[DS] Standards for Control of Substances used in Products

DS-ERU-026

Revision	Date
1.0	2024-05-22
1.1	2024-09-27
2.0	2024-12-13
3.0	2025-11-11

Samsung Electronics DS division

SAMSUNG

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1. Purpose

The Purpose of the [DS] Standards for Control of Substances used in products (Registration No.: DS-ERU-026, and hereinafter referred to as the "Standard") is to ensure that semiconductor products and parts sold by the DS Division of Samsung Electronics (hereinafter referred to as the "Company") do not contain harmful substances that negatively affect human health and the environment and to develop products and parts that comply with environmental regulations.

2. Scope

In principle, the Standard applies to all products and parts developed for sale in the DS Division, regardless of where they are sold. (For CSS team, see the CSS' standard)

2.1. Applied Places

Kiheung, Hwaseong, Pyeongtaek, Cheonan, Onyang, Suwon (SAIT) sites and overseas sites (SCS, SESS, SAS)

2.2. Applied Targets

employees, executives, commodities & partner companies

2.3. Exclusions

The Standard does not apply to substances used during the process that do not remain in the final product (gases/chemicals which are removed through the process, lubricants, coolants, etc.).

3. Definition of Terms

3.1. Product

It refers to all finished products developed by the Company for sale purposes, including outsource-finished products and purchased products (e.g., module, SSD, Card, UFD products, PKG component, etc.).

3.2. Part

Part means all components that comprise the Company's products, including all raw materials and packing materials that remain in the products (e.g., PCB, solder paste, resistor, etc.). For FAB raw materials, wafer, chip in wafer, target, and plating are included in the control subject of this regulation, and other FAB raw materials are classified as process materials that are not retained in the product.

3.3. Substances Requiring Environmental Management

Substances which are restricted and controlled by SEC, due to their negative effects on the environment and the health. They are distinguished from the internally regulated substances, which refer to substances with health effects among all chemicals brought into the workplace.

3.4. Classification of Substances Requiring Environmental Management

3.4.1. Restricted Substances

Substances whose use within products is limited by national laws or conventions and for which the Company voluntarily reduces, considering their impact on the environment and human health. (Restricted substances under RoHS are classified according to the substances regulated by the EU RoHS Directive.)

3.4.2. Substances with Potential Risk

Substances that require ongoing monitoring due to anticipated future regulations or ongoing client requests for restricted use.

3.5. Exemptions

The exemptions for restricted substances will primarily adhere to the determined matters by the EU RoHS Directive and other environmental regulations that recognize exemptions. If the use is inevitable for maintaining the quality and performance of the Company's products, such instances are classified as exemptions, and their implementation is deferred.

3.6. Certification of Hazardous Substances in Products/Parts

It is the process of confirming through actual measurement or related documents that the hazardous substances in products and parts comply with the management standards of the standard, thereby recognizing that the requirements of environmental regulations are satisfied. If the Company's management standards are not met, approval for the product or part cannot proceed.

3.7. Product/Part Approval

It is the process of evaluating the quality and reliability of products and parts by the Company's standardized review criteria and formally recognizing the evaluation results; the approval unit is operated as "Product or part code + Maker abbreviation + Maker part No."

3.8. Homogenous Materials

It refers to the smallest component unit of a part made of a single material and a material of such uniform composition that cannot be separated into different materials by physical methods such as cutting, grinding, and polishing.

3.9. Article

A product (an object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition. Source: Article 3(3) of EU REACH) which is given a specific shape, surface or design that determines its function during production process.

3.10. Threshold Limit

It refers to the maximum permissible concentration for a restricted substance in the analysis of a regulated substance, considering analytical errors and impurities; the threshold limit represents the result of a chemical analysis. In the case where the result exceeds the threshold limit, the product is prohibited from being supplied to the Company as it is considered an intentional use of a regulated substance. In addition, prohibited substances must not be used intentionally or unintentionally (when expressing threshold limits. In this Standard, 'total' means that the sum of the listed items must comply with the threshold limit, and 'each' means that each substance must comply with the threshold limit).

3.11. Chemical Analysis

It refers to an analysis of inorganic substances by ICP, IC, UV/VIS, and organic substances by GC/MS equipment with high precision and accuracy, unlike the screening analysis (XRF analysis, etc.), which analyzes the approximate concentration.

3.11.1. Organic

Collectively referring to carbon compounds such as plastics, rubber, ink, etc.

3.11.2. Inorganic

Collectively referring to compounds other than organic matters, such as metals, ceramics, etc.

3.12. Chemical Analysis Data

An analytical test report issued by a laboratory accredited under ISO 17025 in accordance with the international standard testing method.

