

Sanken Group Standard for the Management of Chemical Substances in Products [Ver. 21]

1. Purpose

This standard clarifies the requirements for “the management of chemical substances in products” related to Sanken products. This standard aims to comply with laws, regulations and customer’s requirements, and reduce the influence on environment by end-of-life products, by making this standard widely known to and obeyed by Sanken group and suppliers.

2. Terms and definitions

Table 2-1 Terms and definitions

No	Terms	Definitions in this standard
1	Sanken products	The products sold by Sanken Electric Co.,Ltd.
2	Sanken group	Generic name of Sanken Electric Co., Ltd and its group companies (abbreviation: “SG”)
3	Suppliers	The suppliers of parts and materials for Sanken products, the contract manufacturing companies for Sanken products, etc. (except for Sanken group)
4	Customers	The customers for Sanken products (except for Sanken group)
5	Chemical Substances Control Law	The examination and regulation such as the production of Chemical substances (Japan)
6	RoHS Directive	EU directive on the restriction of the use of hazardous substances in electrical and electronic equipments (substantially the global standard)
7	ELV Directive	EU directive on the restriction of the use of hazardous substances in vehicles (substantially the global standard)
8	REACH	EU rule that determined chemical substance management for all materials (substantially the global standard)
9	SVHC	Substances of Very High Concern which are prescribed ECHA
10	Article	Object given specific shape, a design deciding the function during production
11	Packaging Directive	EU directive on the restriction of the use of hazardous substances in packaging (There are substantially equal state regulations in USA.)
12	JIG (Joint Industry Guide)	Industry guideline in Japan-USA-EU on the disclosure of material compositions in electrical and electronic equipments
13	GADSL (Global Automotive Declarable Substance List)	A common list of controlled chemicals, which has been established by the GASG(Global Automotive Stakeholders Group)consisted of automobile manufacturers,automobile component manufacturers,and chemicals manufacturers in Japan, USA,and Europe,The listed chemicals are defined with codes(prohibited)or(declarable).

3. Scope

This standard is applied to the products in **Table 3-1**.

Table 3-1 Target products

No	Target products
1	Parts, materials and assembled components used for the main body of Sanken products
2	Parts, materials and assembled components used for the accessories of Sanken products
3	Printed matters such as operating instructions packaged together with Sanken products
4	Chemicals, parts and materials composing manufacturing devices, etc. used in the manufacturing process, that remain in or adhere to the finished Sanken products (including unintended residuals and deposits)
5	Semi-finished products and finished products that are bought by Sanken group to be resold as Sanken products
6	Packaging materials for shipping of Sanken products to customers (i.e. parts and materials used for these packaging materials)

4. Banned substances

Sanken Group specifies the substances in **Table 4-1** and **Table 5-5** as the chemical substances banned from inclusion in target products (hereafter, “**banned substances**”). Banned substances range from the substances banned by a part of applications to the substances through all applications (refer to Chapter 5). As to SVHC, its inclusion information must be disclosed.

In the future, more substances will be registered by council.

Please pay attention to REACH which was established after RoHS Directive enforcement. This REACH doesn't include RoHS Directive.

Table 4-1 List of banned substances

No	Categories	Banned Substances
1	Heavy metals	Cadmium (Cd) and its compounds
2		Lead (Pb) and its compounds
3		Mercury (Hg) and its compounds
4		Hexavalent chromium (Cr6+) compounds
5	Brominated organic compounds	Polybrominated biphenyls (PBBs)
6		Polybrominated diphenylethers (PBDEs) (not excluding deca BDE)
7	Organic tin compounds	Dibutyl tin compounds(DBTs)
8		Diethyl tin compounds(DOTs)
9		Trimethyl tin compounds(TMTs)
10		Triethyl tin compounds(TETs)
11		Tripropyl tin compounds(TPTs)
12		Tributyl tin compounds (TBTs) include Bis(Tributyl tin)oxide(TBTO)
13	Triphenyl tin compounds (TPTs)	
14	Chlorinated organic compounds	Polychlorinated biphenyls (PCBs)
15		Polychlorinated naphthalenes (PCNs) (more than 1 chlorine atoms)
16		Polychlorinated terphenyls (PCTs)
17		Short-chain chlorinated paraffins (SCCPs) (carbon chain length of 10-13)
18		Polyvinyl chloride (PVC) (including its mixtures and its copolymers) voluntary restriction:see Table 5-3 Other Banned Substances
19	Halogenated Organic compounds	Hexachlorobenzene
20		Mirex
21		Hexachlorobuta(-1,3-)diene
22		Pentachlorobenzene
23		α,β,γ-Hexachlorocyclohexane
24	Others	Asbestos
25		Specific azo compounds (forming specific amines)
26		Ozone depleting substances (target substances of Montreal Protocol)
27		Radioactive substances
28		Formaldehyde
29		Beryllium oxide
30		Cobalt chloride
31		Perfluorooctane sulfonates and its salt(PFOS)
32		Specific benzotriazol(CAS.No3846-71-7)

No	Categories	Banned Substances
33		Specific phthalates (the following six substances) (1) Bis (2-ethylhexyl) phthalate [another name:Di (2-ethylhexyl) phthalate (DEHP or DOP)] (2) Dibutyl phthalate (DBP) (3) Benzyl butyl phthalate (BBP) (4) Di-“isononyl” phthalate (DINP) (5) Di-“isodecyl” phthalate (DIDP) (6) Di-n-octyl phthalate (DNOP)
34		dimethyl fumarate (DMF)(CSANo624-49-7)
35		Aldrin
36		Dieldrin
37		Endrin
38		DDT(Chlorophenothane)
39		Chlordanes
40		N,N'-ditolyl-p,N'-tolyl-N'-xylyl-p,N,N'-dixylyl-p-phenylenediamine
41		2,4,6-tri-tert-butylphenol
42		Toxaphene
43		Kelthane
44		2-(2H-benzotriazol-2-yl)-4,6-di-tert-butylphenol
45		Chlordecone
46		Fluorinated greenhouse gases(HFC,PFC,SF6)
47		Tris(2,3-dibromopropan-1-yl) phosphate(TRIS)
48		Tris(1-aziridinyl) phosphine oxide(TEPA)
49		Tris(2-chloroethyl)phosphate(TCEP)
50		Hexabromocyclododecane(HBCDD)
51		Diarsenic trioxide
52		Diarsenic pentaoxide
53		Bis(2-ethylhexyl)phthalate(DEHP)
54		Dibutyl phthalate(DBP)
55		Benzyl butyl phthalate(BBP)
56		Diisobutyl phthalate(DIBP)
57		Simazine
58		Ethyl p-nitrophenyl
59		Endosulfan
60		Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene(BNST)

No	Categories	Banned Substances
61		Polycyclic Aromatic Hydrocarbon(PAH) (1) Naphthalene (2) Acenaphthylene (3) Acenaphthene (4) Fluorene (5) Phenanthrene (6) Anthracene (7) Fluoranthene (8) Pyrene (9) Benzo(a)anthracene (10) Chrysene (11) Indeno(1,2,3-cd)pyrene (12) Benzo(b)fluoranthene (13) Benzo(k)fluoranthene (14) Benzo(a)pyrene (15) Dibenzo(a,h,)anthracene (16) Benzo(g,h,i,)pyrylene (17) Benzo(j)fluoranthene (18) Benzo(e)pyrene
62		Naphthalene
63		Refractories, fibers, aluminosilicate
64		GADSL 'P': Substance of Prohibited category

5. Banned usage and allowable concentration

Sanken Group specifies banned usage and allowable concentration with **Table 5-1~5-4** for each of banned substances in Table 4-1. And Table 5-5 specifies SVHC in REACH. Refer to the supplementary explanations in **Table 5-6**.

Table 5-1 RoHS substances

Banned substances : Cadmium (Cd) and its compounds / Applications	Allowable concentrations per each homogeneous material	
	Controlled values	Regulated values
Plastics, paints, and inks Note: Plastics mainly content synthesis polymer and rubber. Paints content fluorescent materials for fluorescent lamps. (the same as follows)	(Cd) Prohibition of intentional use and less than 5 ppm	(Cd) Less than 100 ppm
Solders	(Cd) Prohibition of intentional use and less than 20 ppm	(Cd) Less than 100 ppm
All applications other than the above	(Cd) Prohibition of intentional use	(Cd) Less than 100 ppm

	and less than 50 ppm	
[Exemption (Cd)] ■Electrical contacts ■filter glasses and glasses used for reflectance standards ■printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses ■thick film pastes used on aluminum bonded beryllium oxide ■color converting □-□LEDs(<10µg Cd per mm ² of light-emitting area) for use in solid state illumination or display systems		

Banned substances : Lead (Pb)and its compounds / Applications	Allowable concentrations per each homogeneous material	
	Controlled values	Regulated values
Plastics, paints, and inks	(Pb) Prohibition of intentional use and less than 50 ppm	(Pb) Less than 300 ppm
Electroless nickel plated (Lead and its compounds are allowed to be added to the plating liquid for stabilization. Strictly control the content density of lead.)	(Pb) Less than 750 ppm	(Pb) Less than 1000 ppm
All applications other than the above (excluding lead contained solders intentionally purchased by Sanken group)	(Pb) Prohibition of intentional use and less than 500 ppm	(Pb) Less than 1000 ppm
[Exemption (Pb)] ■Dielectric ceramic in capacitors for a rated voltage of 125VAC or 250VDC or higher ■White glasses used for optical applications ■Filter glasses and glasses used for reflectance standards ■Solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages ■Printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses ■Solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors ■The plating layer of high voltage diodes on the basis of a zinc borate glass body		

