Guidelines for Chemical Substances Contained in Products
【Semiconductors】

Version 9

November 15, 2019

Fuji Electric Co., Ltd.
Electronic Devices Business Group

[MGn5001 Appendix 2]

Guidelines for Chemical Substances contained in products

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Foreword

Fuji Electric Co., Ltd. has promoted to provide the products and techniques contributing to the protection of the global environment, to reduce environmental impact in the life cycle of a product, to lighten the environmental impact by our business activities, to contribute to the construction of a sustainable recycling community.

It is necessary to procure the parts and the materials that are ecologically friendly and cause less environmental impacts for achieving it. So we are tackling the promotion of Green procurement actively.

Fuji Electric Co., Ltd. Electronic Devices Business Group（our company, hereinafter） wants to realize these with our suppliers to issue these guidelines and revise it.

Your understanding and cooperation are earnestly requested.

1. Purpose

Purpose of these guidelines is, on chemical substances contained in the parts and the materials delivered to our company, having our suppliers comply with these guidelines, to establish the management system and to acquire necessary information from our suppliers.

2. Scope

1) Applicable suppliers

Suppliers that deliver parts, materials, packaging materials, subsidiary materials, and so on for the production of semiconductors of our company or our manufacturing companies

※Our manufacturing companies

Fuji Electric Co., Ltd.　Electronic Devices Business Group　Production Division

Matsumoto Factory

Yamanashi Branch Factory

Fuji Electric Power Semiconductor Co., Ltd. Oomachi Factory

〃　Iiyama Factory

〃　Hokuriku Factory

Fuji Electric Tsugaru Semiconductor Co., Ltd.

Fuji Electric Philippines, Inc.

Fuji Electric Malaysia Sdn. Bhd.

Fuji Electric (Shenzhen) Co., Ltd.　Semiconductor Section

Our company asks for our suppliers that deliver the parts and materials to the companies above to follow these guidelines and give priority to these guidelines over ″the Guidelines for Green Procurement″ separately issued by Fuji Electric Group.

2) Applicable parts and materials（parts and materials, hereinafter）

Constituent parts (including products manufactured on commission), materials, packaging materials (that are used for packaging our company's products) , and subsidiary materials used in products (that get in or touch the products at process) of our company's semiconductors. However, supplies from our company are exempted.

3. A request for the construction of management system for chemical substances contained in the products

It is necessary to control the chemical substances contained in every product throughout supply chain to conform to restrictions on chemical substances contained in the products such as EU RoHS Directive.

Requirements for our suppliers to follow are completed in Appendix 1 “Requirements on Environmental Quality Assurance”. Suppliers are encouraged to construct the management system in accordance with that requirements or equal system to improve environmental quality.

Construction of the management system will be checked with Appendix 2 “Environmental Quality Assurance System Check-sheet”.

4. Chemical substance in delivered parts and materials

Our company establishes two categories “Prohibited substances” and “Controlled substances” on the chemical substances contained in parts and materials delivered by our suppliers, and asks to warrant not to contain any of them for the former, and to report the content for the latter.

1) Prohibited substances

These are the substances that their production and use are prohibited or restricted by law or treaty or the prohibited substances specified our company's own standard. They are not allowed to use on purpose in principle except to our specified parts and materials .

Please refer to Table A “Prohibited substances” as to the details of substances.

No.	Regulations on prohibited substances	Scope
[A01]	Ozone Layer Protection Law (Montreal Protocol)	Annex A(I、II)、B(I、II、III)、C(I、II、III)、E(I)、F(I、II)
[A02]	Chemical Substances Control Law	Class I Specified Chemical Substances
[A03]	Industrial Safety and Health Act	Prohibition of Manufacturing etc. Permission for Manufacturing
[A04]	Poisonous and Deleterious Substances Control Law	Specific Poison
[A05]	Act on the Regulation of Nuclear Source Material etc.	Radioactive material
[A06]	EU RoHS, ELV and Package Directive (*1)	Restricted substances
[A07]	EU REACH (Regulation EC/1907/2006)	Annex XIV (Authorisation list), Annex XVII (Restriction list) [Substance by which the condition of the restriction relates to our company]
[A08]	GADSL	P:Prohibited substances D/P: [Substance by which the condition of the prohibition relates to our company]
[A09]	Customer Request substances	Cyanide (Selected from Poison and Deleterious substance of PDSL) Polyvinyl chloride (Selected from U.S. IEEE 1680) Chlorinated Flame Retardants (U.S. Vermont State. Act 85) PFCs、SF6((EC) 842/2006 Annex I)

(*1) Allowable concentrations and exemption of substances in EU RoHS/ELV/Package directive

Standards for allowable concentrations of substances on EU RoHS/ELV/Package directive (Lead, Cadmium, Mercury, Hexavalent Chromium, PBB, PBDE, DEHP, BBP, DBP, DIBP) are established for each supply at Table B. Please pay attention to conformity to package directive

The allowable concentrations for 4 phthalates (DEHP, BBP, DBP, DIBP) is 1000 ppm in total (according to the threshold of REACH Annex XVII No. 51).

that is required for the materials used for packaging of our company's products.

Exemption is stipulated under the provision of EU RoHS directive and they are shown at Table C.

2) Controlled substances

Controlled substances that should be properly managed by grasping the content are specified as follows. The main structure of controlled substances is based on chemSHERPA.

The object substance follows the latest version of each regulations and industry standards.

No.	Regulations on controlled substances	Scope	Old No.
[B01] ※1※2	EU REACH (Regulation (EC) No 1907/2006)	SVHC (Candidate List)	[B01]
		Annex XVII (Restriction substance) [Substance by which the condition of the restriction does not relate to our company]	
[B02] ※1※2	EU CLP (Regulation(EC)/1272/2008)	Annex VI Table3 CMR Cat. 1A,1B ※1 EU MDR (Medical Device Regulation) Annex I 10.4.1(a)	[B02]
[B03] ※1	U.S. Toxic Substances Control Act (TSCA)	Section 6 (prohibit or restrict) [Substance by which the condition of the prohibition and restriction does not relate to our company]	[B03]
[B04] ※1※2	GADSL	D:Declarable substances D/P:[Substance by which the condition of the prohibition does not relate to our company]	[B04]
[B05] ※1※2	IEC62474 (JIG-101)	Criteria 1, 2, 3	[B05]
[B06]	Law concerning Pollutant Release and Transfer Register (PRTR)	Class I Designated Chemical Substances	[B06]
		Class II Designated Chemical Substances	
[B07]	Chemical Substances Control Law (CSCL)	Class II Specified Chemical Substances	[B07]
		Monitoring Chemical Substances	
[B08]	Measures to Tackle Global Warming	Green House Gases (Kyoto Protocol)	[B08]
[B09]	Other Controlled Substances	Norway PoHS Candidate substance	[B09]
		U.S. TSCA [The object of SNUR is a substace of 'any use' (except for the prohibited substances of our company, medicine, explosive, etc.).]	
		EU ESIS PBT list Fulfilling ※2	
		Polycyclic aromatic hydrocarbons (PAH)	
		Red phosphorus and Organophosphorus compounds (except Prohibited Substances)	
		Perfluoroalkyl sulfonate (PFAS) and its salts, related substance	
		GADSL old version (The substance deleted by revision)	
		JIG old version (The substance deleted by revision)	

Please refer to the attached list "Prohibited and controlled substances detailed list" as to the details on the illustrated substances and CAS number.

※1 Declarable substances of chemSHERPA.

chemSHERPA HP: https://chemsherpa.net/chemSHERPA/english/

※2 Declarable substances of JAMP-AIS.

5. A request of investigation into green procurement to our suppliers

1) Submission of "Environmental quality management system check sheet"

Our company periodically confirms the construction of management system at our suppliers with Appendix 2 "Environmental Quality Assurance System Check-sheet". we may audit again depending on the result of that check.

2) Submission of "The warranty on the prohibited substances"

Submission of Appendix 3 "The warranty on the prohibited substances" is requested to ensure that parts and materials which contains prohibited substances specified at clause 4. 1) are not delivered to our company. Even though intentional containing shall not be allowed in principle except to the designated parts and materials by us, please report regardless of its relevant law, use, exemption, threshold value, etc. because we want to grasp containing ingredients.

・Investigation into the use of ozone-depleting substances in the process

Our company confirms the use of prohibited ozone-depleting substances in our suppliers' process. Please report with Appendix 3 "The warranty on the prohibited substances".
(However, HFCs listed in Annex F(I、II) of Montreal Protocol are not subject to investigation.)

3) Submission of "The list of information on the constituent"

Submission of Appendix 4 "The list of information on the constituent" is requested to grasp chemical substances constituting parts and materials delivered to our company. For chemical substances used intentionally as well as prohibited and controlled substances mentioned at clause 4. 1) and 2) contained in delivered parts and materials, please report all of their defined or measured content.

Necessary information on chemical substances to complete the list should be acquired from your suppliers and answer with taking into account its change of composition in your process.

The concrete entry to this form is specified in the examples of "The list of information on the constituent.xls". Please pay attention to the following points.

- Please report on all of material, components, and concentration in each supplied model.
- Please report the substances with their concentration of 0.1 wt% and over and make the sum of concentration 100% for each material. However, Please report on our prohibited or controlled substances even less than 0.1 wt%.

  The unit of the material is "the homogeneous material" defined by RoHS Directive. (Refer to appendix 7 "Periodic analysis guideline")
- For each substance, make a "Prohibited substances" or " Controlled substances" judgment in the "FE Prohibited / Controlled Substance Detail List" and select "×" for the corresponding item. For substances that do not fall under "Prohibited substances" and "Controlled substances", select "×" for "Other substances".

  Even if you do not disclose specific chemical substance names and CAS numbers for manufacturing reasons, be sure to judge them.

- The specific name and CAS No. of chemical substances do not have to be disclosed because of manufacturing method etc. on condition that its composition is less than 10 wt% in the material.
  Even in this case, please be sure to enter "×" on the relevant box.
- Please fill the finally remained substances for resin, plating solution, ink, etc. that their composition change.

