Chlorodifluoroethane (HCFC 142)	25497-29-4
1-chloro-1,1-difluoroethane (HCFC142b)	75-68-3

THIS DOCUMENT IS UNCONTROLLED UNLESS OTHERWISE STAMPED. It is the user's responsibility to ensure this is the latest revision prior to using or referencing this document.	Page	SPEC. NO.	REV.
Microchip Technology (Thailand)	19 of 30	SPI-91060	D
Form Q001 Rev. B Refer Spec SPI-91003			

**PROHIBITED AND RESTRICTED SUBSTANCES –
SEMICONDUCTOR DEVICES AND PRODUCT PACKING MATERIALS**

Example Compounds	CAS #
1-chloro-1,2-difluoroethane (HCFC142a)	25497-29-4
Hexachlorofluoropropane (HCFC 221)	134237-35-7
Pentachlorodifluoropropane (HCFC 222)	134237-36-8
Tetrachlorotrifluoropropane (HCFC 223)	134237-37-9
Trichlorotetrafluoropropane (HCFC 224)	134237-38-0
Dichloropentafluoropropane, (Ethyne, fluoro-) (HCFC 225)	127564-92-5, (2713-09-9)
2,2-dichloro-1,1,1,3,3-pentafluoropropane (HCFC 225aa)	128903-21-9 422-48-0
2,3-dichloro-1,1,1,2,3-pentafluoropropane (HCFC 225ba)	422-44-6 422-56-0
1,2-dichloro-1,1,2,3,3-pentafluoropropane (HCFC 225bb)	507-55-1 13474-88-9
3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC 225ca)	431-86-7 136013-79-1
1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC 225cb)	111512-56-2
1,1-dichloro-1,2,2,3,3-pentafluoropropane (HCFC 225cc)	
1,2-dichloro-1,1,3,3,3-pentafluoropropane (HCFC 225da)	
1,3-dichloro-1,1,2,3,3-pentafluoropropane (HCFC 225ea)	
1,1-dichloro-1,2,3,3,3-pentafluoropropane (HCFC 225eb)	
Chlorohexafluoropropane (HCFC 226)	134308-72-8
Pentachlorofluoropropane (HCFC 231)	134190-48-0
Tetrachlorodifluoropropane (HCFC 232)	134237-39-1
Trichlorotrifluoropropane (HCFC 233)	134237-40-4
1,1,1-trichloro-3,3,3-trifluoropropane	7125-83-9
Dichlorotetrafluoropropane (HCFC 234)	127564-83-4
Chloropentafluoropropane (HCFC 235)	134237-41-5
1-chloro-1,1,3,3,3-pentafluoropropane	460-92-4
Tetrachlorofluoropropane (HCFC 241)	134190-49-1
Trichlorodifluoropropane (HCFC 242)	134237-42-6
Dichlorotrifluoropropane (HCFC 243)	134237-43-7
1,1-dichloro-1,2,2-trifluoropropane	7125-99-7
2,3-dichloro-1,1,1-trifluoropropane	338-75-0
3,3-dichloro-1,1,1-trifluoropropane	460-69-5
Chlorotetrafluoropropane (HCFC 244)	134190-50-4

THIS DOCUMENT IS UNCONTROLLED UNLESS OTHERWISE STAMPED. It is the user's responsibility to ensure this is the latest revision prior to using or referencing this document.	Page	SPEC. NO.	REV.
Microchip Technology (Thailand)	Form Q001 Rev. B Refer Spec SPI-91003	20 of 30	SPI-91060
			D

**PROHIBITED AND RESTRICTED SUBSTANCES –
SEMICONDUCTOR DEVICES AND PRODUCT PACKING MATERIALS**

Example Compounds	CAS #
3-chloro-1,1,2,2-tetrafluoropropane	679-85-6
Trichlorofluoropropane (HCFC 251)	134190-51-5
1,1,3-trichloro-1-fluoropropane	818-99-5
Dichlorodifluoropropane (HCFC 252)	134190-52-6
Chlorotrifluoropropane (HCFC 253)	134237-44-8
3-chloro-1,1,1-trifluoropropane (HCFC 253fb)	460-35-3
Dichlorofluoropropane (HCFC 261)	134237-45-9
1,1-dichloro-1-fluoropropane	7799-56-6
Chlorodifluoropropane (HCFC 262)	134190-53-7
2-chloro-1,3-difluoropropane	102738-79-4
Chlorofluoropropane (HCFC 271)	134190-54-8
2-chloro-2-fluoropropane	420-44-0

Table 14. Lead and its Compounds.