<p>6(a) Lead as an alloying element in steel for machining purposes and in galvanised steel containing up to 0,35 % lead by weight</p>	<p>Expires on: 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; 21 July 2023 for category 8 in vitro diagnostic medical devices; 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.</p>
<p>6(a)-1 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</p>	<p>Expires on 21 July 2021 for categories 1-7 and 10.'</p>
<p>6(b) Lead as an alloying element in aluminium containing up to 0,4 % lead by weight</p>	<p>Expires on: 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments, 21 July 2023 for category 8 in vitro diagnostic medical devices, 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.</p>
<p>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</p>	<p>Expires on 21 July 2021 for categories 1-7 and 10</p>
<p>6(b)- II Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight</p>	<p>Expires on 18 May 2021 for categories 1-7 and 10.'</p>
<p>6(c) Copper alloy containing up to 4 % lead by weight</p>	<p>Expires on: 21 July 2021 for categories 1-7 and 10, 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments, 21 July 2023 for category 8 in vitro diagnostic medical devices, 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.'</p>
<p>7(a) Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead)</p>	<p>Applies to categories 1-7 and 10 (except applications covered by point 24 of this Annex) and expires on 21 July 2021. For categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments expires on 21 July 2021. For category 8 in vitro diagnostic medical devices expires on 21 July 2023. For category 9 industrial monitoring and control instruments, and for category 11 expires on 21 July 2024.'</p>

<p>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</p>	<p>Applies to categories 1-7 and 10 (except applications covered under point 34) and expires on 21 July 2021. For categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments expires on 21 July 2021. For category 8 in vitro diagnostic medical devices expires on 21 July 2023. For category 9 industrial monitoring and control instruments, and for category 11 expires on 21 July 2024.'</p>
<p>34 Lead in cermet-based trimmer potentiometer elements</p>	<p>Applies to all categories; expires on: 21 July 2021 for categories 1-7 and 10, 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments, 21 July 2023 for category 8 in vitro diagnostic medical devices, 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.'</p>

Banned substances : Mercury (Hg)and its compounds / Applications	Allowable concentrations per each homogeneous material	
	Controlled values	Regulated values
All applications	(Hg) Prohibition of intentional use and less than 100 ppm	(Hg) Less than 1000 ppm

Banned substances : Hexavalent chromium(Cr6+)compounds / Applications	Allowable concentrations per each homogeneous material	
	Controlled values	Regulated values
All applications	(Cr6+)Prohibition of intentional use and less than 100 ppm	(Cr6+) Less than 1000 ppm

Banned substances : 4 heavy metals in packaging materials (Cd and its compounds, Pb and its compounds, Hg and its compounds, and Cr6+ compounds) / Applications	Allowable concentrations per each homogeneous material	
	Controlled values	Regulated values
Packaging materials for shipping of Sanken products to customers e.g. handles, wooden frames, foils, trays, reels, magazine including stoppers, sticks, bags, cushions, staples, sheets, wraps, corrugated cardboards, paintings, inks, tapes, binding bands, labels, bulk cases.	Prohibition of intentional use for Cd, Pb, Hg, and Cr6+	Less than 100 ppm for total of Cd, Pb, Hg, and Cr6+

<p>■Except for boxes for transporting products which do not contaminate products with prohibited substances when it comes into contact. (Note) This regulation is based on Packaging Directive.</p>	and less than 50 ppm for total of Cd, Pb, Hg, and Cr6+
	and less than 5 ppm of Cd for plastics, paints, and inks

Banned substances : Polybrominated biphenyls (PBBs), Polybrominated diphenylethers (PBDEs)(not excluding deca BDE) / Applications	Allowable concentrations per each homogeneous material	
	Controlled values	Regulated values
<p>All applications (Note) It is prohibited to contain any of them in the packing and packaging materials in consideration of cutomers'request.</p>	(PBBs) Prohibition of intentional use and less than 100 ppm	(PBBs) Less than 1000 ppm
	(PBDEs) Prohibition of intentional use and less than 100 ppm	(PBDEs) Less than 1000 ppm

Banned substances : Bis (2-ethylhexyl) phthalate[another name:Di (2-ethylhexyl) phthalate (DEHP or DOP)], Benzyl butyl phthalate (BBP), Dibutyl phthalate (DBP), Diisobutyl phthalate(DIBP) / Applications	Allowable concentrations per each homogeneous material	
	Controlled values	Regulated values
All applications	Prohibition of intentional use and less than 100 ppm	Less than 1000 ppm

Table 5-2 RoHS substances

(Summary version of Table 5-1)

RoHS 6 substances Applications	Cd		Pb		Hg/Cr ⁶⁺ /PBBs/PBDEs DEHP or DOP BBP/DBP/DIBP	
	Controlled values	Regulated values	Controlled values	Regulated values	Controlled values (each substance)	Regulated values (each substance)

Sanken products	Plastics, paints, and inks	5	100	50	300	100	1000	
	Solders	Lead free solders	20	100	500	1000	100	1000
		Lead contained solders						
	Electroless nickel plating	50	100	750	1000	100	1000	
	Others	50	100	500	1000	100	1000	
Packaging materials for shipping of Sanken products to customers		Controlled values Cd+Pb+Hg+Cr6+: 50 Cd for plastics, paints, and inks: 5 PBBs, PBDEs: 100 (each substance)			Regulated values Cd+Pb+Hg+Cr6+: 100 PBBs, PBDEs: 1000 (each substance)			
<ul style="list-style-type: none"> • Unit of controlled value and regulated value: “Less than __ ppm” per each homogeneous material • Intentional use of RoHS substances is prohibited regardless of the content density, excluding Pb in electroless nickel plated. • RoHS/ELV exemptions are allowed. However, RoHS exemption for deca BDE is not allowed. 								

Table 5-3 Other Banned Substances

Banned substances	CAS No	EC No	Applications	Allowable concentrations per each homogeneous material
Dibutyl tin compounds (DBTs)	-	-	All applications [Exemptions (DBT)] DBT compounds may be included up to January 1, 2014 if any of following cases apply to <ul style="list-style-type: none"> ■ One-component and two-component room temperature vulcanization sealants (RTV-1 and RTV-2 sealants) and adhesives ■ Paints, coatings and soft polyvinyl chloride (PVC) which contain DBT compounds as catalysts when applied in products 	Less than 1000ppm
Diocetyl tin compounds (DOTs)	-	-	If the following cases apply to, the use of chemical substances is prohibited <ul style="list-style-type: none"> ■ Being used as textile intended to contact with the skin and two-component room temperature vulcanization molding kits. ■ Products for childcare. 	Less than 1000ppm
Trimethyl tin compounds (TMTs)	-	-	All applications	Prohibition of intentional use And less than 1000 ppm (each substance)
Triethyl tin compounds (TETs)	-	-		
Tripropyl tin compounds (TPTs)	-	-		
Tributyl tin compounds (TBTs) [Including Bis(tributyltin) oxide (TBTO)]	-	-		
Triphenyl tin compounds (TPTs)	-	-		

Banned substances	CAS No	EC No	Applications	Allowable concentrations per each homogeneous material
Polychlorinated biphenyls (PCBs)	-	-	All applications	Prohibition of intentional use
Polychlorinated naphthalenes (PCNs) (more than 1 chlorine atoms)	-	-	All applications	
Polychlorinated terphenyls (PCTs)	-	-	All applications	
Short-chain chlorinated paraffins (SCCPs) (carbon chain length of 10-13)	85535-84-8	287-476-5	All applications	
Polyvinyl chloride (PVC) (including its mixtures and its copolymers)	9002-86-2	-	<ul style="list-style-type: none"> ● Binding bands (for bundling connecting cords, etc. ; the same as “binding ties”) ● Heat shrink tubes ● Insulating plates 	<ul style="list-style-type: none"> ● Decorative panels ● Labels ● Sheets ● Laminates
			Flexible flat cables (for specific customers)	
			Other applications that Sanken group individually specify to suppliers	
			Exemptions In cases where: quality such as safety cannot be maintained; procurement is difficult; materials are specified by law or regulation; materials are specified by the customer, etc.	
Hexachlorobenzene	118-74-1	204-273-9	All applications	
Mirex	2385-85-5	219-196-6		
Hexachlorobuta-1,3-diene	87-68-3	201-765-5		
Pentachlorobenzene	608-93-5	210-172-5		
α,β,γ -Hexachlorocyclohexane	α -319-84-6 β -319-85-7 γ -58-89-9	α -206-270-8 β -206-271-3 γ -200-401-2		
Asbestos	-	-	All applications	
Specific azo compounds (forming specific amines)	-	-	Leather, textile, and other products that may come into direct and prolonged contact with human skin (e.g. ear pads of headphones)	