4) Submission of "REACH SVHC survey form "

When EU REACH SVHC(Candidate List) is updated, Appendix 5 "REACH SVHC survey form " is sent to you each time. Please report information on containment of SVHC indicated in the survey form.

*The latest list: http://echa.europa.eu/web/guest/candidate-list-table

5) Submission of “Additional controlled substances survey form ”

When controlled substances is added, Appendix 6 “Additional controlled substances survey form” is sent to you each time. Please report information on containment of additional controlled substances indicated in the survey form.
(However, the addition of SVHC is surveyed by clause 5.4).)

6) Submission of “Data of analysis (Test Report)”

For the parts and materials delivered to our company, submission of precise analysis data for relevant substances (Lead, Cadmium, Mercury, Hexavalent Chromium, PBB, PBDE, DEHP, BBP, DBP, DIBP) is requested for each homogeneous material as evidence of conformity to the EU RoHS/ELV/Packgae directive except some exemption. This data is effective within one year from the analyzed date and required to update continuously.

Please refer to Appendix 7 “Periodic analysis guideline” about analyzing method.
If analysis data is not available, please provide samples for the analysis for every homogeneous material.

As for the parts and materials that our company requested halogen-free, the analysis on the related substances (Chloride, Bromine, Antimony) are also requested. Standards for allowable concentrations of the related substances are established at Table B.

7) Submission of “SDS(Safety Data Sheet)”

Please submit SDS(Safety Data Sheet) with the parts and materials delivered to our company. If a supply is an article, SDS of used materials should be submitted.

6. Alteration management

If processes or materials involving to the parts and materials delivered to our company are changed, that alteration shall be noticed to our purchase division in advance and approval must be obtained.
In that case, please submit the document of preceding clause 5 again.

7. Inquiries on these guidelines

Any questions on these guidelines, please contact the section in charge of the investigation into green procurement or below.

Environment & Quality Management Sec. Quality Assurance Dept.
Production Division Electronic Devices Business Group
Fuji Electric Co., Ltd.

Takashi Inanuma or Tsutomu Kasuga E-mail: ems-matsumoto@fujielectric.com

Table A. Prohibited substances

Please refer to Table B. Threshold values as to the threshold values.
Please refer to Table C Exemption from prohibited substances as to the exemption.
Please refer to the attached list "Prohibited and controlled substances detailed list" as to the details on the illustrated substances and CAS number.

No.	Applicable laws and regulations	Substance name	CAS-No.
1	Ozone Layer Protection Law	Ozone-Depleting Substances [Montreal Protocol]	75-69-4
2	Chemical Substances Control Law [Class I Specified Chemical Substances]	Polychlorinated biphenyl (PCB)	1336-36-3
3		Polychloronaphthalene (PCN) [Cl≧1(based on GADSL)]	1321-64-8
4		Hexachlorobenzene and pigment containing by-product hexachlorobenzene	118-74-1
5		Aldrin	309-00-2
6		Dieldrin	60-57-1
7		Endrin	72-20-8
8		DDT	50-29-3
9		Chlordane	57-74-9
10		p-Phenylenediamine	620-91-7
11		2,4,6-tri-tert-butylphenol	732-26-3
12		Toxaphene	8001-35-2
13		Mirex	2385-85-5
14		Dicofol or Kelthane (p,p'-dicofol and o,p'-dicofol)	115-32-2
15		Hexachlorobuta- 1,3-diene	87-68-3
16		2-(2H-1,2,3-Benzotriazol-2-yl)-4,6-di-tert-butylphenol	3846-71-7
17		Perfluorooctane sulfonate (PFOS) and its salt	1763-23-1
18		Perfluorooctane sulfonyl fluoride (PFOS-F)	307-35-7
19		Pentachlorobenzene (PeCB)	608-93-5
20		α-Hexachlorocyclohexane(α-HCH)	319-84-6
21		β-Hexachlorocyclohexane(β-HCH)	319-85-7
22		γ-Hexachlorocyclohexane(γ-HCH, Lindane)	58-89-9
23		Chlordecone	143-50-0
24		Endosulfan	115-29-7
25		Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified	3194-55-6
26		Pentachlorophenol and its salts and esters	87-86-5
27		Short Chain Chlorinated Paraffins (C10-13) [Cl≧1(based on GADSL)]	85535-84-8
28	(Next added)	Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds	335-67-1
29	(Scheduled to be added)	Perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds	355-46-4
30	Industrial Safety and Health Act [Prohibition of Manufacturing etc.]	Yellow phosphorus match	12185-10-3
31		Benzidine and its salt	92-87-5
32		4-amino diphenyl and its salt	92-67-1
33		Asbestos [asbestos, amosite, Crocidolite, etc.]	1332-21-4
34		4-nitrodiphenyl and its salt	92-93-3
35		Bis(chloromethyl)ether	542-88-1
36		beta-naphthylamine and its salt	91-59-8
37		Benzene	71-43-2
38	[Permission for Manufacturing]	Dichlorobendizine and its salts	84-68-4
39		alpha-Naphthylamine and its salts	134-32-7
40		o-Tolidine and its salts	119-93-7
41		Dianisidine and its salts	119-90-4
42		Beryllium and its compounds	1304-56-9
43		Benzotrichloride	98-07-7
44	Poisonous and Deleterious Substances Control Law [Specific Poison]	Octamethylphosphoramide	152-16-9
45		Specified organophosphorus compound [Parathion, Methyl Demeton, Phosphamidon, Methyl Parathion, TEPP]	56-38-2
46		Fluoroacetic acid, its salt, and amide	144-49-0
47		Aluminium phosphide	20859-73-8
48	Nuclear Source Material Act	Radioactive material	7440-61-1
49	EU RoHS	Cadmium and its compounds	7440-43-9
50		Hexavalent chromium compounds	1333-82-0
51		Mercury and its compounds	7439-97-6
52		Lead and its compounds	7439-92-1
53		Specified Brominated flame retardants [PBB and PBDE]	67774-32-7
54		Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7

No.	Applicable laws and regulations	Substance name	CAS-No.
55		Benzyl butyl phthalate (BBP)	85-68-7
56		Dibutyl phthalate (DBP)	84-74-2
57		Diisobutyl phthalate (DIBP)	84-69-5
58	EU REACH	5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2
59	[Annex XIV]	4,4'- Diaminodiphenylmethane (MDA)	101-77-9
60		tris(2-chloroethyl)phosphate	115-96-8
61	(Authorisation substances)	2,4-Dinitrotoluene	121-14-2
62		Trichloroethylene	79-01-6
63		Formaldehyde, oligomeric reaction products with aniline	25214-70-4
64		Bis(2-methoxyethyl) ether	111-96-6
65		1,2-dichloroethane	107-06-2
66		2,2'-dichloro-4,4'-methylenedianiline (MOCA)	101-14-4
67		1-Bromopropane	106-94-5
68		1,2-Benzenedicarboxylic acid, dipentylester, branched and linear (DPP, DIPP, PIPP)	84777-06-0
69		1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7 rich	71888-89-6
70		1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4
71		Bis(2-methoxyethyl) phthalate	117-82-8
72		Anthracene oil	90640-80-5
73		Pitch, coal tar, high temp.	65996-93-2
74		4-(1,1,3,3-Tetramethylbutyl)phenol, ethoxylated	2315-67-5
75	[Annex XVII]	Polychloro terphenyl (PCT)	61788-33-8
76		Chloroethylene (vinyl chloride monomer)	75-01-4
77	(Restriction substances)	Arsenide	7440-38-2
78	(Substance by which the condition of the restriction relates to our company)	Organostannic compounds [Dibutyltin/Dioctyltin/All tri-substituted organostannic compounds]	56-35-9
79		Monomethyl-tetrachloro-diphenyl methane (Ugilec 141)	76253-60-6
80		Monomethyl-dichloro-diphenyl methanes (Ugilec 121)	81161-70-8
81		Monomethyl-dibromo-diphenyl methane (DBBT)	99688-47-8
82		Cobalt dichloride	7646-79-9
83		Formaldehyde	50-00-0
84		Nickel compound 《Human body contact parts are prohibition and alloy content are excepted》	7440-02-0
85		Chloroform	67-66-3
86		1,1,2-trichloroethane	79-00-5
87		1,1,2,2-tetrachloroethane	79-34-5
88		1,1,1,2-tetrachloroethane	630-20-6
89		Pentachloroethane	76-01-7
90		1,1-dichloroethylene	75-35-4
91		Hexachloroethane	67-72-1
92		Nonyl phenol, Nonyl phenol ethoxy rate	25154-52-3
93		Dimethyl fumarate	624-49-7
94	GADSL	Azodyes that can form carcinogenic amines, selected	12217-14-0
95	[P:Prohibited substances]	Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene (BNST)	68921-45-9
96	[D/P] (Substance by which	Chlorinated or brominated Dibenzo-p-dioxins or Dibenzofurans, all members	1746-01-6
97	the condition of the prohibition	2-Methoxyethanol	109-86-4
98	relates to our company)	Hydrofluorocarbons (HFC's), all members	75-46-7
99		N-Nitroso dimethyl amine	62-75-9
100		Tetrachlorobenzene, all members	95-94-3
101		TriAziridinylphosphineoxide	545-55-1
102		Phosphoric Acid tris(2,3-dibromopropyl)ester	126-72-7
103	(Old P:Prohibited substances)	Amines, carcinogenic, which are formed from Azo-dyes, selected	137-17-7
104	Customer Request substances	Cyanide [Poison & Deleterious substance]	143-33-9
105		Polyvinyl chloride (PVC) and PVC compounds [U.S. IEEE 1680]	9002-86-2
106		Tris(2-chloro-1-methylethyl)phosphate (TCPP) [U.S. Vermont State. Act 85]	13674-84-5
107		Tris(1,3-dichloro-2-propyl)phosphate (TDCPP) [U.S. Vermont State. Act 85]	13674-87-8
108		Perfluorocarbons (PFCs) [(EC) 842/2006]	75-73-0
109		Sulphur hexafluoride (SF6) [(EC) 842/2006]	2551-62-4

【 The main amendments of Prohibited substances 】

・Addition of "p,p'-dicofol and o,p'-dicofol" to No.14 "Dicofol or Kelthane".