Example Compounds	CAS #
Lead	7439-92-1
Lead (II) sulfate	7446-14-2
Lead (II) carbonate	598-63-0
Lead acetate	301-04-2
Lead (II) acetate, trihydrate	6080-56-4
Lead phosphate	7446-27-7
Lead selenide	12069-00-0
Lead (IV) oxide	1309-60-0
Lead (II, IV) oxide	1314-41-6
Lead (II) sulfide	1314-87-0
Lead (II) oxide	1317-36-8
Lead (II) carbonate, basic	1319-46-6
Lead (II) hydrocarbonate [bis[carbonato (2-)]dihydroxytrilead]	
Lead (II) carbonate, basic [(PbCo ₃) ₂ Pb(OH) ₂]	1344-36-1
Lead (II) phosphate	7446-27-2
Lead (II) chromate	7758-97-6
Lead (II) titanate	12060-00-3
Lead sulfate; Sulphuric acid, lead salt	15739-80-7
Lead sulphate, tribasic	12202-17-4
Lead stearate	1072-35-1
Other Lead Compounds	--

Table 15. Mercury and its Compounds.

THIS DOCUMENT IS UNCONTROLLED UNLESS OTHERWISE STAMPED. It is the user's responsibility to ensure this is the latest revision prior to using or referencing this document.	Page	SPEC. NO.	REV.
Microchip Technology (Thailand)	Form Q001 Rev. B Refer Spec SPI-91003	21 of 30	SPI-91060
			D

**PROHIBITED AND RESTRICTED SUBSTANCES –
SEMICONDUCTOR DEVICES AND PRODUCT PACKING MATERIALS**

Example Compounds	CAS #
Mercury	7439-97-6
Mercuric chloride	33631-63-9
Mercury (II) chloride	7487-94-7
Mercuric sulfate	7783-35-9
Mercuric nitrate	10045-94-0
Mercuric (II) oxide	21908-53-2
Mercuric sulfide	1344-48-5
Other Mercury Compounds	--

Table 16. Nickel and its Compounds.

Example Compounds	CAS #
Nickel	7440-02-0
Nickel acetate	373-02-4
Nickel carbonate	3333-67-3
Nickel carbonyl	13463-39-3
Nickel hydroxide	12054-48-7 or 11113-74-9
Nickelocene	1271-28-9
Nickel oxide	1313-99-1
Nickel subsulfide	12035-72-2
Other Nickel Compounds	--

Table 17. Polyaromatic Hydrocarbons.

Example Compounds	CAS #
Anthracene	120-12-7
Benzo(g, h, i) perylene	191-24-2
Benzo(a) pyrene	50-32-8
Fluoranthrene	206-44-0

Table 18. Polybrominated Biphenyls (PBBs) and their Ethers/Oxides (PBDEs).

Example Compounds	CAS #
Bromobiphenyl and its ethers	2052-07-5 (2-Bromobiphenyl) 2113-57-7 (3-Bromobiphenyl) 92-66-0 (4-Bromobiphenyl) 101-55-3 (Ether)

THIS DOCUMENT IS UNCONTROLLED UNLESS OTHERWISE STAMPED. It is the user's responsibility to ensure this is the latest revision prior to using or referencing this document.	Page	SPEC. NO.	REV.
Microchip Technology (Thailand)	Form Q001 Rev. B Refer Spec SPI-91003 22 of 30	SPI-91060	D

**PROHIBITED AND RESTRICTED SUBSTANCES –
SEMICONDUCTOR DEVICES AND PRODUCT PACKING MATERIALS**

Example Compounds	CAS #
Decabromobiphenyl and its ethers	13654-09-6 1163-19-5 (Ether)
Dibromobiphenyl and its ethers	92-86-4 2050-47-7 (Ether)
Hexabromobiphenyl and its ethers	59080-40-9 36355-01-8 (Hexabromo-1,1'-biphenyl) 67774-32-7 (Firemaster FF-1) 36483-60-0 (Ether)
Nonabromobiphenylether	63936-56-1
Octabromobiphenyl and its ethers	61288-13-9 32536-52-0 (Ether)
Pentabromobidphenyl Ether; Note: Commercially available PeBDPO is a complex reaction mixture containing a variety of brominated diphenyloxides	32534-81-9 (CAS number used for commercial grades of PeBDPO)
Polybrominated Biphenyls	59536-65-1
Tetrabromobiphenyl and its ethers	40088-45-7 40088-47-9 (Ether)
Tribromobiphenyl ether	49690-94-0

Table 19. Polychlorinated Biphenyls (PCBs) and Terphenyls (PCTs).