Banned substances	CAS No	EC No	Applications	Allowable concentrations per each homogeneous material
Ozone depleting substances (target substances of Montreal Protocol)	-	-	All applications (Note) Use of ozone depleting substances in the manufacturing process is prohibited in addition to contain in products.	
Radioactive substances	-	-	All applications	
Formaldehyde	50-00-0	200-001-8	Wooden products (e.g. speakers, racks)	
Beryllium oxide	1304-56-9	215-133-1	All applications	
Cobalt chloride	7646-79-9	231-589-4	Indicator of desiccants (e.g. silicagel) that are shipped with Sanken products (for specific customers) (Note) Used as a material that discolored by moisture absorption	
PFOS (Perfluorooctanesulfonic acid and its salt) PFOA (Perfluorooctanoic acid and its salt)	-	-	Impurities must not exceed the following level of content by percentage and amount. <ul style="list-style-type: none"> • Content by percentage in Preparation: 0.005% by weight • Content by percentage in Materials: 0.1% by weight • Amount in coated materials: 1µg/m² [Exemption (PFOS,PFOA)] ■Photoresist or anti reflective coatings for photolithographs process ■Photo coatings used to films, documents, or printing plates.	
Specific phthalates (the following three substances) (1) Bis (2-ethylhexyl) phthalate[another name:Di (2-ethylhexyl) phthalate (DEHP or DOP)] (2) Dibutyl phthalate (DBP) (3) Benzyl butyl phthalate (BBP)	117-81-7 84-74-2 85-68-7	204-211-0 201-557-4 201-622-7	RoHS directive prohibited substances All applications (Note) (Delivery has been prohibited as of Septmber 30, 2014) “Toys which can be put into the mouth and plastic products for childcare” for specific customers (Note) This regulation is based on Directive 2005/84/EC. Mainly used as plasticizers for PVC Plasticizers used for cables and cords (including plugs and connectors) (Delivery has been prohibited as of January 1, 2014)	Prohibition of intentional use and less than 1000 ppm for total of these three substances
Specific phthalates(the following three substances) (4)Di-“isononyl” phthalate	28553-12-0	249-079-5	“Toys which can be put into the mouth and plastic products for childcare” for specific customers (Note) This regulation is based on Di-	Prohibition of intentional use and less than 1000 ppm for

Banned substances	CAS No	EC No	Applications	Allowable concentrations per each homogeneous material
(DINP)	68515-48-0		Directive 2005/84/EC.	total of these three substances
(5)Di-“isodecyl” phthalate (DIDP)	26761-40-0	247-977-1	Mainly used as plasticizers for PVC (Use for products to China has been prohibited as of January 1, 2014)	
(6) Di-n-octyl phthalate (DNOP)	68515-49-1 117-84-0	204-214-7		
dimethyl fumarate(DMF)	624-49-7	210-849-0	All applications (Note) This regulation is based on Directive 2009/251/EC. Mainly used as prevention of spread of mold	Prohibition of intentional use
Aldrin	309-00-2	206-215-8	All applications	
Dieldrin	60-57-1	200-484-5		
Endrin	72-20-8	200-775-7		
DDT(Chlorophenothane)	50-29-3	200-024-3		
Chlordanes	57-74-9	200-349-0		
N,N'-ditolyl-p-,N-tolyl-N'-xylyl-p-,N,N'-dixylyl-p-phenylenediamine	-	-		
2,4,6-tri-tert-butylphenol	732-26-3	211-989-5		
Toxaphene	8001-35-2	232-283-3		
Kelthane	115-32-2	115-32-2		
2-(2H-benzotriazol-2-yl)-4,6-di-tert-butylphenol	3846-71-7	223-346-6		
Chlordecone	143-50-0	-		
Fluorinated greenhouse gases(HFC,PFC,SF6)	-	-		
Tris(2,3-dibromopropyl)phosphate(TRIS)	126-72-7	204-799-9	Textile which intends to come into contact with the skin directly	
Tris (1-aziridinyl) phosphine oxide(TCEP)	545-55-1	208-892-5		
Tris(2-chloroethyl)phosphate (TCEP)	115-96-8	204-118-5	Flame retardants used in plastics, resins, textile, and fabric. (Delivery has been prohibited as of January 1, 2014) (Vermont, USA)	less than 1000 ppm
Tris(2-chloroisopropyl) phosphate (TCPP)	13674-84-5	237-158-7		
Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)	13674-87-8	237-159-2		
Hexabromocyclododecane(3194-55-6	221-695-9	Flame retardants used in plastics and res-	

Banned substances	CAS No	EC No	Applications	Allowable concentrations per each homogeneous material
HBCDD)	25637-99-4 (Isomeric mixture)	247-148-4	ins. (Delivery has been prohibited as of July 1, 2014)	
Diarsenic trioxide	1327-53-3	215-481-4	Antifoam agents and fining agents for LCD panels (including cover glasses, touch screens, and backlights) (Delivery has been prohibited as of January 1, 2014)	
Diarsenic pentaoxide	1303-28-2	215-116-9		
Diisobutyl phthalate	84-69-5	201-553-2	RoHS directive prohibited substances All applications (Note) (Delivery has been prohibited as of September 30, 2014) Plasticizers used for cables and cords (including plugs and connectors) (Delivery has been prohibited as of January 1, 2014)	Prohibition of intentional use
Simazine	122-34-9	204-535-2	Used as herbicide (It is specified as water pollution agricultural chemicals by Agricultural Chemicals Regulation Law.)	
Ethyl p-nitrophenyl	2104-64-5	218-276-8	Used as organic phosphorus pesticide.	
Endosulfan	115-29-7	204-079-4	Pesticide	
Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene(BNST)	68921-45-9		Additives in the lubricating oil (antioxidant)	
Polycyclic Aromatic Hydrocarbon(PAH)			rubber or plastic components that come into direct as well as prolonged or shortterm repetitive contact with the human skin or the oral cavity: Customer special request	
(1) Naphthalene	91-20-3	-		
(2) Acenaphthylene	208-96-8	-		
(3) Acenaphthene	83-32-9	-		
(4) Fluorene	86-73-7	-		
(5) Phenanthrene	85-01-8	-		
(6) Anthracene	120-12-7	-		
(7) Fluoranthene	206-44-0	-		
(8) Pyrene	129-00-0	-		
(9) Benzo(a)anthracene	56-55-3	-		
(10) Chrysene	218-01-9	-		
(11) Indeno(1,2,3-cd)pyrene	193-39-5	-		
(12) Benzo(b)fluoranthene	205-99-2	-		
(13) Benzo(k)fluoranthene	207-08-9	-		
(14) Benzo(a)pyrene	50-32-8	-		

Banned substances	CAS No	EC No	Applications	Allowable concentrations per each homogeneous material
(15) Dibenzo(a,h,)anthracene	53-70-3	-		
(16) Benzo(g,h,i,)pyrylene	191-24-2	-		
(17) Benzo(j)fluoranthene	205-82-3	-		
(18) Benzo(e)pyrene	192-97-2	-		
Chemicals that are listed in the GADSL list	-	-	All applications	Prohibition of intentional use
Naphthalene	91-20-3	-	All applications	Prohibition of intentional use
Refractories, fibers, aluminosilicate	142844-00-6	-	All applications	Prohibition of intentional use

Points to remember

* The use of chemical substances indispensable for manufacturing is not limited.

However, it does not remain in the final product.

In addition, there is a mechanism that does not affect air, soil and human body in the process.

Table 5-4 Banned Substances for batteries

Banned substances	Applications	Allowable concentrations per total weight of each battery (Regulated values)
Cadmium (Cd) and its compounds	Ni-Cd batteries	(Cd) Prohibition regardless of the density
Lead (Pb) and its compounds	Lead-acid batteries (excluding intentional purchase by Sanken group)	(Pb) Prohibition regardless of the density
	Batteries other than lead-acid batteries	(Pb) Less than 0.4wt%
Mercury (Hg) and its compounds	Button cell batteries	(Hg) Less than 2 wt%
	Batteries other than button cell batteries	(Hg) Less than 0.0005wt%
	Carbon zinc batteries and alkaline batteries designed for use in China	(Hg) Less than 0.0001wt%

Table 5-5 REACH SVHC

2018/6/27 update

SVHC has the materials that are already limited the use by REACH, other laws, and industry standard. Please follow the each regulations that have been already specified the contents of regulation in column as “other regulations”.

- (1) Banned substance in GADSL (2) Banned substance other than "the exceptional usage in RoHS".
(3) Banned substance in RoHS (4) Restricted substance in REACH.

No	REACH SVHC(limit material)	Suggestion	Mainly	Other
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	Material name	CAS No.	EC No.	reason	use,handling etc(Japan,EU)	re-strictions
1	Anthracene	120-12-7	204-371-1	PBT	A preservative and an insecticide of the wood, paint, carbon black	(4)
2	4,4'-Diaminodiphenylmethane	101-77-9	202-974-4	CMR	The raw materials of the polyurethane intermediate	(1)(4)
3	Dibutyl phthalate(DBP)	84-74-2	201-557-4	Toxic for reproduction (Article 57c) Endocrine disrupting properties (Article 57(f) - human health)	A resinous plasticizer(Vinyl Chloride, vinyl acetate, nitrocellulose, methacrylic acid etc)	(3)(4)
4	Cobalt dichloride	7646-79-9	231-589-4	CMR	Raw materials for paint, plating, ink desiccating agents	
5	Diarsenic pentaoxide	1303-28-2	215-116-9	CMR	Arsenic compound drug, prevention of decay / ant on wood	(4)
6	Diarsenic trioxide	1327-53-3	215-481-4	CMR	Raw materials of the metal arsenic, clearing agent at the time of the flint glass and liquid crystal glass production	(4)
7	Sodium dichromate, dehydrate	7789-12-0	234-190-3	CMR	An inorganic chrome pigment, metal surface processing (Prevention of corrosion)	(3)(4)
8	5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	201-329-4	vPvB	Compounding spice(Perfume, soap, etc)	