・Added No.29 "Perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds".

Table B.Threshold values

1. Threshold values for prohibited substances of RoHS and ELV Directive

Parts or Materials

Unit (ppm)

Substance name	parts and materials		Allowable concentration (Threshold
Lead	Resin, Ink		100
	Lead free solder		500
	The others		1000
	exemption	Copper alloys (Brass, Phosphor bronze)	40000
		Aluminium alloy	4000
		Steel	3500
		High melting temperature type solder	≧85%
		Lead glass	—
Cadmium	Resin, Ink		5
	Lead free solder, Solder plating		20
	The others		75
Mercury	All		1000
Hexavalent chromium	All		1000
PBB (Polybromobiphenyl)	Resin (Flame retardants)		1000
PBDE (Polybromodiphenyl ether)	Resin (Flame retardants)		1000
DEHP (Bis (2-ethylhexyl)phthalate	Resin		Total 1000 (According to the threshold in REACH Annex XVII No. 51.)
BBP (Benzyl butyl phthalate)			
DBP (Dibutyl phthalate)			
DIBP (Diisobutyl phthalate)			

2. Threshold values for prohibited substances of Package Directive

Packaging materials

Unit (ppm)

Substance name	Allowable concentration (Threshold value)	
Lead	-	total 100
Cadmium	5	
Mercury	-	
Hexavalent chromium	-	

3. Threshold values for halogen-free related substances

Parts and materials requested halogen-free

Unit (ppm)

Substance name	Allowable concentration (Threshold value)	
Chlorine	900	total 1500
Bromine	900	
Antimony [as Diantimony trioxide]	835 [1000]	

Table C. Exemption from prohibited substances

No.	RoHS exemption list	Dates of applicability
1～4(g)	Mercury in lamps (An acceptable value sets up according to the kind of lamp.) (For details, please refer to the directive.)	Set for each
5(b)	Lead in glass of fluorescent tubes not exceeding 0.2% by weight	21/07/2021[*1]
~~6(a)~~	~~Lead as an alloying element in steel for machining purposes and in galvanised steel containing up to 0.35% lead by weight~~	~~30/06/2019~~
6(a)-I	Lead as an alloying element in steel for machining purposes containing up to 0,35 % lead by weight and in batch hot dip galvanised steel components containing up to 0,2 % lead by weight	21/07/2021
~~6(b)~~	~~Lead as an alloying element in aluminium containing up to 0.4% lead by weight~~	~~30/06/2019~~
6(b)-I	Lead as an alloying element in aluminium containing up to 0,4 % lead by weight, provided it stems from lead-bearing aluminium scrap recycling	21/07/2021
6(b)-II	Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight	18/05/2021
6(c)	Copper alloy containing up to 4% lead by weight	21/07/2021
7(a)	Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)	21/07/2021
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	21/07/2021
7(c)- Ⅱ	Lead in dielectric ceramic in capacitors for a rated voltage of 125V AC or 250V DC or higher	21/07/2021
7(c)-Ⅳ	Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors'	21/07/2021
8(b)	Cadmium and its compounds in electrical contacts	29/02/2020
8(b)-I	Cadmium and its compounds in electrical contacts used in: — circuit breakers, — thermal sensing controls, — thermal motor protectors (excluding hermetic thermal motor protectors), — AC switches rated at: — 6 A and more at 250 V AC and more, or — 12 A and more at 125 V AC and more, — DC switches rated at 20 A and more at 18 V DC and more, and — switches for use at voltage supply frequency ≥ 200 Hz. [apply from 1 March 2020]	21/07/2021
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0.75% by weight in the cooling solution	31/12/2019[*1]
13(a)	Lead in white glasses used for optical applications	2021/7/21
13(b)-I	Lead in ion coloured optical filter glass types	21/07/2021
13(b)-II	Cadmium in striking optical filter glass types; excluding applications falling under point 39 of this Annex	21/07/2021
13(b)-III	Cadmium and lead in glazes used for reflectance standards	21/07/2021
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	29/02/2020
15(a)	Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies: — a semiconductor technology node of 90 nm or larger; — a single die of 300 mm2 or larger in any semiconductor technology node; — stacked die packages with die of 300 mm2 or larger, or silicon interposers of 300 mm2 or larger. [apply from 1 March 2020]	21/07/2021
18(b)	Lead as activator in the fluorescent powder (1% lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP (BaSi2O5:Pb)	21/07/2021
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	29/02/2020
21(a)	Cadmium when used in colour printed glass to provide filtering functions, used as a component in lighting applications installed in displays and control panels of EEE [apply from 1 March 2020]	21/07/2021

No.	RoHS exemption list	Dates of applicability
21(b)	Cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses [apply from 1 March 2020]	21/07/2021
21(c)	Lead in printing inks for the application of enamels on other than borosilicate glasses [apply from 1 March 2020]	21/07/2021
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	21/07/2021
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC (1)	21/07/2021
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes	21/07/2021
34	Lead in cermet-based trimmer potentiometer elements	21/07/2021
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body	29/02/2020
~~39(a)~~	~~Cadmium selenide in downshifting cadmium-based semiconductor nanocrystal quantum dots for use in display lighting applications (< 0,2 μg Cd per mm2 of display screen area)~~	~~31/10/2019~~
41	Lead in solders and termination finishes of electrical and electronic components and finishes of printed circuit boards used in ignition modules and other electrical and electronic engine control systems, which for technical reasons must be mounted directly on or in the crankcase or cylinder of hand-held combustion engines (classes SH:1, SH:2, SH:3 of Directive 97/68/EC of the European Parliament and of the Council	31/12/2018*1

This list is based on (EU) 2019/169～178 (2018/11/16)

*1 Draft deadline under discussion. If the repeal the exemption is decided, it will expire after 18 months from 12 months after the decision.

Appendix 1

Requirements on Environmental Quality Assurance

Please develop, maintain and improve the management system of chemical substances in products in order to ensure environment quality of products.

1. The Management Policy

Top management shall define the management policy of chemical substances in products and shall state that the organization works on that policy.

2. Planning

(1) The organization shall define and document the management criteria of chemical substances in products.
The management criteria shall be determined in accordance with laws, regulations and customers' requirement, etc.
And the management criteria shall be reviewed where necessary.

(2) The organization shall set the target in order to develop, maintain and improve the management of chemical substances in products.
The organization shall establish and implement the program to achieve the target.

(3) The organization shall define responsibilities and authorities to implement management of chemical substances in products effectively.
And the organization shall clarify departments and their roles and shall document.

(4) The organization should identify necessary information on management of chemical substances in products, and establish a procedure for the internal communication in order to communicate appropriately.

3. Management at Design and Development

(1) For the purpose of producing products which can fulfil the management criteria of chemical substances in products, the organization shall define clearly and document the management criteria at the stage of purchasing, manufacturing and delivery respectively.

- Management at the stage of Purchasing
  Verification of information on chemical substances in purchased materials and parts.
  Verification of information on some chemical product applied on manufactured articles. Examples of these chemical products are refrigerant, grease, lubricant or rustproof.
- Management at the stage of Manufacturing Process
  Understanding a change (concentration or kind) of prohibited substances in the manufacturing process.
  The management method to prevent contamination by incorrect use or admixture, in case there is a parallel production.
  The management method of recycled material
- Management at the stage of Delivery
  The method to verify that products to be shipped satisfy the requirement of chemical substances in products.

(2) The organization shall clearly define and implement the necessary check items at the respective stage of development. (testing, trial and mass production, etc).
For example, the verification of the components before trial products are input into the mass manufacturing line, etc.

(3) At the respective stage of purchasing, manufacturing and delivery, the organization shall clearly define the instruction for the management. (For example, specifications, drawings, work request, etc.)

4. Management at Purchasing

(1) Collection and Verification of Information of Chemical Substances in Products

- The organization shall present the requirement (the management criteria) of chemical substances in products to suppliers.
- The organization shall collect necessary information of chemical substances in products from suppliers.
  (In case of purchasing from multiple suppliers, necessary information shall be collected from all suppliers.)
- The organization shall verify if the collected information satisfies the requirement (the management criteria) of chemical substances in products before the start of production and record the result accordingly.
- The organization shall define the action to the case that necessary information could not be collected, or it does not satisfy the requirement (the management criteria).

(2) Verification of the Management Status of Chemical Substances in Products at Supplier

- The organization shall request the suppliers to establish and operate the management system of chemical substances in products.
- When the organization selects the supplier, the organization shall verify the management status of chemical substances in products at the supplier.
- In case that the organization continues business with the supplier, for the purpose of fulfilling the management criteria of chemical substances in products, the organization shall verify the supplier's management status of chemical substances in products again whenever necessary.
- The organization shall define the response or the action to take, when verification for the management status of chemical substances in products is incomplete or when verification result has some problems.

(3) Management of Chemical Substances in Products at Receiving

- The organization shall verify purchased materials and parts upon receiving if they fulfil the requirement (the management criteria) and record accordingly.
- Corresponding to risks (of the targets), the organization shall have the analysis equipment for chemical substance and analyzes materials and parts or products.

5. Management for the Manufacturing Process

(1) The manegement of "change of composition and change of concentration" of chemical substances in products

- The organization shall manage declarable chemical substances subject to the management criteria of chemical substances in products not to be generated or remained exceeding the level specified in the management criteria at the manufacturing process by composition change or concentration change.
- The organization shall identify "the priority management process" and shall implement the appropriate management. "The priority management process" is the process that has any possibility to generate any restricted substances or residue of restricted substances exceeding the standard. For example,
  - Ink, Solder paste, Adhesive (Concentration change by volatilization)
  - Polymerization, UV ink (Composition change by hardening)
  - Plating (Composition change or concentration change by separation)
  - Solder bath (Concentration change by charge of solder/ soldering), etc.
- In case that the organization is unable to identify a change of chemical composition, the organization shall take a necessary action such as contacting the supplier of chemical product.
- The management criteria of chemical substances in products for manufacturing processes shall be reflected in QC process chart, management process chart, management flow chart and operation.