Example Compounds	CAS #
Polychlorinated Biphenyls	1336-36-3
Aroclor	12767-79-2
Chlorodiphenyl (Aroclor 1260)	11096-82-5
Kanechlor 500	27323-18-8
Aroclor 1254	11097-69-1
Terphenyls	26140-60-3

Table 20. Azo Colorants (Aromatic Amines that May Be Formed by Reductive Cleavage of Azo Dyes).

Specific Amines	CAS #
4-Aminodiphenyl and its salts	92-67-1
Benzidine	92-87-5
4-Chloro-o-toluidine	95-69-2
2-Naphthylamine	91-59-8
o-Aminoazotoluene	97-56-3

THIS DOCUMENT IS UNCONTROLLED UNLESS OTHERWISE STAMPED. It is the user's responsibility to ensure this is the latest revision prior to using or referencing this document.	Page	SPEC. NO.	REV.
Microchip Technology (Thailand)	Form Q001 Rev. B Refer Spec SPI-91003	23 of 30	SPI-91060 D

**PROHIBITED AND RESTRICTED SUBSTANCES –
SEMICONDUCTOR DEVICES AND PRODUCT PACKING MATERIALS**

Specific Amines	CAS #
5-Nitro-o-toluidine	99-55-8
4-Chloroaniline	106-47-8
4-Methoxy-m-phenylenediamine	615-05-4
4,4'-Methylenedianiline	101-77-9
3,3'-Dichlorobenzidine	91-94-1
3,3'-Dimethoxybenzidine	119-90-4
3,3'-Dimethylbenzidine	119-93-7
4,4'-Methylenedi-o-toluidine	838-88-0
6-Methylenedi-o-toluidine	120-71-8
4,4'-Methylene-bis(2-chloroaniline)	101-14-4
4,4'-Oxydianiline	101-80-4
4,4'-Thiodianiline	139-65-1
o-Toluidine	95-53-4
4-Methyl-m-phenylenediamine	95-80-7
2,4,5-Trimethylaniline	137-17-7
o-Anisidine	90-04-0
4-Amino azobenzene	60-09-3

Table 21. Halogenated Flame Retardants/Additives (Other than PBBs or PBDEs).

Example Compounds	CAS #
Brominated Flame Retardant which comes under notation of ISO 1043-4 code number FR(14) [Aliphatic/Alicyclic Brominated Compounds]	--
Brominated Flame Retardant which comes under notation of ISO 1043-4 code number FR(15) [Aliphatic/alicyclic brominated compounds in combination with antimony compounds]	--
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(16) [Aromatic brominated compounds excluding brominated diphenyl ether and biphenyls]	--
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(17) [Aromatic brominated compounds excluding brominated diphenyl ether and biphenyls in combination with antimony compounds]	--
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(22) [Aliphatic/alicyclic chlorinated and brominated]	--

THIS DOCUMENT IS UNCONTROLLED UNLESS OTHERWISE STAMPED. It is the user's responsibility to ensure this is the latest revision prior to using or referencing this document.	Page	SPEC. NO.	REV.
Microchip Technology (Thailand)	24 of 30	SPI-91060	D
Form Q001 Rev. B Refer Spec SPI-91003			

**PROHIBITED AND RESTRICTED SUBSTANCES –
SEMICONDUCTOR DEVICES AND PRODUCT PACKING MATERIALS**

Example Compounds	CAS #
compounds]	
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(42) [Brominated organic phosphorus compounds]	--
Poly(2,6-dibromo-phenylene oxide)	69882-11-7
Tetra-decabromo-diphenoxy-benezene	58965-66-5
1,2-Bis (2,4,6-tribromo-phenoxy) ethane	37853-59-1
3,5,3',5'-Tetrabromo-bisphenol A (TBBA)	79-94-7
TBBA, unspecified	30496-13-0
TBBA-epichlorhydrin oligomer	40039-93-8
TBBA-TBBA-diglycidyl-ether oligomer	70682-74-5
TBBA carbonate oligomer	28906-13-0
TBBA carbonate oligomer, phenoxy end capped	94334-64-2
TBBA carbonate oligomer, 2,4,6-tribromo-phenol terminated	71342-77-3
TBBA-bisphenol A-phosgene polymer	32844-27-2
Brominated epoxy resin end-capped with tribromophenol	139638-58-7
Brominated epoxy resin end-capped with tribromophenol	135229-48-0
TBBA-(2,3-dibromo-propyl-ether)	21850-44-2
TBBA bis-(2-hydroxy-ethyl-ether)	4162-45-2
TBBA-bis-(allyl-ether)	25327-89-3
TBBA-dimethyl-ether	37853-61-5
Tetrabromo-bisphenol S	39635-79-5
TBBS-bis-(2,3-dibromo-propyl-ether)	42757-55-1
2,4-Dibromo-phenol	615-58-7
2,4,6-Tribromo-phenol	118-79-6
Pentabromo-phenol	608-71-9
2,4,6-Tribromo-phenyl-allyl-ether	3278-89-5
Tribromo-phenyl-allyl-ether, unspecified	26762-91-4
Bis(methyl)tetrabromo-phthalate	55481-60-2
Bis(2-ethylhexyl)tetrabromo-phthalate	26040-51-7
2-Hydroxy-propyl-2-(2-hydroxy-ethoxy)-ethyl-TBP	20566-35-2
TBPA, glycol-and propylene-oxide esters	75790-69-1
N,N'-Ethylene –bis-(tetrabromo-phthalimide)	32588-76-4
Ethylene-bis(5,6,-dibromo-norbornane-2,3-dicarboximide	52907-07-0
2,3-Dibromo-2-butene-1,4-diol	3234-02-4