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other restrictions
	Material name	CAS No.	EC No.			
9	Bis (2-ethyl(hexyl)phthalate) (DEHP)	117-81-7	204-211-0	Toxic for reproduction (Article 57c) Endocrine disrupting properties (Article 57f) - environment) Endocrine disrupting properties (Article 57f) - human health)	Resin(Chloroethylene, nitrocellulose, methacrylic acid etc) , A plasticizer(Chloride rubber, etc), Paint, pigment, adhesive, the additive of the lubricating oil	(3)(4)
10	Hexabromocyclododecane (HBCDD)	25637-99-4	247-148-4	PBT	Incombustibility agent	
11	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8	287-476-5	PBT	Incombustibility agent, a plasticizer	(1)
12	Bis(tributyltin)oxide	56-35-9	200-268-0	PBT	Sterilization , mold prevention,bottom of a ship paint additive	(1)(4)
13	Lead hydrogen arsenate	7784-40-9	232-064-2	CMR	A pesticide (lapse in Japan)	(2)(3)(4)
14	Triethyl arsenate	15606-95-8	427-700-2	CMR		(4)
15	Benzyl butyl phthalate (BBP)	85-68-7	201-622-7	Toxic for reproduction (Article 57c) Endocrine disrupting properties (Article 57f) - human health)	a plasticizer of the nitrocellulose resin and vinyl chloride resin	(3)(4)
16	Anthracene oil	90640-80-5	292-602-7	PBT	Raw material of Pure Anthracene, Preservative,waterproof material	(4)
17	Antracene oil,paste,distin,Lights	91995-17-4	295-278-5	PBT	Raw material of Pure Anthracene, Preservative,waterproof material	

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
18	Antracene oil,paste,fraction	91995-15-2	295-275-9	PBT	Raw material of Pure Anthracene, Preservative,waterproof material	
19	Antracene oil,-low	90640-82-7	292-604-8	PBT	Raw material of Pure Anthracene, Preservative,waterproof material	
20	Antracene oil,paste	90640-81-6	292-603-2	PBT	Raw material of Pure Anthracene, Preservative,waterproof material	
21	Coal tar pitch,high temperature	65996-93-2	266-028-2	CMR	Carbon electrodes, graphite electrodes, paint	
22	Aluminosilicate,RefractoryCeramicFibres			CMR	Refractory ceramic fiber, fireproof agent	
23	ZirconiaAluminosilicate,RefractoryCeramicFibres			CMR	Refractory ceramic fiber, fireproof agent	
24	2,4-Dinitrotoluene	121-14-2	204-450-0	CMR	Synthetic raw material of Toluene-diisocyanate	
25	Diisobutyl phthalate(DIBP)	84-69-5	201-553-2	Toxic for reproduction (Article 57c) Endocrine disrupting properties (Article 57(f) - human health)	Plasticizer	(3)(4)
26	Lead chromate	7758-97-6		CMR	Pigment, Bleach	(3)(4)
27	Lead chromate molybdate surfate red(CI Pigment Red 104)	12656-85-8	235-759-9	CMR	Pigment	(3)(4)
28	Lead sulfochromate yellow (C.I.Pigment Yellow 34)	1344-37-2	215-693-7	CMR	Pigment	(3)(4)
29	Tris(2-chloroethyl)phosphate	115-96-8	204-118-5	CMR	Flame retardant	

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
30	Acrylamide	79-06-1	201-173-7	CMR	Paper processing, waste water treatment, adhesives, laundry starches	(4)
31	Trichloroethylene	79-01-6	201-167-4	CMR	Cleaning and degreasing of metal parts, solvent in adhesives	
32	Boric acid	10043-35-3/1 1113-50-1	233-139-2/ 234-343-4	CMR	Glass,ceramics,flame-retardants,food-additives, fertilizers, rubbers	
33	Disodium tetraborate, anhydrous	1330-43-4 12179-04-3 1303-96-4	215-540-4	CMR	Glass,glass-fibers,ceramics,fertilizers,cle aners	
34	Tetraboron disodium heptaoxide, hydrate	12267-73-1	235-541-3	CMR	Glass,glass-fibers,ceramics,fertilizers,cle aners	
35	Sodium chromate	7775-11-3	231-889-5	CMR	It is mainly used as an intermediate in the manufacture of other chromium compounds as well as a laboratory analytical agent	(3)(4)
36	Potassium chromate	7789-00-6	232-140-5	CMR	Coating of metals,reagents,textiles	(3)(4)
37	Ammonium dichromate	7789-09-5	232-143-1	CMR	Tanned leather, in the manufacture of photosensitive screens, metal treatment	(3)(4)
38	Potassium dichromate	7778-50-9	231-906-6	CMR	Chrome steel plate, treatment and coating of metals, tanned leather	(3)(4)
39	Cobalt(□)sulphate	10124-43-3	233-334-2	CMR	Manufacture of catalysis and driers, surface treatments , pigment, red	
40	Cobalt(□)dinitrate	10141-05-6	233-402-1	CMR	Manufacture of catalysis and surface treatment ,batteries	

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
41	Cobalt(□)carbonate	513-79-1	208-169-4	CMR	Manufacture of catalysis and feed Additive, pigment, pale-rouge	
42	Cobalt(□)diacetate	71-48-7	200-755-8	CMR	Manufacture of catalysis and surface treatment, alloys, adhesives, feed additive, pink-rouge	
43	2-Methoxyethanol	109-86-4	203-713-7	CMR	Solvent for ink, chemical intermediate and additive for fuels, paints	(1)
44	2-Ethoxyethanol	110-80-5	203-804-1	CMR	Solvent for paint and ink, chemical intermediate ,	
45	Chromium trioxide	1333-82-0	215-607-8	CMR	Pigment, manufacture of catalysis, surface treatment	(3)(4)
46	Acids generated from chromium trioxide and their oligomers	7738-94-5	231-801-5	CMR	Pigment, manufacture of catalysis, surface treatment	(3)(4)
		13530-68-2	236-881-5			
47	2-Ethoxyethyl acetate	111-15-9	203-839-2	Toxic for reproduction (article 57c)	Solvent for paint and ink	
48	1,2-Benzenedicarboxylic acid, di-C7-11-branched(DHNUP)	68515-42-4	271-084-6	Toxic for reproduction (article 57c)	Plasticizer,Dye, Pigment,Paint,Ink, Adhesive	
49	Hydrazine	7803-57-8 302-01-2	206-114-9	Carcinogenic (article 57 a)	Foaming agent for rubber and plastic	
50	1-Methyl-2-pyrrolidone	872-50-4	212-828-1	Toxic for reproduction (article 57c)	Plasticizer, Stabilizers, Special ink	
51	1,2,3-Trichloropropane	96-18-4	202-486-1	Carcinogenic and toxic for reproduction (articles 57 a and 57 c)	Solvent, Cross-linking agent	
52	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich(DIHP)	71888-89-6	276-158-1	Toxic for reproduction (article 57c)	Plasticizer,Dye, Pigment,Paint,Ink, Adhesive	
53	Calcium arsenate	7778-44-1	231-904-5	Carcinogenic (article 57 a)	insect killer, insect repellent	(4)

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other restrictions
	Material name	CAS No.	EC No.			
54	Bis(2-methoxyethyl) ether	111-96-6	203-924-4	Carcinogenic (article 57 a)	Solvent, Solvent of battery electrolyte, Adhesive	
55	Lead dipicrate	6477-64-1	229-335-2	Toxic for reproduction (article 57 c)	Detonator	(2)(3)(4)
56	N,N-dimethylacetamide (DMAC)	127-19-5	204-826-4	Toxic for reproduction (article 57 c)	Solvent for textile manufacturing, cleaning agent, remover	
57	Arsenic acid	7778-39-4	231-901-9	Carcinogenic (article 57 a)	Bubble removal in the manufacture of multilayer printed wiring board, Reagent	(4)
58	2-Methoxyaniline (o-Anisidine)	90-04-0	201-963-1	Carcinogenic (article 57 a)	Dyestuff	(1)(4)
59	Trilead diarsenate	3687-31-8	222-979-5	Carcinogenic and toxic for reproduction (articles 57 a and 57 c)	insect killer, insect repellent	(2)(3)(4)
60	1,2-dichloroethane	107-06-2	203-458-1	Carcinogenic (article 57 a)	Solvent, intermediate	
61	4-(1,1,3,3-Tetramethylbutyl)phenol: 4-tert-octyl phenol	140-66-9	205-426-2	Equivalent level of concern having probable serious effects to the environment (article 57 f)	Raw material of oil solvent phenol resin, Compounding ingredient for rubber	
62	Formaldehyde, oligomeric reaction products with aniline (technical MDA)	25214-70-4	500-036-1	Carcinogenic (article 57 a)	Intermediate, Curing agent, Adhesive, ion exchange resin	
63	Bis(2-methoxyethyl) phthalate	117-82-8	204-212-6	Toxic for reproduction (article 57 c)	Plasticizer, Ink, Adhesive, Pigment, paints, Dyestuff	
64	Lead diazide, Lead azide	13424-46-9	236-542-1	Toxic for reproduction (article 57 c)	Detonator	(2)(3)(4)
65	Lead styphnate	15245-44-0	239-290-0	Toxic for reproduction (article 57 c)	Gunpowder, detonating powder	(2)(3)(4)