(2) Prevention of Contamination by Incorrect Use or Admixture

- The organization shall implement the preventive measures properly to avoid any admixture or contamination of chemical substances to the products at the manufacturing process.
  (The management criteria shall be reflected in management process chart, etc.)
- The management of "the priority management process" shall be implemented separate from other general processes. In specific, "the priority management process" should separate from other general process.
  "The priority management process" includes parallel production (in case that the prohibited substances are used in the same factory building) and the process which recycled materials are used.
- In "the priority management process", the organization shall conduct proper management to prevent contamination by incorrect use, admixture or mix-up.
  In specific, the organization shall implement the appropriate management by identification of the equipment, mold/die, tools and jigs to be used and materials, parts, work in progress and end products (including warehouse storage)
- In case "the priority management process" can be not isolated from other processes, the organization shall ensure thorough implementation of the appropriate procedures(cleaning, verification by analyzing,etc.) at switch changeover.
- In case that recycled materials are used, upon full understanding of risks in the management of chemical substances in products, the organization shall define the management method and use them accordingly.

6. Management at Delivery

(1) At shipment of products, the organization shall verify again that the check items of chemical substances in products at receiving or at the manufacturing process satisfy the management criteria.
And their result shall be recorded accordingly.

(2) The organization shall also manage to prevent contamination by any incorrect shipment or mixed-up in the product warehouse.

7. Management at Outsourcing

In case that the organization outsources some processes such as product design and development or manufacturing to another organization, the organization shall verify the management status of chemical substances in products at the outsourced organization to ensure that the management criteria of chemical substances in products are complied with and shall record the result accordingly.

The management items and the management contents should be instructed to the outsourced organization with document,etc.

8. Traceability

The organization shall manage in order to trace a receiving lot of components/parts/raw materials, manufacturing time, manufacturing process, outsourced organizations from the delivered products.

And the organization shall manage in order to grasp, utilize, disclose and communicate of chemical substances in products promptly.

9. Exchange of Information with the Customer

The organization shall clearly define and implement the method of communication with the customer for

a) Laws, regulations and the industry criteria that are required by the customer to comply
b) Information on chemical substances in products
c) Information on the management of chemical substances in products

10. Change Management

(1) When any change which may have the possibility to affect chemical substances subject to the management criteria of chemical substances in products are made, the organization shall confirm that the management criteria of chemical substances in products are fulfilled before the change. (The examples: Change or addition of a supplier, Change of a purchased product, Alteration of the manufacturing process, etc.)

(2) When any change arises in the internal or suppliers or the outsourced organization, information on the change shall be reported to the customers prior to the change.

(3) The organization shall document the procedures of change management and record the result of the change.

11. Response to Nonconformity

(1) The organization shall develop and document procedure for dealing with nonconformity concerring chemical substances in products including the method of in-house contacts, the temporary corrective actions and the method of contacting customers.

(2) The organization requests that the suppliers and the outsourced organizations report their of nonconformance immediately.

(3) The organization shall investigate and identify the cause, determine and implement the necessary countermeasures to prevent recurrence of nonconformity. Recurrence-preventive measures should be implemented at relevant department. And preventive measures should be implemented to avoid nonconformance.

(4) The responses taken at nonconformity shall be recorded.

12. Education and Training

The organization shall develop the education and training program for management of chemical substances in products which reflects duty and work of train. The personnel who need education and training shall be identified.

The organization shall conduct the training and education, and record accordingly.

13. Control of Document and Record

The standards and manuals those are necessary to the operation of the management of chemical substances in products shall be documented and managed. And the operation record shall be managed accordingly with retention period appropriate.

14. Evaluation and Improvement of Implementation Status

(1) The organization shall conduct internal audit and evaluate the management status of chemical substances in products periodically.

(2) The organization shall take corrective actions as necessary.

(3) The result of evaluation and the corrective actions shall be recorded and reported to the top management. The top management shall review them.

That's it.

Appendix 2 **Ver.2.1**

Environmental Quality Assurance System Check-sheet

This check sheet is intended to check the progress of the establishment of your management system relating to matters for the management of chemical substances in products (Refer to "Guidelines for Chemical Substances Contained in Products【Semiconductors】") of the Electronic Devices Business Group, Fuji Electric Co., Ltd. (hereinafter referred to as Fuji Electric).

Please evaluate your system based on the judgment criteria shown in the table below.

＊Please refer to our website for the latest version of the Guidelines for Chemical Substances in Products [Semiconductor Products].(https://www.fujielectric.com/products/semiconductor/green/index.ht

Date of evaluation	
Name of delivered product or outsourced work	
Factory name	
Company name	
Department	
Person responsible for evaluation (post/name)	
E-mail	

1. If the check results are different depending on the delivered product or the production plant, use different check sheets for replies.
2. Give a grade of evaluation for all check items of questions 1 to 32.
3. In the "Description of management/Comment, etc." column, enter the name of the document and the contents of the management

***Please fill in the yellow coloring column.**

Evaluation	Judgment criterion
Conforming	A scheme relating to requirements/checks is established and thoroughly applied.
Partial conforming	The scheme relating to requirements/checks or its application is incomplete.
Not conforming	No scheme for implementing requirements/checks is established and applied.
Not applicable	The question is not applicable.

Requirement			Question No.	Check item	Self-evaluation	Score	Description of management/Comment, etc.
1	Policy		1	Do you have a management policy of chemical substances in products that approved by top management?			Title of document
2	Documentation of criteria		2	Do you have criteria of chemical substances in products and their management and review it as needed?			Title of criteria / Date of the latest revision
3	Responsibility and authority		3	Is a management representative for chemical substances in products appointed, and are the responsibility and authority of the management representative clearly defined?			Title of document stipulating management representative
4	Management at Design and Development	Verification of management at purchasing	4	Do you verify information about chemical substances in materials and parts, and check conformity to the criteria berore the start of mass production?			Contents specifically checked
		Verification of management for the manufacturing	5	Do you verify composition and concentration changes (solder bath, polymerization, plating, inks and paints, adhesives, etc.) in the process, the effect of contamination by prohibited substances, and the use of recycled materials and check conformity to the criteria before the start of mass production?			Contents specifically checked
		Verification of management at delivery	6	Do you stipulate check points before the start of mass production to ensure conformity to the criteria for the management of chemical substances in products at delivery?			Contents specifically checked
5	Management at Purchasing	Collection and Verification of Information	7	Do you acquire from the component/raw material supplier, etc. information about chemical substances in products (guarantee of containing no prohibited substances, composition table, analysis record, etc.), which is required to fulfill the standard?			Acquired information
			8	Do you check information about chemical substances in each material and part purchased from several suppliers and conformity to the criteria?			Material and part purchased from several suppliers
		Verification of the Management Status at Supplier	9	Do you require each of your suppliers to establish and apply a scheme for the management of chemical substances in products?			Title of document requiring establishment and application
			10	When selecting a supplier, do you evaluate its commitment to the management of chemical substances in products?			Evaluated record
			11	Do you periodically evaluate the management of chemical substances in products by each supplier having continued transactions with you and perform an audit, corrective action, etc. as needed?			Evaluated record / Frequency
		Management at Receiving	12	At receiving, do you confirm that the purchased materials and parts fulfill the criteria? (Don't you use components that are not checked or identified?)			Details of check at the time of acceptance
			13	Do you have analysis equipment for chemical substances in the products concerned at the production site where they are manufactured, and regularly analyze materials and parts or products as needed?			Analysis equipment (XRF, ICP, etc.) Items to be analyzed, frequency of analysis
6	Management for the Manufacturing Process	The manegement of "change of composition and change of concentration"	14	Is there any possibility that prohibited substances exceeding the management criteria will remain or be generated due to composition and concentration changes of parts and materials in the process? (Solder bath, polymerization, plating, inks and paints, adhesives, etc.)			Name of possible process or parts and materials Name of prohibited substance
			(1)	Do you perform management considering prohibited substances that may remain or be generated?			Manufacturing condition, etc. considering prohibited substances
			(2)	Do you regularly analyze composition change or concentration change?			Analysis equipment (XRF, ICP, etc.) Items to be analyzed, frequency of analysis