**PROHIBITED AND RESTRICTED SUBSTANCES –
SEMICONDUCTOR DEVICES AND PRODUCT PACKING MATERIALS**

Example Compounds	CAS #
Dibromo-neopentyl-glycol	3296-90-0
Dibromo-propanol	96-13-9
Tribromo-neopentyl-Alcohol	36483-57-5
Poly tribromo-styrene	57137-10-7
Tribromo-styrene	61368-34-1
Dibromo-styrene grafted PP	171091-06-8
Poly-dibromo-styrene	31780-26-4
Bromo-/Chloro-Paraffins	68955-41-9
Bromo-/Chloro-alpha-olefin	82600-56-4
Vinylbromide	593-60-2
Tris-(2,3-dibromo-propyl)-isocyanurate	52434-90-9
Tris(2,4-dibromo-phenyl) phosphate	49690-63-3
Tris(tribromo-neopentyl) phosphate	19186-97-1
Chlorinated and brominated phosphate ester	125997-20-8
Pentabromo-toluene	87-83-2
Pentabromo-benzyl bromide	38521-51-6
1,3-Butadiene homopolymer, brominated	68441-46-3
Pentabromo-benzyl-acrylate, monomer	59447-55-1
Pentabromo-benzyl-acrylate, polymer	59447-57-3
Decabromo-diphenyl-ethane	84852-53-9
Tribromo-bisphenyl-maleinimide	59789-51-4
Brominated trimethylphenyl-lindane	155613-93-7
Other Brominated Flame Retardants	--
Hexabromo-cyclo-dodecane (HBCD), unspecified	3194-55-6
Tetrabromo-cyclo-octane	3194-57-8
1,2-Dibromo-4-(1,2 dibromo-methyl)-cyclo-hexane	3322-93-8
TBPA Na salt	25357-79-3
Tetrabromo phthalic anhydride	632-79-1

Table 22. Phthalates.

Example Compounds	CAS #
Diisononyl phthalate	28553-12-0
Di-sec-octyl phthalate	117-81-7
Dibutyl phthalate	84-74-2
Diisodecyl phthalate	26761-40-0
Bis(n-octyl) phthalate	117-84-0
Butyl benzyl phthalate	85-68-7
Other phthalates and phthalate esters	-

**PROHIBITED AND RESTRICTED SUBSTANCES –
SEMICONDUCTOR DEVICES AND PRODUCT PACKING MATERIALS**

Table 23. Radioactive Materials.

Example Compounds	CAS #
Americium	7440-35-9
Cesium	7440-46-2
Strontium	7440-24-6
Thorium	7440-29-1
Uranium	7440-61-1
Other radioactive materials	-

Table 24. Tributyltin and Triphenyltin Compounds.

Example Compounds	CAS #
Tributyltin	56573-85-4
Tributyltin acetate	56-36-0
Tributyltin bromide	1461-23-0
Tributyltin fluoride	1983-10-4
Tributyltin laurate	3090-36-6
Tributyltin oxide	56-35-9
Tributyltin sulfamate	6517-25-5
Triphenyltin	668-34-8
Triphenyltin acetate	900-95-8
Triphenyltin chloride	639-58-7
Triphenyltin fatty acid salts (Carbon = 9 to 11)	47672-31-1
Triphenyltin fluoride	1983-10-4
Triphenyltin hydroxide	76-87-9

THIS DOCUMENT IS UNCONTROLLED UNLESS OTHERWISE STAMPED. It is the user's responsibility to ensure this is the latest revision prior to using or referencing this document.		Page	SPEC. NO.	REV.
Microchip Technology (Thailand)	Form Q001 Rev. B Refer Spec SPI-91003	27 of 30	SPI-91060	D