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
66	2,2'-dichloro-4,4'-methylenedi aniline (MOCA)	101-14-4	202-918-9	Carcinogenic (article 57 a)	Hardening accelerator, Curing agent of polyurethane, Extend material of high melting temperature type hard segment	(1)(4)
67	Phenolphthalein	77-09-8	201-004-7	Carcinogenic (article 57 a)	Indicator, pH indicator, and ink that Disappears	
68	Potassiumhydroxyoctaoxidiz incatedi-chromate	11103-86-9	234-329-8	Carcinogenic (article 57 a)	Paint	(3)(4)
69	Pentazinc chromate octahydroxide	49663-84-5	256-418-0	Carcinogenic (article 57 a)	Colorant	(3)(4)
70	Dichromium tris(chromate)	24613-89-6	246-356-2	Carcinogenic (article 57 a)	surface treatment	(3)(4)
71	Strontium chromate	7789-06-2	232-142-6	Carcinogenic (article 57 a)	Yellow pigments	(3)(4)
72	[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2, 5-dien-1-ylidene]dimethylam monium chloride (C.I. Basic Violet 3) [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)]	548-62-9	208-953-6	Carcinogenic (Article 57a)	Colored paper, Ballpoint pen ink and printer ink, Coloring drugs, dried plant, Marker to increase the visibility of the liquid, In medical research, microorganisms and coloring Stain bacteria Dye	
73	1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (β-TGIC)	59653-74-6	423-400-0	Mutagenic (Article 57b)	hardener of Resin and coating	
74	1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme)	112-49-2	203-977-3	Toxic for reproduction (Article 57 c)	Solvent, Processing aid, Refrigerant, Absorbent, Acid gas, cleaning agent, Brake fluid	

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
75	4,4'-bis(dimethylamino)-4'-(methylamino)trityl alcohol [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)]	561-41-1	209-218-2	Carcinogenic (Article 57a)	Writing ink,Other ink,Dye	
76	Lead(II) bis(methanesulfonate)	17570-76-2	401-750-5	Toxic for reproduction (Article 57 c)	Plating of electronic components (electrolytic, electroless)	(2)(3)(4)
77	1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	110-71-4	203-794-9	Toxic for reproduction (Article 57 c)	Solvent,Processing aid,Refrigerant,Absorbent,Acid gas cleaning agent,Lithium battery electrolyte solvent	
78	Diboron trioxide	1303-86-2	215-125-8	Toxic for reproduction (Article 57 c)	Glass,Ceramics,Flame retardants,Catalyst,Adhesive,Ink/paint,Insecticide and fungicide	
79	α,α-Bis[4-(dimethylamino)phenyl]-4-(phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4) [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)]	6786-83-0	229-851-8	Carcinogenic (Article 57a)	Printing and writing ink Colored paper CFCs and glass cleaning agent	
80	1,3,5-Tris(oxiran-2-ylmethyl)-1,3,5-triazinane-2,4,6-trione (TGIC)	2451-62-9	219-514-3	Mutagenic (Article 57b)	Curing agent and coating resin (Curing agent for polyester) powder coating, Solder resist ink, Semiconductor sealing resin, Stabilizer (heat resistance, rigidity hardness, improved reactivity) of flame-retardant plastic	

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
81	4,4'-bis(dimethylamino)benzo phenone (Michler's ketone)	90-94-8	202-027-5	Carcinogenic (Article 57a)	Additives of Dry film products, pigments, dyes	
82	N,N,N',N'-tetramethyl-4,4'-m ethylenedianiline (Michler's base)	101-61-1	202-959-2	Carcinogenic (Article 57a)	Dye material,Organic synthesis, intermediate,Applications Research and Development	
83	[4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methy lenel]cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Blue 26) [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)]	2580-56-5	219-943-6	Carcinogenic (Article 57a)	Manufacture of ink-cleaner coating,Dye (Other moldings / plastic product / woven / packaging / paper),Diagnostic and analytical applications	
84	Formamide	75-12-7	200-842-0	Toxic for re- production (Ar- ticle 57 c)	Intermediate, Sol- vent, Synthetic or- ganic chemicals	
85	Pyrochlore, antimony lead yellow	8012-00-8	232-382-1	Toxic for re- production (Ar- ticle 57 c)	Pigment	(2)(3)(4)
86	6-methoxy-m-toluidine (p-cresidine)	120-71-8	204-419-1	Carcinogenic (Article 57a)	Raw material, In- termediate	(1)(4)
87	Henicosafuoroundecanoic acid	2058-94-8	218-165-4	vPvB (Article 57 e)	Surface-active agent	
88	Hexahydromethylphthalic anhydride [1], Hexahydro-4-methylphthalic anhydride [2], Hexahydro-1-methylphthalic anhydride [3], Hexahydro-3-methylphthalic anhydride [4] [The individual isomers [2], [3] and [4] (in- cluding their cis- and trans- stereo isomeric forms) and all possible combinations of the isomers [1] are covered by this entry]	25550-51-0, 19438-60-9, 48122-14-1, 57110-29-9	247-094-1, 243-072-0, 256-356-4, 260-566-1	Equivalent level of concern having probable seri- ous effects to hu- man health (Article 57 f)	Epoxy hardener	

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
89	Cyclohexane-1,2-dicarboxylic anhydride [1], cis-cyclohexane-1,2-dicarboxylic anhydride [2], trans-cyclohexane-1,2-dicarboxylic anhydride [3] [The individual cis- [2] and trans- [3] isomer substances and all possible combinations of the cis- and trans-isomers [1] are covered by this entry]	85-42-7, 13149-00-3, 14166-21-3	201-604-9, 236-086-3, 238-009-9	Equivalent level of concern having probable serious effects to human health (Article 57 f)	Epoxy hardener	
90	Dibutyltin dichloride (DBTC)	683-18-1	211-670-0	Toxic for reproduction (Article 57 c)	Rubber additive, PVC Plasticizer	(4)
91	Lead bis(tetrafluoroborate)	13814-96-5	237-486-0	Toxic for reproduction (Article 57 c)	Plate electrolyte	(2)(3)(4)
92	Lead dinitrate	10099-74-8	233-245-9	Toxic for reproduction (Article 57 c)	Synthesis Raw material	(2)(3)(4)
93	Silicic acid, lead salt	11120-22-2	234-363-3	Toxic for reproduction (Article 57 c)	Glass Raw material	(2)(3)(4)
94	4-Aminoazobenzene	60-09-3	200-453-6	Carcinogenic (Article 57a)	Raw material, Intermediate	(1)(4)
95	Lead titanium zirconium oxide	12626-81-2	235-727-4	Toxic for reproduction (Article 57 c)	electronic ceramics Raw material	(2)(3)(4)
96	Lead monoxide (lead oxide)	1317-36-8	215-267-0	Toxic for reproduction (Article 57 c)	Glass Raw material, Stabilization agent Raw material	(2)(3)(4)
97	o-Toluidine	95-53-4	202-429-0	Carcinogenic (Article 57a)	Raw material, Intermediate	(1)(4)
98	3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2	421-150-7	Toxic for reproduction (Article 57 c)	-	

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
99	Silicic acid (H ₂ Si ₂ O ₅), barium salt (1:1), lead-doped [with lead (Pb) content above the applicable generic concentration limit for 'toxicity for reproduction' Repr. 1A (CLP) or category 1 (DSD); the substance is a member of the group entry of lead compounds, with index number 082-001-00-6 in Regulation (EC) No 1272/2008]	68784-75-8	272-271-5	Toxic for reproduction (Article 57 c)	Lamp fluorescing agent	(2)(3)(4)
100	Trilead bis(carbonate)dihydroxide	1319-46-6	215-290-6	Toxic for reproduction (Article 57 c)	Electronic ceramics Raw material	(2)(3)(4)
101	Furan	110-00-9	203-727-3	Carcinogenic (Article 57a)	-	
102	N,N-dimethylformamide	68-12-2	200-679-5	Toxic for reproduction (Article 57 c)	Synthesis, Solvent	
103	4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated [covering well-defined substances and UVCB substances, polymers and homologues]	-	-	Equivalent level of concern having probable serious effects to the environment (Article 57 f)	Surface-active agent	
104	4-Nonylphenol, branched and linear [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]	-	-	Equivalent level of concern having probable serious effects to the environment (Article 57 f)	Surface-active agent, Ink, Paint	(4)
105	4,4'-methylenedi-o-toluidine	838-88-0	212-658-8	Carcinogenic (Article 57a)	Raw material, Solvent, Intermediate	(1)(4)
106	Diethyl sulphate	64-67-5	200-589-6	Carcinogenic (Article 57a); Mutagenic (Article 57b)	Raw material, Solvent, Intermediate	