6	Management for the Manufacturing Process	Prevention of Contamination by Incorrect Use or Admixture	15	Is the procedure for process control (lot number management, first-in first-out, identification control, prevention of inclusion of RoHS prohibited substances, etc.) described in a process control chart or control flow chart, regardless of whether there are "prohibited substances"?			Title of document	
			16	Are prohibited substances brought into or are there unchecked processes or parts and materials in the same factory building? (e.g., products, materials, etc. that contain lead, phthalates, etc., regulated by RoHS)			Subject parts and materials Substance of concern	
			(1)	Do you introduce identification control (exclusive use, marking, etc.) of prohibited substances to storage areas for parts, materials, and in-process products, processes (including equipment and peripheral systems), and product warehouses?			Title of document specifying exclusive use, marking, etc.	
			(2)	Do you conduct education in prohibited substances for operators?			Name of education on record	
			(3)	Are equipment, jigs, tools, containers, etc. also used for products (parts, materials) containing prohibited substances?			Subject equipment, jig, tool, container	
			-1	Do you establish, apply, and record a standard for cleaning after the use of prohibited substances?			Title of standard for cleaning	
			-2	Do you analyze and check prohibited substances whenever cleaning is performed?			Title of checked record	
			-3	Can you present evidence that indicates that incorrect use, admixture of foreign substances, and contamination can be constantly prevented?			Name of evidence	
			17	Do some of the packaging and protective materials used for equipment and tools within the production process and for products delivered to us contain phthalates regulated under the RoHS Directive? (Parts that are in direct contact with delivery products/parts)			Target equipment, jigs and tools, and containers	
			(1)	Is it confirmed that there is no contamination of the RoHS phthalate from the facilities, jigs, tools, packaging, and protective materials that contain the phthalate ester to the delivery products/parts?			Confirmation method and content	
			18	Do you use recycled materials for products delivered to Fuji Electric?			Name of recycled material	
			(1)	Have you ascertained the content of recycled materials and assured that they do not contain substances prohibited by RoHS?			Subject material Basis for warranty	
7	Management at Delivery		19	Do you check the results of the management of chemical substances in products at the time of warehousing or delivery of products?			Checked contents	
8	Confirmation of status of management at Outsourcing		20	Do you outsource to another organization any of the processes relating to products delivered to Fuji Electric?			Outsourced process	
			(1)	Do you direct such a outsourced organization to manage chemical substances in products, and monitor the status of management?			Name of checked record	
9	Traceability		21	Can the date of manufacture, manufacturing process, and delivery history (customer) of each delivered product lot be traced from raw materials?			Name of record (name of system) from which traceability can be verified	
10	Exchange of Information with the Customer		22	Do you keep the latest edition of Fuji Electric's requirements relating to the management of chemical substances in products (Guidelines for Chemical Substances Contained in Products【Semiconductors】)?			Storage method, location, etc.	
			23	Do you guarantee the requirements of "The warranty on prohibited substances" for products delivered to Fuji Electric?				
			24	Can you present the latest (within a year) data on the contents of the RoHS restricted substances obtained from precision measurement, such as by means of ICP, in relation to products delivered to Fuji Electric?				
11	Change Management		25	Do you confirm in advance that the requirements for chemical substances in products are satisfied when changing materials or processes?			Checked contents	
			26	Do you make an application to Fuji Electric before performing a material or process change for products? (If such a change is yet to take place, do you make it a rule to apply for it?)			Name of record of application to customer (or title of rules)	
12	Response to Nonconformity		27	Do you have a documented procedure for taking actions against nonconformities about chemical substances in products and keep a record of the results of actions?			Title of document in which the results of actions are recorded	
			28	If there is a possibility of delivery of non-conforming products to customers (or if non-conforming products were delivered to customers), do you have a provision of reporting it to the affected customers?			Name of record of application to customer (or title of rules)	
13	Education and Training		29	Is education in chemical substances in products and their management conducted for employees as appropriate?			Education conducted for the past year	
14	Control of Document and Record		30	Do you have in place and apply standards relating to chemical substances in products and their management?			Title of document showing the organization of standards	
15	Evaluation and Improvement of Implementation Status		31	Do you regularly perform an internal audit of the management of chemical substances in products?			Date of audit for the past year	
			32	Do you take corrective actions against non-conformities found in internal audits and check and report these corrective actions and their effects to the top management?			Date of report for the past year	

Total score	Evaluation result
0	0 /100

To: Fuji Electric Co.,Ltd.

The warranty on the prohibited substances -Ver. 9-

Date of answer	
Company name	
Department	
An official title	
The person in charge	
Signature	
E-mail	

※The person in charge should be general manager or higher rank.

We warrant that the prohibited substances (shown in [2] Prohibited substances list) contained in our products (shown in [1] Delivering products list) delivered to Fuji Electric Co., Ltd. Electronic Devices Business Headquarters and its manufacturing companies meet item <1>-<3>.

<1> There is no intentional inclusion except for the substance entered in Information on prohibited substances.

<2> The concentration of the substance including impurities is less than the threshold value of Table B.

<3> There is no use of ozone-depleting substances (excluding HFC) in the manufacturing process of our delivering product/s.

※ Supplies from Fuji Electric Co., Ltd. are exempted.

[1] Delivering products list

※If yes is selected at the box of containing, please enter substance name, CAS No, and maximum percentage of a constituent.

Fe code	Product number, Type number, Name	Containing	Information on prohibited substances ※Please enter the used region in the case of composite material.				Exemption No. (shown in Table C)	Note
			Used region	Substance name	CAS No.	Maximum percentage of a constituent		
ex.) ML5Q01X	**Lead Solder**	**Yes**		**Lead**	**7439-92-1**	**950000ppm**	**7(a)**	high melting temperature type solders

↑ If lines are not sufficient, please add lines.

[2] Prohibited substances list

＊ Please refer to the attached list "Prohibited and controlled substances detailed list" as to the details on the illustrated substances.

No.	Applicable laws	Substance name	CAS-No.	Note of the warranty
1	Ozone Layer Protection Law	Ozone-Depleting Substances [Montreal Protocol]	75-69-4	There is no use in the manufacturing process.
2	Chemical Substances Control Law [Class I Specified Chemical Substances]	Polychlorinated biphenyl (PCB)	1336-36-3	—
3		Polychloronaphthalene (PCN) [Cl≧1(based on GADSL)]	1321-64-8	—
4		Hexachlorobenzene and pigment containing by-product hexachlorobenzene	118-74-1	—
5		Aldrin	309-00-2	—
6		Dieldrin	60-57-1	—
7		Endrin	72-20-8	—
8		DDT	50-29-3	—
9		Chlordane	57-74-9	—
10		p-Phenylenediamine	620-91-7	—
11		2,4,6-tri-tert-butylphenol	732-26-3	—
12		Toxaphene	8001-35-2	—
13		Mirex	2385-85-5	—
14		Dicofol or Kelthane (p,p'-dicofol and o,p'-dicofol)	115-32-2	—
15		Hexachlorobuta- 1,3-diene	87-68-3	—
16		2-(2H-1,2,3-Benzotriazol-2-yl)-4,6-di-tert-butylphenol	3846-71-7	—
17		Perfluorooctane sulfonate (PFOS) and its salt	1763-23-1	—
18		Perfluorooctane sulfonyl fluoride (PFOS-F)	307-35-7	—
19		Pentachlorobenzene (PeCB)	608-93-5	—
20		α-Hexachlorocyclohexane(α-HCH)	319-84-6	—
21		β-Hexachlorocyclohexane(β-HCH)	319-85-7	—
22		γ-Hexachlorocyclohexane(γ-HCH, Lindane)	58-89-9	—
23		Chlordecone	143-50-0	—
24		Endosulfan	115-29-7	—
25		Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified	3194-55-6	—
26		Pentachlorophenol and its salts and esters	87-86-5	—
27		Short Chain Chlorinated Paraffins (C10-13) [Cl≧1(based on GADSL)]	85535-84-8	—
28	(Next added)	Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds	335-67-1	—
29	(Scheduled to be added)	Perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds	355-46-4	—
30	Industrial Safety and Health Act [Prohibition of Manufacturing	Yellow phosphorus match	12185-10-3	—
31		Benzidine and its salt	92-87-5	—
32		4-amino diphenyl and its salt	92-67-1	—
33		Asbestos [asbestos, amosite, Crocidolite, etc.]	1332-21-4	—

34	etc.]	4-nitrodiphenyl and its salt	92-93-3	—
35		Bis(chloromethyl)ether	542-88-1	—
36		beta-naphthylamine and its salt	91-59-8	—
37		Benzene	71-43-2	—
38	[Permission for	Dichlorobendizine and its salts	84-68-4	—
39	Manufacturing]	alpha-Naphthylamine and its salts	134-32-7	—
40		o-Tolidine and its salts	119-93-7	—
41		Dianisidine and its salts	119-90-4	—
42		Beryllium and its compounds	1304-56-9	—
43		Benzotrichloride	98-07-7	—
44	Poisonous and	Octamethylphosphoramide	152-16-9	—
45	Deleterious Substances	Specified organophosphorus compound [Parathion, Methyl Demeton, Phosphamidon, Methyl Parathion, TEPP]	56-38-2	—
46	Control Law	Fluoroacetic acid, its salt, and amide	144-49-0	—
47	[Specific Poison]	Aluminium phosphide	20859-73-8	—
48	Nuclear Act	Radioactive material	7440-61-1	—
49	EU RoHS	Cadmium and its compounds	7440-43-9	The concentrations are less than the threshold value of Table B.
50		Hexavalent chromium compounds	1333-82-0	
51		Mercury and its compounds	7439-97-6	
52		Lead and its compounds	7439-92-1	
53		Specified Brominated flame retardants [PBB and PBDE]	67774-32-7	
54		Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7	
55		Benzyl butyl phthalate (BBP)	85-68-7	
56		Dibutyl phthalate (DBP)	84-74-2	
57		Diisobutyl phthalate (DIBP)	84-69-5	
58	EU REACH	5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	—
59	[Annex XIV]	4,4'- Diaminodiphenylmethane (MDA)	101-77-9	—
60	(Authorisation	tris(2-chloroethyl)phosphate	115-96-8	—
61	substances)	2,4-Dinitrotoluene	121-14-2	—
62		Trichloroethylene	79-01-6	—
63		Formaldehyde, oligomeric reaction products with aniline	25214-70-4	—
64		Bis(2-methoxyethyl) ether	111-96-6	—
65		1,2-dichloroethane	107-06-2	—
66		2,2'-dichloro-4,4'-methylenedianiline (MOCA)	101-14-4	—
67		1-Bromopropane	106-94-5	—
68		1,2-Benzenedicarboxylic acid, dipentylester, branched and linear (DPP, DIPP, PIPP)	84777-06-0	—
69		1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7 rich	71888-89-6	—
70		1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4	—
71		Bis(2-methoxyethyl) phthalate	117-82-8	—
72		Anthracene oil	90640-80-5	—
73		Pitch, coal tar, high temp.	65996-93-2	—
74		4-(1,1,3,3-Tetramethylbutyl)phenol, ethoxylated	2315-67-5	—
75	[Annex XVII]	Polychloro terphenyl (PCT)	61788-33-8	—
76	(Restriction	Chloroethylene (vinyl chloride monomer)	75-01-4	—
77	substances)	Arsenide	7440-38-2	—
78	(Substance by which the	Organostannic compounds [Dibutyltin/Dioctyltin/All tri-substituted organostannic compounds]	56-35-9	—
79	condition of the	Monomethyl-tetrachloro-diphenyl methane (Ugilec 141)	76253-60-6	—
80	restriction	Monomethyl-dichloro-diphenyl methanes (Ugilec 121)	81161-70-8	—
81	relates to our	Monomethyl-dibromo-diphenyl methane (DBBT)	99688-47-8	—
82	company)	Nickel compound	7440-02-0	Human body contact parts are prohibition and alloy content are excepted
83		Cobalt dichloride	7646-79-9	—
84		Formaldehyde	50-00-0	—
85		Chloroform	67-66-3	—
86		1,1,2-trichloroethane	79-00-5	—
87		1,1,2,2-tetrachloroethane	79-34-5	—
88		1,1,1,2-tetrachloroethane	630-20-6	—
89		Pentachloroethane	76-01-7	—
90		1,1-dichloroethylene	75-35-4	—
91		Hexachloroethane	67-72-1	—
92		Nonyl phenol, Nonyl phenol ethoxy rate	25154-52-3	—
93		Dimethyl fumarate	624-49-7	—
94	GADSL	Azodyes that can form carcinogenic amines, selected	12217-14-0	—
95	[P:Prohibited	Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene (BNST)	68921-45-9	—
96	substances]	Chlorinated or brominated Dibenzo-p-dioxins or Dibenzofurans, all members	1746-01-6	—
97	[D/P] (Substance	2-Methoxyethanol	109-86-4	—
98	by which the	Hydrofluorocarbons (HFC's), all members	75-46-7	—
99	condition of	N-Nitroso dimethyl amine	62-75-9	—
100	the prohibition	Tetrachlorobenzene, all members	95-94-3	—
101	relates to our	TriAziridinylphosphineoxide	545-55-1	—
102	company)	Phosphoric Acid tris(2,3-dibromopropyl)ester	126-72-7	—
103	(Old P:Prohibited)	Amines, carcinogenic, which are formed from Azo-dyes, selected	137-17-7	—
104	Customer	Cyanide [Poison & Deleterious substance]	143-33-9	—
105	Request	Polyvinyl chloride (PVC) and PVC compounds [U.S. IEEE 1680]	9002-86-2	—
106	substances	Tris(2-chloro-1-methylethyl)phosphate (TCPP) [U.S. Vermont State. Act 85]	13674-84-5	—
107		Tris(1,3-dichloro-2-propyl)phosphate (TDCPP) [U.S. Vermont State. Act 85]	13674-87-8	—
108		Perfluorocarbons (PFCs) [(EC) 842/2006]	75-73-0	—
109		Sulphur hexafluoride (SF6) [(EC) 842/2006]	2551-62-4	—