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
107	Dimethyl sulphate	77-78-1	201-058-1	Carcinogenic (Article 57a)	Raw material , Solvent, Intermediate	
108	Lead oxide sulfate	12036-76-9	234-853-7	Toxic for re-production (Article 57 c)	Battery electrode	(2)(3)(4)
109	Lead titanium trioxide	12060-00-3	235-038-9	Toxic for re-production (Article 57 c)	Electronic ceramics Raw material	(2)(3)(4)
110	Acetic acid, lead salt, basic	51404-69-4	257-175-3	Toxic for re-production (Article 57 c)	Synthesis Intermediate, Corrosion-resistant Pigment	(2)(3)(4)
111	[Phthalato(2-)]dioxotrilead	69011-06-9	273-688-5	Toxic for re-production (Article 57 c)	PVC Stabilization agent	(2)(3)(4)
112	Bis(pentabromophenyl) ether (decabromodiphenyl ether; DecaBDE)	1163-19-5	214-604-9	PBT (Article 57 d); vPvB (Article 57 e)	Flame retardant	(2)(3)
113	N-methylacetamide	79-16-3	201-182-6	Toxic for re-production (Article 57 c)	Solvent	
114	Dinoseb (6-sec-butyl-2,4-dinitrophenol)	88-85-7	201-861-7	Toxic for re-production (Article 57 c)	Polymer Raw material	
115	1,2-Diethoxyethane	629-14-1	211-076-1	Toxic for re-production (Article 57 c)	Ink,Paint Solvent	
116	Tetralead trioxide sulphate	12202-17-4	235-380-9	Toxic for re-production (Article 57 c)	Battery electrode, PVC Stabilization agent	(2)(3)(4)
117	N-pentyl-isopentylphthalate	776297-69-9	-	Toxic for re-production (Article 57 c)	Plasticizer	
118	Dioxobis(stearato)trilead	12578-12-0	235-702-8	Toxic for re-production (Article 57 c)	PVC Stabilization agent	(2)(3)(4)
119	Tetraethyllead	78-00-2	201-075-4	Toxic for re-production (Article 57 c)	Gasoline additive	(2)(3)(4)
120	Pentalead tetraoxide sulphate	12065-90-6	235-067-7	Toxic for re-production (Article 57 c)	Battery electrode, PVC Stabilization agent	(2)(3)(4)
121	Pentacosafuorotridecanoic acid	72629-94-8	276-745-2	vPvB (Article 57 e)	Surface-active agent	

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
122	Tricosafuorododecanoic acid	307-55-1	206-203-2	vPvB (Article 57 e)	Surface-active agent	
123	Heptacosafuorotetradecanoic acid	376-06-7	206-803-4	vPvB (Article 57 e)	Surface-active agent	
124	1-bromopropane (n-propyl bromide)	106-94-5	203-445-0	Toxic for reproduction (Article 57 c)	Washing solvent	
125	Methoxyacetic acid	625-45-6	210-894-6	Toxic for reproduction (Article 57 c)	Intermediate	
126	4-methyl-m-phenylenediamine (toluene-2,4-diamine)	95-80-7	202-453-1	Carcinogenic (Article 57a)	Raw material, Solvent	(1)(4)
127	Methyloxirane (Propylene oxide)	75-56-9	200-879-2	Carcinogenic (Article 57a); Mutagenic (Article 57b)	Raw material, Solvent	
128	Trilead dioxide phosphonate	12141-20-7	235-252-2	Toxic for reproduction (Article 57 c)	PVC Stabilization agent	(2)(3)(4)
129	o-aminoazotoluene	97-56-3	202-591-2	Carcinogenic (Article 57a)	Raw material, Intermediate	(1)(4)
130	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	84777-06-0	284-032-2	Toxic for reproduction (Article 57 c)	Plasticizer	
131	4,4'-oxydianiline and its salts	101-80-4	202-977-0	Carcinogenic (Article 57a); Mutagenic (Article 57b)	Raw material, Intermediate	(1)(4)
132	Orange lead (lead tetroxide)	1314-41-6	215-235-6	Toxic for reproduction (Article 57 c)	Paint Pigment	(2)(3)(4)
133	Biphenyl-4-ylamine	92-67-1	202-177-1	Carcinogenic (Article 57a)	Raw material, Intermediate	(1)(4)
134	Diisopentylphthalate	605-50-5	210-088-4	Toxic for reproduction (Article 57 c)	Plasticizer	
135	Fatty acids, C16-18, lead salts	91031-62-8	292-966-7	Toxic for reproduction (Article 57 c)	PVC Stabilization agent	(2)(3)(4)

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
136	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))	123-77-3	204-650-8	Equivalent level of concern having probable serious effects to human health (Article 57 f)	Bloating agent	
137	Sulfurous acid, lead salt, di-basic	62229-08-7	263-467-1	Toxic for reproduction (Article 57 c)	PVC Stabilization agent	(2)(3)(4)
138	Lead cyanamidate	20837-86-9	244-073-9	Toxic for reproduction (Article 57 c)	Paint Pigment	(2)(3)(4)
139	Cadmium	7440-43-9	231-152-8	Carcinogenic (Article 57a); Equivalent level of concern having probable serious effects to human health (Article 57 f)	Pigment Plate Battery	(2)(3)(4)
140	Ammonium pentadecafluorooctanoate (APFO)	3825-26-1	223-320-4	Toxic for reproduction (Article 57 c); PBT (Article 57 d)	Surface-active agent	
141	4-Nonylphenol, branched and linear, ethoxylated [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, ethoxylated covering UVCB- and well-defined substances, polymers and homologues, which include any of the individual isomers and/or combinations thereof]	-	-	Equivalent level of concern having probable serious effects to the environment (Article 57 f)		(4)
142	Pentadecafluorooctanoic acid (PFOA)	335-67-1	206-397-9	Toxic for reproduction (Article 57 c); PBT (Article 57 d)	Surface-active agent	

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
143	Dipentyl phthalate (DPP)	131-18-0	205-017-9	Toxic for reproduction (Article 57 c);	Plasticizer	
144	Cadmium oxide	1306-19-0	215-146-2	Carcinogenic (Article 57a); Equivalent level of concern having probable serious effects to human health (Article 57 f)	Pigment Plate	(2)(3)(4)
145	Cadmium sulphide	1306-23-6	215-147-8	Carcinogenic (Article 57a); Equivalent level of concern having probable serious effects to human health (Article 57 f)		(2)(3)(4)
146	Disodium 4-amino-3-[[4'-(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo]-5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate (C.I. Direct Black 38)	1937-37-7	217-710-3	Carcinogenic (Article 57a);		(1)(4)
147	Dihexyl phthalate	84-75-3	201-559-5	Toxic for reproduction (Article 57 c);		
148	Imidazolidine-2-thione; (2-imidazoline-2-thiol)	96-45-7	202-506-9	Toxic for reproduction (Article 57 c);		
149	Trixylyl phosphate	25155-23-1	246-677-8	Toxic for reproduction (Article 57 c);		
150	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	573-58-0	209-358-4	Carcinogenic (Article 57a);		(1)(4)
151	Lead di(acetate)	301-04-2	206-104-4	Toxic for reproduction (Article 57 c);		(2)(3)(4)

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
152	acid, dihexyl ester, branched and linear	68515-50-4	271-093-5	Toxic for re- production (Ar- ticle 57 c)		
153	Cadmium chloride	10108-64-2	233-296-7	Carcinogenic (Article 57a); Mutagenic (Ar- ticle 57b); Toxic for re- production (Ar- ticle 57c); Equivalent level of concern having proba- ble serious ef- fects to human health (Article 57 f)		(2)(3)(4)
154	Sodium perborate; perboric acid, sodium salt	15120-21-5;1 1138-47-9	239-172-9 ; 234-390-0	Toxic for re- production (Ar- ticle 57 c)		
155	Sodium peroxometaborate	7632-04-4	231-556-4	Toxic for re- production (Ar- ticle 57 c)		
156	2-(2H-benzotriazol-2-yl)-4,6-di-tert-pentylphenol (UV-328)	25973-55-1	247-384-8	PBT (Article 57 d); vPvB (Article 57 e)		
157	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	3846-71-7	223-346-6	PBT (Article 57 d); vPvB (Article 57 e)		(1)
158	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	15571-58-1	239-622-4	Toxic for re- production (Ar- ticle 57 c)		(4)

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
159	Cadmium fluoride	7790-79-6	232-222-0	Carcinogenic (Article 57 a); Mutagenic (Article 57 b); Toxic for reproduction (Article 57 c); Equivalent level of concern having probable serious effects to human health (Article 57 d)		(2)(3)(4)
160	Cadmium sulphate	10124-36-4; 31119-53-6	233-331-6	Carcinogenic (Article 57 a); Mutagenic (Article 57 b); Toxic for reproduction (Article 57 c); Equivalent level of concern having probable serious effects to human health (Article 57 d)		(2)(3)(4)
161	Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyloxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stanna-tetradecanoate (reaction mass of DOTE and MOTE)	-	-	Toxic for reproduction (Article 57 c)		
162	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ? 0.3% of dihexyl phthalate (EC No. 201-559-5)	68515-51-5,6 8648-93-1	271-094-0,27 2-013-1	Toxic for reproduction (Article 57 c)	Adhesives,Ppaints, Plasticizers,Lubricant	

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
163	5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2] [covering any of the individual stereoisomers of [1] and [2] or any combination thereof]	-	-	vPvB (Article 57e)	Aroma chemicals, Soap, Detergent	
164	Perfluorononan-1-oic-acid and its sodium and ammonium salts	375-95-1 21049-39-8 4149-60-4	206-801-3	Toxic for reproduction (Article 57 c) PBT (Article 57 d)	Production of fluorine polymer process aid / lubricant additive / Surface-active agent for fire extinguisher / cleaning aids / fiber odor control agent / crystal display of waterproofing agent	
165	Nitrobenzene	98-95-3	202-716-0	Toxic for reproduction (Article 57 c)	Synthetic intermediates of dyes and perfumes	
166	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	36437-37-3	253-037-1	vPvB (Article 57 e)	Coating, plastic, rubber and cosmetics of UV protection agents	
167	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	3864-99-1	223-383-8	vPvB (Article 57 e)	Coating, plastic, rubber and cosmetics of UV protection agents	
168	1,3-propanesultone	1120-71-4	214-317-9	Carcinogenic (Article 57 a)	Electrolyte of the lithium ion battery	
169	Benzo[def]chrysene (Benzo[a]pyrene)	50-32-8	200-028-5	Carcinogenic (Article 57a) Mutagenic (Article 57b) Toxic for reproduction (Article 57c)	Normally not manufactured intentionally but may occur as a constituent or impurity in other substances.	

170	4,4'-isopropylidenediphenol	80-05-7	201-245-8	Toxic for reproduction (Article 57c) Endocrine disrupting properties (Article 57(f) - human health)	Manufacture of polycarbonate, epoxy resins and chemicals; hardener in epoxy resins	
171	4-Heptylphenol, branched and linear substances with a linear and/or branched alkyl chain with a carbon number of 7 covalently bound predominantly in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof	-	-	Equivalent level of concern having probable serious effects to environment (Article 57 f)	Manufacture of polymers; formulation into lubricants	
172	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts show/hide	335-76-2	206-400-3	Toxic for reproduction (Article 57c) PBT (Article 57 d)	Lubricant, wetting agent, plasticiser and corrosion inhibitor Lubricant, wetting agent, plasticiser and corrosion inhibitor	
	Nonadecafluorodecanoic acid					
	Ammonium nonadecafluorodecanoate	3108-42-7	221-470-5			
	Decanoic acid, nonadecafluoro-, sodium salt	3830-45-3	-			
173.	p-(1,1-dimethylpropyl)phenol	80-46-6	201-280-9	Equivalent level of concern having probable serious effects to environment (Article 57 f)	Manufacture of chemicals and plastic products	
174	Perfluorohexane-1-sulphonic acid and its salts PFHxS	-	-	vPvB (Article 57e)		
175	Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP)	-	-	Endocrine disrupting properties (Article 57(f) - environment)		
176	Chrysene	218-01-9, 1719-03-5	205-923-4	Carcinogenic (Article 57a) PBT (Article 57d) vPvB (Article 57e)		
177	Cadmium nitrate	10022-68-1,	233-710-6	Carcinogenic		

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
		10325-94-7		(Article 57a) Mutagenic (Article 57b) Specific target organ toxicity after repeated exposure (Article 57(f) - human health)		
178	Cadmium hydroxide	21041-95-2	244-168-5	Carcinogenic (Article 57a) Mutagenic (Article 57b) Specific target organ toxicity after repeated exposure (Article 57(f) - human health)		
179	Cadmium carbonate	513-78-0	208-168-9	Carcinogenic (Article 57a) Mutagenic (Article 57b) Specific target organ toxicity after repeated exposure (Article 57(f) - human health)		
180	Benz[a]anthracene	56-55-3, 1718-53-2	200-280-6	Carcinogenic (Article 57a) PBT (Article 57d) vPvB (Article 57e)		
181	1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo[12.2.1.1.6,9.02,13.05,10]octadeca-7,15-diene (“Dechlorane Plus”™)	-	-	vPvB (Article 57e)		
182	Terphenyl, hydrogenated	61788-32-7	262-967-7	vPvB (Article 57e)		
183	Octamethylcyclotetrasiloxane	556-67-2	209-136-7	PBT (Article 57d) vPvB (Article		

No	REACH SVHC(limit material)			Suggestion reason	Mainly use,handling etc(Japan,EU)	Other re-strictions
	Material name	CAS No.	EC No.			
				57e)		
184	Lead	7439-92-1	231-100-4	Toxic for re- production (Ar- ticle 57c)		
185	Ethylenediamine	107-15-3	203-468-6	Respiratory sensitising properties (Ar- ticle 57(f) - human health)		
186	Dodecamethylcyclhexasiloxane	540-97-6	208-762-8	Toxic for re- production (Ar- ticle 57c)		
187	Disodium octaborate	12008-41-2	234-541-0	Toxic for re- production (Ar- ticle 57c)		
188	Dicyclohexyl phthalate	84-61-7	201-545-9	Toxic for re- production (Ar- ticle 57c) Endocrine dis- rupting proper- ties (Article 57(f) - human health)		
189	Decamethylcyclopentasiloxane	541-02-6	208-764-9	PBT (Article 57d) vPvB (Article 57e)		
190	Benzo[ghi]perylene	191-24-2	205-883-8	PBT (Article 57d) vPvB (Article 57e)		
191	Benzene-1,2,4-tricarboxylic acid 1,2 anhydride	552-30-7	209-008-0	Respiratory sensitising properties (Ar- ticle 57(f) - human health)		

The threshold in REACH SVHC specified in table 5-5 should be under 0.1% (1,000ppm) of the article mass.

Table 5-6 Supplementary explanations

Items	Comments
Permissible concentration per homogeneous material	It means that permissible concentration for banned substances per homogeneous material which constitutes products. The homogeneous material means a material which cannot be mechanically divided into sub materials any more. Film coated with painting, printing or plating is the homogeneous material. If the film is formed with some layers, each layer is the homogeneous material. If it would be “metal and its compounds”, concentration converted into metal would be used. (same as paragraph 6)
Intentional use	It means that adding banned substances for the purpose of improving product characteristics and/or its quality on purpose.
Control value	It means that concentration of banned substances which is considered not to exceed without intentional use or mixing/contamination, and to be monitored by Sanken Group and suppliers. Over control value would be a signal that announces the risk of over restriction value. In case of over control value, re-analysis, emergency measure, and corrective/preventive action should be taken for resolution of the over control value.
Restriction value	It equivalents to the legally regulated value and any excess ions will be unacceptable.
Exceptions of RoHS/ELV directives	Sanken Group accepts the exceptions of RoHS and ELV directives. However, the exception of deca-BDE (a kind of PBDE) in RoHS directive is unacceptable in consideration of customers' requirements etc as of July, 2007. RoHS and ELV exceptions which are scarcely related to Sanken products are not listed in the Table 5 – 1.
Restriction for purchasing of two raw materials (Recommended use of four raw materials)	Sanken group selects two raw materials of “recycled resin and coated wire (except for the magnet wire)” manufactured by customers who have SONY green partner approval. According to 4 raw materials such as “plastic, painting, ink, and magnet wire”, Sanken group selects the materials manufactured by whom SONY recommends raw material business partner as much as possible. It wouldn't be applied when SANKEN group does not sell SANKEN products to SONY group.
Purchases without this standard	Sanken Group applies RoHS/ELV to the products as much as possible even they do not have this standard. However, Sanken Group sometimes purchases products without this standard.
Efforts for reduction of hazardous chemical substances	Sanken Group and suppliers shall make constant efforts for reduction or disuse of hazardous chemical substances in accordance with technology innovation.
Compliance with laws and regulations	In addition to banned substances specified in this standard, there are a number of banned substances regulated in the chemical substance assessment and restriction law and the law for worker's safety and hygiene. Sanken Group and suppliers shall comply with all laws and regulations relating to chemical substances.

6 . Controlled substances contained in products

Sanken Group specifies the chemical substances of which Sanken group and suppliers must manage the content in target products in **Table 3-1** as “control substances contained in products (hereafter, **managed substances**)” in **Table 6-1**.

Banned substances in **Table 4-1** are a part of managed substances. Though the managed substances after No2 in **Tables 6-1** are the chemical substances to be reduced as possible, they are not banned substances. These managed substances are added the substances based on the customer request to the substances specified in the industry guideline JIG. Please refer JIG for the details.

Understanding the managed substances is essentially important. Furthermore, understanding the entire chemical substances constituting products is needed these days.

Table 6-1 Controlled substances

No	Categories	Managed substances
1	Banned substances described in Table 4-1	Refer to Table 4-1 for the substance names. (Not only the confirmation of non-content in the banned applications, but also the grasp of the content amount in the allowed applications.)
2	Metal and its compounds	Arsenic and its compounds
		Beryllium (Be) and its compounds (other than Beryllium oxide)
		Bismuth (Bi) and its compounds
		Selenium (Se) and its compounds
		Nickel (Ni) and its compounds (Only in the applications for articles that may come into direct and prolonged contact with human skin)
3	Halogenated organic compounds	Brominated flame retardants (other than PBBs or PBDEs)
		Chlorinated organic compounds (other than banned substances)
4	Chlorates	Perchlorate and its compounds
5	Antimony and antimony compounds	Antimony and antimony compounds
6	GADSL	D and substance of D/P
		D: Declarable (reportable substances)
		D/P: Declarable /Prohibited (Basically banned substances. But if you use them, report Sanken their use.)
Threshold: Understanding managed substances which content more than 1000ppm (more than 100pm only for cadmium) per homogeneous material. However, the content of managed substances which are used on purpose should be grasped even the threshold is less than the standard.		

7. Management system for chemical substances in products

Sanken Group and suppliers establish and operate the management system for chemical substances in products according to the conditions of the organizations. This management system should include action items shown in **Table 7-1**

and **Table 7-2**, and the action to guarantee the non-content of banned substances to be taken. **Table 7-1 General matters**

No	Action items	Briefs of action
1	Policy	Create a document including the basic policy of top management regarding “the management of chemical substances in products” (hereafter “substance management”), and inform it to the related parties.
2	Legal, customer’s and other requirements	Clarify legal, customer’s and other requirements regarding managed substances in products, and inform it to the related parties.
3	Own requirements	Clarify own requirements regarding managed substances in products, and inform it to the related parties.
4	Improvement plans	Create improvement plans, implement them, and manage their progress regarding managed substances in products.
5	Organizational systems and roles	Create organizational systems for managed substances in products and clarify roles and responsibilities.
6	Education and training	Plan and implement education and training programs regarding managed substances in products.
7	Documents and records	Create, maintain, and use documents that provide managed substances in products properly.
		Create and keep records of activities regarding managed substances in products properly.
8	Communication	Create and use a framework for the exchange and sharing of information regarding managed substances in products both internally and externally.
9	Internal audits	Implement internal audits about the system and operation regarding managed substances in products.
10	Management review	Implement management review by top management about the system and operation regarding managed substances in products, based on the results of the internal audits.