Appendix 4

Notes on entering "The list of information on the constituent"

① Please create configuration information for each delivered product (each sheet).

② Please report substances of 0.1wt% or more so that the total content of each material (homogeneous material) is 100wt%.
If the substance falls under our “prohibited / controlled substances”, please report even less than 0.1 wt%.

③ For each substance, make a “Prohibited substances" or " Controlled substances” judgment in the “FE Prohibited / Controlled Substance Detail List” and select “×” for the corresponding item. For substances that do not fall under “Prohibited substances" and " Controlled substances”, select “×” for “Other substances”. Even if you do not disclose specific chemical substance names and CAS numbers for manufacturing reasons, be sure to judge them.

④ If the composition changes after curing / drying, such as resin (one-part / two-part), plating solution, ink, etc., enter the remaining components.

【Company information】

[MRn0260 Form 5]

Date of answer	
Company name	
Department	
The contact person	
TEL	
E-mail	

【Delivering products list】

Fe code	Product number, Type number, Name	Manufactured country	Manufacturing factory	Substance list information		Remarks
				Version of FE's list of prohibited and controlled substances	Date of confirmation of substance list	
				9.0		
				9.0		
				9.0		
				9.0		

The list of information on the constituent

[MRn0260 Form 5]

Version of FE's list of prohibited and controlled substances	9.0

FE code		Product number, Type number, Name		Product weight	0.000	g

Component	Material				Substance ※The name and the CAS No. of the substance contained				FE's list of prohibited and controlled substances		
	Material name / Model number (by homogeneous material)	Manufacturer's name (Manufacturer's name of plating process)	Weight of the material (Three significant	Unit	Substance Name Substance selection	CAS No.	Concentration (wt%)	RoHS exemption code	Prohibited substances	Controlled substances	Other substances

REACH SVHC survey form

※1: Please refer to the attached list on the relevant REACH SVHC substances.

※2: If more than one substance are contained at the part, or a relevant substance is contained at more than one part, please add a line and fill in.

※3: Excluding the parts provided by Fuji Electric Co., Ltd.

①Supplier

Date	
Company	
Section	
The responsible person (Position)	

②Manufacturer

Date	
Company	
Section	
The responsible person (Position)	

On REACH SVHC substances	All of the below products do not contain.	✔
	Products do not contain except some products.	

An inquiry ends

Please answer the details on the products containing SVHC.

Delivered products list		REACH SVHC substances					Note
Fe code	Product's name・Type No.	containment	The contained substance name※1	The containing part※2 (The constituent parts／Homogeneous material name)	Content rate to the part (ppm)	Content rate to the product (ppm)	
		N					
		N					
		N					
		N					
		N					
		N					
		N					
		N					
		N					
		N					
		N					
		N					
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		N					
		N					
		N					
		N					
		N					
		N					
		N					

To:Fuji Electric Co., Ltd.

Jul-19

Additional controlled substances survey form

Date	
Company	
Department	
Official position	
The person in charge Signature	

※The person in charge should be general manager or higher rank.

We report【**Contained substance information**】about delivery products to Fuji Electric Co., Ltd. Electronic Devices Business Headquarters and its manufacturing companies.

『Substances of survey』

Substance name	CAS No.	Applicable laws and regulations	Main use example

『List of supplies for the survey』 ※)Supplies from Fuji Electric Co., Ltd. are exempted.

Fe code	Product number, Type number, Name	【Contained substance information】 ※Please enter the application area in the case of composite material					Note
		Contain	Application area	Substance name	CAS No.	Maximum content(ppm)	
Example) ML5Q01△	**A0001**	**Y**	**Case resin**	**imidazole**	**288-32-4**	**25000ppm**	**resin hardener**
		N					
		N					
		N					
		N					
		N					
		N					
		N					
		N					
		N					
		N					
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		N					
		N					

Appendix 7

Periodic analysis guideline

Analysis method for "Substances required the periodic report of analysis data (test report)" and necessary items on the analysis report are prescribed below.

1. Scope

All of parts, materials, packaging materials that constitute semicondutor products.
(Example) resin, ink, lead-frame, solder, plating, electronic parts, adhesive, aluminum wire, packaging material, etc.

2. Analysis unit

Analysis is carried out for every component unit shown in 1) and 2).

1) Definition of homogeneous material in RoHS(ELV) directive

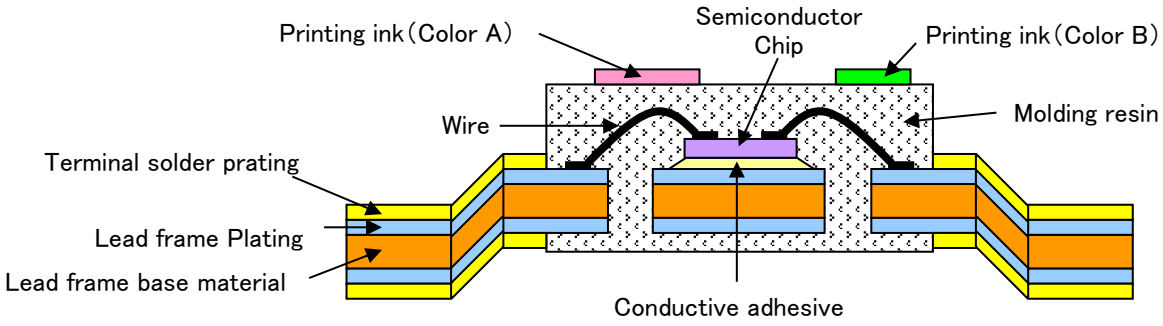
The threshold value in RoHS (ELV) directive is the concentration in homogeneous material. Homogeneous material is defined as "the minimum unit that can be separated into parts and materials by mechanical method for every constituent".

Especially on plating, a base material and plating are defined as a independent homogeneous material, respectively.

【Example: Separation of homogeneous materials】

In the following figure, nine kinds of homogeneous materials, Semiconductor Chip, Conductive adhesive, Wire, Molding resin, Lead frame base material, Lead frame plating, Terminal solder plating, Printing ink (Color A) and Printing ink (Color B) constitute the electronic component (example).

(Srrictly speaking, the each electrode metal layer of a semiconductor chip is considered to be the homogeneous material respectively. They are omitted here.)



2) Analysis unit of EU Packaging directive

On the other hand, the threshold value of the EU packaging directive is the concentration in each part unit which constitutes a package.

However, since US State Toxics in Packaging Clearinghouse regards ink as a separate "packaging component", the concentration of ink in itself is analyzed for ink.

3. Analysis method

The following methods are recommended for the precise anlysis of each homogeneous material.

1) Cadmium, Lead, Total Chromium

① Sample preparation

Use below methods for pretreatment.

Precipitates must be completely dissolved by some technical methods (e.g. hydrofluoric acid dissolution, Alkaline dissolution)

- Closed system for acid decompositon
  (microwave decomposition method: IEC 62321-5:2013, EN13346 , EPA3052:1996)
- Acid digestion met
- Ashing method under H_2SO_4 (not applicable for lead.)

・ Wet decomposition method under H_2SO_4, HNO_3 and H_2O_2(EN1122) (not applicable for lead.)

Note: Any extraction methods (including EN 71-3:1994, ASTM F963-96a, ASTM aF963-03, ASTM D 5517, and ISO 8124-3:1997) shall not be applied.

② Measurement methods

The following methods shall be used. (i.e. IEC 62321-5:2013)

・ Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES、ICP-AES)
・ Atomic absorption spectrometry (AAS) or flameless atomic absorption spectrometry (FL-AAS)
・ Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

Note: If a combination of a sample preparation and a measurement method can ensure that the method detection limit (MDL) is less than below list, the combination is applicable.