Table 7-2 Matters related to development through shipment of products

No	Action items	Briefs of action
1	Development of products	Design the products that satisfy own and customer's requirements, and verify compliance to these requirements.
2	Selection of material suppliers	Investigate substance management systems of material suppliers, and select suppliers based on the investigation results. Request suppliers for the improvements of the system as necessity.
3	Management of manufacturing subcontractors	Investigate substance management systems of manufacturing subcontractors, and select the subcontractors based on the investigation results. Request the manufacturing subcontractors for the improvements of the system as necessity. Select the manufacturing subcontractors for Sanken products from members of Sony Green partner certified companies.(Specific products)
4	Obtaining and confirmation of substance content information	Obtain substance content information of purchased parts and materials regularly, and confirm if it meets own and specific customer's requirements. As a component analysis, apply analysis methods, including preprocessing methods of samples, which customers and industry allow.
5	Confirmations at acceptance of materials	Confirm if the materials have done with the confirmation above, and accept these materials. When examination transcripts or the similar documents are attached to delivered materials, confirm if the examination results meet own and customer's requirements. As for materials with concerning the content of banned substances (hereafter, concerned materials), implement receiving inspections of concerned materials with proper frequency and method corresponding to the situation. (e.g. fluorescent X-ray analysis)
6	Process management	Confirm whether materials containing banned substances are used or not in manufacturing process. When using them, ensure to prevent incorrect use and contamination caused by them to target products. (e.g. Identification, isolation, cleaning, in-process inspections) If characteristic change and content density of substances occur because of chemical reactions, volatilizing, etc. in manufacturing processes, understand and control the influence on final products by these changes. Control manufacturing processes so that materials which should not be contained to the target products (e.g. transportation tools for products, machine oils, cleaning agent for equipments, etc.) would not be the cause of contamination for the products by banned substances.
7	Confirmations at shipment of products	Implement and operate a mechanism in which products are shipped only after the confirmations of certain operational controls have been done in manufacturing processes as to contained substances. As for products containing questionable materials, implement inspections at shipment of the products according to frequency and method corresponding to the situation. (e.g. fluorescent X-ray analysis)
8	Management of change	Establish and operate a mechanism for the management corresponding to each of the changes in designs, manufacturing processes, materials, and etc. If the change is deemed to potentially influence contained substances in products, obtain and confirm again the substance content information in clause 4 above.
9	Management of Non-conformity	Establish and operate a mechanism for the handling of non-conformity including that of substance management.
10	Traceability	Establish and operate a mechanism which manufacturing histories and used materials can be traced from shipped products.

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Revision	Registration No	Date of issue	Content
Ver. 9	ES7013-j (Japanese) ES7013-e (English) ES7013-ch (Chinese)		<ul style="list-style-type: none"> • Table 2-1 added GADSL (Global Automotive Declarable Substance List) to a term. • Table 4-1 added simazine and EPN to a list of prohibition materials. • Table 5-3 Other Banned Substances added CasNo. and ECNo. • Table 5-3 Other Banned Substances added Simazin.EPN.GADSL. • Table 5-5 REACH SVHC added Ec No. • 25 substances were added onto Table 5-5 REACH SVHC and error corrections were done. • Table 5-6 Supplementary explanations was changed. ◆Limitation on suppliers for the designated 4raw materials ⇒◆Limitation for the designated 2 raw materials (Recommended use of 4 raw materials). • Table 6-1 was changed. ◆56banned substances described in Table 4-1 ⇒◆58banned substances described in Table 4-1 • Table 6-1 added Antimony and antimony compounds to a management material.
Ver.10	ES7013-j (Japanese) ES7013-e (English) ES7013-ch (Chinese)	2012.09.15	<ul style="list-style-type: none"> • ED / 87/2012, and (13 substances) were added to "Table 5-5 REACH SVHC."
Ver.11	ES7013-j (Japanese) ES7013-e (English) ES7013-ch (Chinese)	2013.01.15	<ul style="list-style-type: none"> • ED / 169/2012 (54 substances) were added to " Table 5-5 REACH SVHC." • Correction of erroneous description.
Ver.12	ES7013-j (Japanese) ES7013-e (English) ES7013-ch (Chinese)	2013.09.09	<ul style="list-style-type: none"> • Added a "Endosulfan" to "Table 4-1 List of banned substances" and Table 5-3 Other Banned Substances". • ED/69/2013 (6 substances) were added to " Table 5-5 REACH SVHC."
Ver.13	ES7013-j (Japanese) ES7013-e (English) ES7013-ch (Chinese)	2014.01.15	<ul style="list-style-type: none"> • Added a chemical substance to "Table 5-3 Other Banned Substances". CAS No. to DINP, DIDP and Tris (2-chloroisopropyl) phosphate (TCPP), Tris (1,3-dichloro-2-propyl) phosphate (TDCPP). • ED/121/2013(7 substances) were added to " Table 5-5 REACH SVHC."
Ver.14	ES7013-j (Japanese) ES7013-e (English) ES7013-ch (Chinese)	2014.07.01	<ul style="list-style-type: none"> • Limitations on the exceptional use of alloy in the "Table 5-1 RoHS 6 substances" [(Pb)]. • ED/49/2014(4 substances) has been added to " Table 5-5 REACH SVHC."

Ver.15	ES7013-j (Japanese) ES7013-e (English) ES7013-ch (Chinese)	2014.12.17	<ul style="list-style-type: none"> ED/108/2014(6 substances) has been added to " Table 5-5 REACH SVHC." Correction of erroneous description.
Ver.16	ES7013-j (Japanese) ES7013-e (English) ES7013-ch (Chinese)	2015.8.4	<ul style="list-style-type: none"> Added a chemical substance to "Table 4-1 List of banned substances" Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene(BNST) Polycyclic Aromatic Hydrocarbon(PAH) Added a chemical substance to "Table 5-3 Other Banned Substances" Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene(BNST) Polycyclic Aromatic Hydrocarbon(PAH) ED/39/2015(2 substances) has been added to " Table 5-5 REACH SVHC." No. change of "Table 6-1 Controlled substances" Change documents of "Table 6-1 Controlled substances" "58Banned substances described in Table 4-1"⇒"Banned substances described in Table 4-1" Change documents of "Table 7-2 Matters related to development through shipment of products" "Select the manufacturing subcontractors for Sanken products from members of Sony Green Partner certified companies."⇒"Select the manufacturing subcontractors for Sanken products from members of Sony Green Partner certified companies.(Specific products)" <p>[Publication Records]のReorganization</p>
Ver.17	ES7013-j (Japanese) ES7013-e (English) ES7013-ch (Chinese)	2016.1.18	<ul style="list-style-type: none"> Added a chemical substance to "Table 5-1 RoHS 6 substances" and "Table 5-2 RoHS 6 substances (Summary version of Table 5-1)" Additional substances, phthalates four substances (DEHP or DOP / BBP / DBP / DIBP) ED/79/2015(5 substances) has been added to " Table 5-5 REACH SVHC." Change the Applications of (DEHP or DOP / BBP / DBP / DIBP) [Table 5-3 Other Banned Substances]
Ver.18	ES7013-j (Japanese) ES7013-e (English) ES7013-ch (Chinese)	2016.7.1	<p>Table 5-1 RoHS substances:Delete of exemption applications (strikethrough): There is a possibility of deletion, change to the red character.</p> <p>Table 4-1 List of banned substances: Polychlorinated naphthalenes (PCNs) (more than 3 chlorine atoms)⇒more than 1 chlorine atoms; The handling of PVC was a " voluntary restriction ".</p> <p>Add Naphthalene,Refractories, fibers, aluminosilicate.</p> <p>Table 5-3 Other Banned Substances: Delete an "[Exemptions (DBT)]"; Polychlorinated naphthalenes (PCNs) (more than 3 chlorine atoms)⇒more than 1 chlorine atoms; Append the exemption to the item of PVC.</p> <p>Add Naphthalene,Refractories, fibers, aluminosilicate.</p> <p>ED/21/2016(1 substances) has been added to " Table 5-5 REACH SVHC."</p>
Ver.19	ES7013-j (Japanese) ES7013-e (English) ES7013-ch (Chinese)	2017.2.1	<p>Table 5-1 RoHS substances: Add note to field of phthalate 4 substances.</p> <p>Table 5-3 Other Banned Substances: Add "Points to remember"</p> <p>ED/1/2017(4 substances) has been added to " Table 5-5 REACH SVHC."</p>

Ver.20	ES7013-j (Japanese) ES7013-e (English) ES7013-ch (Chinese)	2017.8.28	Table 4-1 List of banned substances: Add item 64” GADSL 'P': Substance of Prohibited category” ED/30/2017(1 substances) has been added to " Table 5-5 REACH SVHC." and added "Reason for suggestion" of No3,9,15,25,170
Ver.21	ES7013-j (Japanese) ES7013-e (English) ES7013-ch (Chinese)	2018.9.18	Table 5-1 RoHS substances [Exemption (Pb)] Unnecessary document deletion [Exemption (Hg)] Deletion [Exemption (Pb)] Added:6(a)-(c),7(a),7(c)- I , - II ,34 Phthalic acid 4 substance Note Delete Table 5-5 REACH SVHC Added SVHC ED 01/2018, ED 61/2018