MDL	Resin, ink	packaging material	Metal	Plating
Cadmium	5ppm	5ppm	10ppm	15ppm
Lead	30ppm	30ppm	30ppm	30ppm
Total Chromium	30ppm	5ppm	30ppm	30ppm

2) Mercury

① Sample preparation

Use below methods for pretreatment, it will help to prevent volatilization.
Precipitates must be completely dissolved by some technical methods (e.g. hydrofluoric acid dissolution, Alkaline dissolution)

・ Pressurized acid decomposition method in sealed container.
(microwave decomposition method: IEC 62321-4:2013, EN13346, EPA3052:1996)
・ Heating Vaporized Atomic Absorption Spectroscopy
・ Wet decomposition method by H2SO4 and HNO3(Kjeldahl method)

② Measurement methods

The following methods shall be used. (i.e. IEC 62321-4:2013)

・ Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES、ICP-AES)
・ Cold Vapour Atomic Absorption Spectrometry (CV-AAS)
・ Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

Note: If a combination of a sample preparation and a measurement method can ensure that the method detection limit (MDL) is less than below list, the combination is applicable.

MDL	Resin, ink	packaging material	Metal	Plating
Mercury	30ppm	5ppm	30ppm	30ppm

3) Hexavalent Chromium

① Sample preparation

Elution methods(like IEC 62321-7-1:2015, IEC 62321-7-2:2017, EPA 3060A, ISO 3613:2000)

・ Boiling water extraction (Metal coating, Trivalent chromate coating)
・ Alkaline digestion (Resin, ink)

② Measurement methods

・ Ultraviolet-Visible(UV-Vis) absorptiometry (i.e. IEC 62321-7-1:2015, IEC 62321-7-2:2017, EPA 7196A)

Note: If a combination of a sample preparation and a measurement method can ensure that the method detection limit (MDL) is less than below list, the combination is applicable.

MDL	Resin, ink	packaging material	Metal, Plating	Trivalent chromate coating
Hexavalent Chromium	10ppm	10ppm	10ppm or 0.1 μg/cm^2	0.1 μg/cm^2

4) Specific Brominated flame retardants (PBB, PBDE)

① Sample preparation

・Soxhlet Extraction Method (i.e. IEC 62321-6:2015)

② Measurement methods

・Gas Chromatography – Mass Spectrometry(GC-MS) (i.e. IEC 62321-6:2015)

Note: If a combination of a sample preparation and a measurement method can ensure that the method detection limit (MDL) is less than 10ppm, the combination is applicable.

5) Phthalates (DEHP, BBP, DBP, DIBP)

① Sample preparation

・Soxhlet Extraction Method (i.e. IEC 62321-8:2017)

② Measurement methods

・ Gas Chromatography – Mass Spectrometry(GC-MS) (i.e. IEC 62321-8:2017)

Note: The method detection limit (MDL) shall be less than 100ppm.

6) Halogen (Cl, Br)

① Sample preparation

・Quartz-tube combustion method (BS EN14582:2007)

※Oxygen bomb method shall not be applied.
(Resin containing silica or metal cause incomplete combustion.)

② Measurement methods

・ Ion chromatography (IC)

Note: The method detection limit (MDL) shall be less than 100ppm.

7) Antimony

① Sample preparation

・ Pressurized acid decomposition method in sealed container.
(Microwave decomposition method: IEC62321-5:2013, EN13346, EPA3052:1996)

※Since Antimony is evaporated easily, acid decompositon in open system shall not be applied.

② Measurement methods

・ Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES、ICP-AES)
・ Atomic absorption spectrometry (AAS) or flameless atomic absorption spectrometry (FL-AAS)
・ Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

Note: The method detection limit (MDL) shall be less than 10ppm.

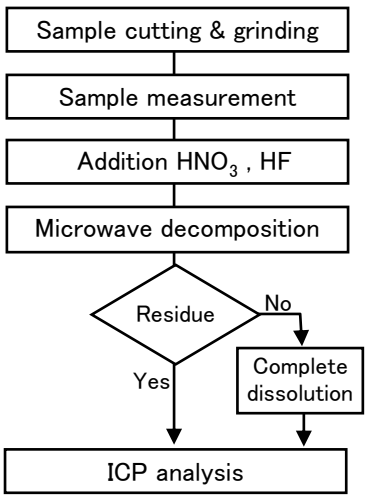
4. Items for analysis report

Below items are specified in your anlysis report.

① Sample preparation method: Please specify the official method or other methods you adopt
② Measurement method:Name of the method
③ Name of the measurer, Name of the responsible person, analyzing organization
④ Testing date(Year/Month/Day)
⑤ Test result (MDL: Method detection limit)
⑥ Measurement flow chart (essential for Cadmium and Lead)
(Please refer to the example of flow chart at right)
⑦ Sample name(Material name, model name etc.)

(⑧ Sample photo)

Measurement Flow Chart



Compliance with IEC62321-5:

Revision history

Version	Date	Revision detail
1st	01/10/2008	Enacted with effectuation of REACH regulation
2nd	22/01/2010	Addition of prohibited substances with reinforcement of restriction against chemical substances both domestically and internationally like chemical substance examination law and EU REACH regulation (Chlordecone, PFOSF, Dibutyltin compounds, Dioctyltin compounds, Dimethyl fumarate, DBP, DEHP, BBP, Musk xylene, HBCDD) Addition of controlled substances (SVHC(added as substance groups with second release), ESIS PBT(Fulfilling), JIG-101 Ed 2.0, GADSL(updated to 2009.03 revised edition))
3rd	01/07/2010	Addition of prohibited substances with reinforcement against chemical substances like EU REACH regulation (Beryllium oxide、Cobalt chloride) Addition of controlled substances (SVHC(added third released substances), JIG-101(updated to Ed 3.0), GADSL(updated to 2010.02 revised edition), Chromium and its compounds(except hexavalent), tellurium and its compounds(except hydrogen tellurium), Titanium and its compounds, other inorganic compounds) Addition of Appendix 3 Periodic analysis guideline
4th	06/01/2012	Text is revised. Addition of the investigation into the use of ozone-depleting substances in the process Addition of prohibited substances (former 136 substance groups ⇒ this version 140 substance groups) ・ Compensated the shortage of "Permission for Manufacturing" in Industrial Safety and Health Act(alpha-Naphthylamine and its salt, Beryllium and its compounds) ・ Addition with the revision of Export Trade Control Order (Alachlor, Aldicarb, Endosulfan). ・ Compensated the shortage of U.S. TSCA [The object of SNUR is 'any use'] (Benzenamine、4,4'-[[1,1'-biphenyl]-2,5-diylbis(oxy)]bis-) Alteration from prohibited substances to controlled substances (one substance) ・ Methoxalen is change to controlled substances because it is removed from Law concerning Pollutant Release and Transfer Register (Class I) Addition of controlled substances ・ Addition of 6th released substances of EU REACH SVHC ・ Addition with the revision of EU REACH Annex XVII (added substances are overlapped with existing controlled substances) ・ Addition of revision of EU CLP regulation (2009/2/EC) ・ Addition with the issue of GADSL 2011 Ver 1.1 ・ Addition with JIG-101 Ed 4.0 ・ Added substances on Law concerning Pollutant Release and Transfer Register (Class I and II) to reinforce the communication on chemical substances information ・ Added substances on Chemical Substances Control Law (Class II Specified Chemical Substances) to reinforce the communication on chemical substances ・ Addition of Monitoring Chemical Substances on the Chemical Substances Control Law with its revision ・ Addition of candidate substances for Norway PoHS to comply with customers' request ・ Added perchlorate compounds (10 of them)to comply with customers' request ・ Added PFAS(260 of them listed on OECD's list) to comply with customers' request Deletion of controlled substances ・ Deletion of Annex VI CMR Cat.3 in EU CLP regulation. Revised Appendix 3, 4, and 5(Method detection limit)

Version	Date	Revision detail
5th	20/02/2013	2.1) Scope　Addition of our manufacturing companies ・Fuji Electric Tsugaru ; ・Fuji Electric (Shenzhen) Co., Ltd.　Semiconductor Section 4. 1)　Revision of prohibited substances (former 140 substance groups ⇒148 substance groups in this version) ・Addition with the revision of EU REACH Annex XIV (No.89-96) ・Expansion of scope of organostannic compounds. (All of tri-substituted organostannic compounds are designated) ・Change of Applicable laws and regulations of Dimethyl fumarate (No.120). (EU 2009/251/EC was deleted and integrated into EU REACH Annex XVII) 4. 2)　Addition of controlled substances ・Addition of 7th and 8th released　substances of EU REACH SVHC ・Addition with revision of EU CLP regulation (286/2011/EC) ・Addition with the issue of GADSL　2012 Ver 1.0 (2012/02/01) ・Addition with JIG-101 Ed 4.1 ・Addition of Monitoring Chemical Substances on the Chemical Substances Control Law with its revision (2012/03/22) ・Addition of "Organophosphorus compounds" (into Other Controlled Substances) to comply with customers' request Addition of　5.4) Submission of "REACH SVHC survey form " Addition of　5.5) Submission of "Additional controlled substances survey form " Deletion of　the Table of　"Controlled substances". Revised Appendix 7: 2. Analysis unit 3.3) Detection limit of Hexavalent Chromium (0.1→0.05 μg/cm2) 3.5), 3.6) Addition of Analysis method (Halogen and Antimony)
6th	16/04/2015	4. 1)　Revision of prohibited substances (former 148 substance g ・Addition with the revision of "Approved Substances" in EU REACH Annex XIV No.62 Trichloroethylene No.63 Formaldehyde, oligomeric reaction products with aniline No.64 Bis(2-methoxyethyl) ether ・Addition of candidate substance of EU REACH Annex XVII in advance. No.85 Perfluorooctanoic acid (PFOA), including its salts ・Addition of prohibited substances of GADSL No.86　Azodyes that can form carcinogenic amines, selected No.87　BNST No.90　2-Methoxyethanol No.91　Hydrofluorocarbons (HFC's), all members No.92　N-Nitroso dimethyl amine ・The substances judged that there is not possibility to be included in our purchased products from the former survey result are deleted from　the survey of Prohibited substances.(Chemical weapon, Pesticide and Medicine, etc.) And the three regulations relevant to above are deleted from the target of Prohibited substance. Old No. [6] Act on Prohibition of Chemical Weapons and control of Specific Old No. [8] Export Trade Control Order Old No. [11] U.S. TSCA ・"Law Concerning Special Measures against Dioxins"(Old No.[7]) is deleted from the target of Prohibited substance. Because the law overlaps with [01]CSCL and [08]GADSL.

Version	Date	Revision detail
6th	16/04/2015	4. 2) Revision of controlled substances ・Addition of 9th to 12th released substances of EU REACH SVHC. ・Addition with revision of REACH Annex XVII (Restriction substance). (Reg. (EU) No 836/2012, Reg. (EU) No 848/2012, and Reg. (EU) No 474/2014) ・Amendment with revision of GADSL. (2013 Ver 1.0, 2014 Ver 1.0 to Ver 1.4 and 2015 Ver 1.0) ・Amendment with revision of GADSL. (2013 Ver 1.0, 2014 Ver 1.0 to Ver 1.4 and 2015 Ver 1.0) ・Our controlled substance target is also shifted to IEC62474 because JIG-101 was taken over to IEC 62474. And amendment with revision of IEC62474(Ver. D4.00 to D7.00) ・Amendment with revision of Monitoring Chemical Substances of CSCL. (2014/5/1) ・TSCA is shifted to controlled substances target from prohibited substances target. Table B.Threshold values ・The threshold of antimony (900ppm→835ppm). Table C. Exemption from prohibited substances ・The expired exemption uses are deleted.(7(c)-Ⅲ、11(b)、16、39、40) Appendix 1 : Overall revision referring to ″ Guidelines for the management of chemical substances in products″ Version 3.0. of JAMP council. Appendix 3-6 : Revision of survey form Revised Appendix 7: 3. Analysis method ・The part of MDL is reconsidered.
7th	09/05/2016	4. 1) Revision of prohibited substances Addition of two Chlorinated Flame Retardants (former 99 substance groups ⇒101 substance groups in this version) ・Revision of Regulations No. (former [01], [02], ・・・⇒ [A01], [A02], ・・・in this version) ・ Addition of ″D/P: [Substance by which the condition of the prohibition relates to our company]″ to Scope of [A08] GADSL. (The expression was just made clear, and there is no change in the object scope.) ・ Addition of [A09] Customer Request substances to Regulations on prohibited substances. Cyanide and Polyvinyl chloride were transferred to [A09]. And addition of Chlorinated Flame Retardants (U.S. Vermont State. Act 85) to [A09]. Table A. Prohibited substances ・ Addition of [Cl≧1(based on GADSL)] to ″Polychloronaphthalene (PCN) (No.3)″. (PCN (Cl=1) are contained in our prohibited substances already, for adapt to GADSL.) ・ Addition of ″esters″ to ″Pentachlorophenol and its salts (No.29)″ and change of applicable laws for adapt to revision of CSCL. ・ Addition of ″its derivatives″ to ″PFOA including its salts (No.85)″ for adapt to REACH candidate. ・ Addition of Chlorinated Flame Retardants of U.S. Vermont State. Act 85, as Customer Request substances. No.100 Tris(2-chloro-1-methylethyl)phosphate (TCPP) No.101 Tris(1,3-dichloro-2-propyl)phosphate (TDCPP) Table C. Exemption from prohibited substances ・ Added the Dates of applicability. ・ Added the exemption No.41. 4. 2) Revision of controlled substances ・Revision of Regulations No. (former [11], [12], ・・・⇒ [B01], [B02], ・・・in this version) ・Addition of 13th and 14th released substances of EU REACH SVHC. ・ Addition with revision of EU CLP regulation (Reg. (EU) 2015/1221).

Version	Date	Revision detail
7th	09/05/2016	・ Addition of "D/P:[Substance by which the condition of the prohibition does not relate to our company] to Scope of [B04] GADSL. (The expression was just made clear, and there is no change in the object scope.) ・Addition and deletion with revision of GADSL(2015 Ver 1.1-1.3, 2016 Ver 1.0- 1.1). ・Addition with revision of IEC62474(Ver. D8.00-D11.00). ・Addition with revision of Law for the Promotion of Measures to Tackle Global Warming in April 2015. Revised Appendix 7: 3. Analysis method ・ Changed "MDL of resin, ink" of total Chromium and Mercury for adapt to Lead. ・ Added IEC 62321-7-1:2015 to Analysis method of Hexavalent Chromium. ・ Addition of sample type to Sample preparation of Hexavalent Chromium. ・ Changed MDL (Metal, Plating and Trivalent chromate coating) of Hexavalent Chromium to 0.1 μ g/cm‘ for adapt to IEC 62321-7-1:2015. ・ Changed Analysis method of Specific Brominated flame retardants to IEC 62321-6:2015. ・ Changed Sample preparation of Antimony to IEC62321-5:2013.
7.1th	09/05/2017	4. 2) Revision of controlled substances ・ The structure of controlled substances was changed from JAMP-AIS to chemSHERPA. ・ Addition of U.S. TSCA as No. [B03]. Section 6 is added to the scope of TSCA. EU ESIS PBT list was carried to No. [B09] from No. [B03]. ・ Excludion of Table 3.2 from the scope of [B02] CLP regulation. ・ Addition of 15th and 16th released substances of EU REACH SVHC ・ Addition with revision of EU CLP regulation (Reg. (EU) 2016/1179). ・ Amendment with revision of GADSL. (2017 Ver 1) ・ Amendment with revision of IEC62474. (Ver. D12.00 and D13.00) 5.6) Submission of "Additional controlled substances survey form " ・ Addition of the date that requre precise analysis data for RoHS phthalates. Table C. Exemption from prohibited substances ・ The expired exemption uses are deleted.(5(a), 7(b), 17, 25, 30, 31, 33, 38)
8th	12/07/2018	4. 1) Revision of prohibited substances ・Addition of Annex F (I、II) to Scope of [A01] for adapt to Kigali Amendment of the Montreal Protocol. ・Addition of PFC and SF6 to [A09]. These fluorinated greenhouse gases are object of Annex I of (EC) 842/2006. 5.2) Submission of "The warranty on the prohibited substances" ・HFCs listed Annex F (I, II) are not included in the confirm target for use in our suppliers' process. 5.6) Submission of "Data of analysis (Test Report)" ・Addition of 4 Phthalates (DEHP, BBP, DBP, DIBP)to the substances needed analysis data. Table A. Prohibited substances ・ Addition of [Cl≧1(based on GADSL)] to "Short Chain Chlorinated Paraffins (C10-13) (No.27)". (SCCP (Cl≧1) are contained in our prohibited substances already, for adapt to (GADSL.) ・ Addition of authorisation substances for adapt to amending REACH Annex XIV ((EU) 2017/999). (No.65-72) No.65 1-Bromopropane No.66 1,2-Benzenedicarboxylic acid, dipentylester, branched and linear No.67 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7 rich

Version	Date	Revision detail
8th	12/07/2018	No.68 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters No.69 Bis(2-methoxyethyl) phthalate No.70 Anthracene oil No.71 Pitch, coal tar, high temp. No.72 4-(1,1,3,3-Tetramethylbutyl)phenol, ethoxylated ・Change of No.91 substance name to "PFOA, including its salts, any related substance" for adapt to REACH. ・Addition of 2 fluorine-based greenhouse gases (EC (No. 842/2006)) with many customer requests. No.107 Perfluorocarbons (PFCs) No.108 Sulphur hexafluoride (SF_6) Table B.Threshold values ・Addition of the thresholds of 4 Phthalates(DEHP, BBP, DBP, DIBP) of RoHS. Table C. Exemption from prohibited substances ・Addition of draft deadline under discussion in the column of "Dates of applicability". ・Addition of No.39(a) Appendix 7 3. 3) Hexavalent Chromium ・Addition of latest analysis standard (IEC 62321-7-2:2017) 3.5) Phthalates(DEHP, BBP, DBP, DIBP) ・Addition of Phthalates analysis method.
8.1th	02/07/2019	4. 1) Revision of prohibited substances ・[A06] (*1)Changed the allowable concentrations of RoHS Phthalates from each <1000ppm to total <1000ppm Table A. Prohibited substances ・Addition of "DPP、DIPP、PIPP (abbreviation of target substances)" to No.66 "1,2-Benzenedicarboxylic acid, dipentylester, branched and linear". Table B.Threshold values ・Changed threshold values for RoHS phthalates (DEHP, BBP, DBP, DIBP) from each 1000ppm to total 1000ppm (according to the threshold of REACH Annex XVII No. 51). Table C. Exemption from prohibited substances ・The amendments of RoHS (EU) 2019/169-178 (2018/11/16) were reflected.
9th	08/11/2019	4. 1) Revision of prohibited substances One substance that is being considered for addition to the CSCL was added. (former 108 substance groups ⇒109 substance groups in this version) Table A. Prohibited substances ・Addition of "p,p'-dicofol and o,p'-dicofol" to No.14 "Dicofol or Kelthane". (In accordance with the POPs Convention) ・Changed applicable laws of "Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds" from REACH Annex XVII to CSCL (No. 28). (for reflect that it is scheduled to be added to CSCL Class I) ・Added No.29 "Perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds" . (This substance has been recommended for addition to the POPs Convention and will be treated as a scheduled substance for CSCL.) Table B.Threshold values ・Added supplement to phthalate threshold. 4. 2) Revision of controlled substances ・Added "EU MDR" of [B02] for adapt to revision of chemSHERPA. ・[B09] Added "its salts, related substance" to "Perfluoroalkyl sulfonate (PFAS)". Table C. Exemption from prohibited substances ・The expired exemptions are deleted (6(a), 6(b), 39(a)).