3.13. Material Composition Data

Data or document on the chemical composition, CAS No. (EC No.), and content (e.g., Material Safety Data Sheet (MSDS), Mill Sheet, Material Declaration, etc.)

* Since a full patterned wafer meets the definition of a finished product under the OSHA Hazard Communication standard (29 CFR 1910.1200), a declaration (e.g., MSDS no issuance statement) can be used instead.

3.14. Outsourced Finished Products

Finished products, which are produced at external manufacturing facilities, including ODM, OEM, and foundry.

3.14.1. ODM (Original Development & Manufacturing)

A method of selling finished products developed and produced by a partner company to the market by attaching the Company's trademark (purchased goods) or changing only the appearance specifications (face change); in general, the ODM is responsible for development, part approval, import inspection, and shipment inspection.

3.14.2. OEM (Original Equipment Manufacturing)

A method in which the finished product is manufactured by a partner company according to the technology and specifications provided by the Company and sold to the market with the Company's trademark; in general, the OEM is responsible for import inspection and shipment inspection.

3.14.3. Toll Manufacturing

A processing or assembly of materials from the Company into products required by the Company by a supplier, which is the finished product outsourcing company.

3.15. Purchased Goods

It refers to products developed by ODM and OEM companies or products developed by the Company, which are then produced through ODM and OEM companies and sold with the Company’s brand attached.

3.16. VOC (Volatile Organic Compounds)

Petrochemicals, organic solvents, or other substances with high vapor pressure (>10.3 kPa) that may have a harmful effect on workers and the workplace.

3.17. EU SCIP

SCIP (substances of concern in articles as such or in complex objects (products)) is a database for information on the REACH SVHC candidate substances in articles or complex products established under the EU Waste Framework Directive (2018/851).

3.18. Eco-partner

It refers to partner companies that use substances that meet the Company's management standards for products, parts, raw materials, etc., and have an organization and management system in place to appropriately manage such substances, so that they can do business with the Company.

4. Operating Procedures

4.1. Operation Standard for Substances Requiring Environmental Management

4.1.1. The Company operates the management of substances requiring environmental management by classifying them into restricted substances and substances with potential risks and prohibiting the use of such substances from the time indicated in the 'enforcement date'. However, in the case when there is no alternative method, the management method should be postponed until the alternative method is developed and applied and then implemented.

4.1.2. The management standards and methods of the Standard shall be updated regularly, and any changes shall be notified to relevant departments and partner companies before being implemented.

4.1.3. Provide the maximum permissible concentration that can be measured due to analytical error or impurities in the raw materials, etc., to clarify the management standards for proof of non-use.

4.2. Standards for Environmental Substances in Products

This standard applies to the unit of homogeneous materials in parts of being supplied by suppliers.
- Homogeneous Material: Material which cannot be mechanically dissembled further into single materials or articles.

Refer to "[Table 4.2.1.] _2 Examples of Restricted Substances" for related criteria and list of substances in detail.

4.2.1. Restricted Substances

[Table 4.2.1.] _1 Thresholds of Restricted Substances

Substance name *1)		Scope	Threshold Limit	Effective Date	References
Cadmium & its compounds (Cd)		All parts	80 mg/kg	January 2005	EU/Korea/China RoHS; OSPAR Priority Chemicals; Japan J-MOSS; US/CA SB-20/50; California Proposition 65; the Electrical Appliances and Consumer Products Safety Control Act of Korea
Lead & its compounds (Pb)		All parts	800 mg/kg	January 2005	EU/Korea/China RoHS; California Proposition 65; OSPAR Priority Chemicals; Japan J-MOSS; US/CA Waste recycling; US CPSIA; EU REACH The Electrical Appliances and Consumer Products Safety Control Act of Korea
Mercury & its compounds (Hg)		All parts	800 mg/kg	January 2005	EU/Korea/China RoHS; OSPAR Priority Chemicals; Japan J-MOSS; US/CA Waste recycling; California Proposition 65
Hexavalent chromium & its compounds (Cr6+)		All parts	800 mg/kg *2)	January 2005	EU/Korea/China RoHS; OSPAR Priority Chemicals; Japan J-MOSS; US/CA Waste recycling, California Proposition 65
PBBs, PBDEs		All parts (Organic)	Prohibited	February 2005	EU RoHS; Japan J-MOSS; POPs OSPAR Priority Chemicals; China RoHS; Korea RoHS; California Proposition 65
Phthalates	**BBP, DBP, DEHP, DIBP**	All parts (Organic)	Prohibited	July 2018	EU RoHS/REACH; California Proposition 65
	DINP, DIDP, DnOP, DnHP, DMEP, DIPP, nPIPP, DnPP, DCHP	All parts (Organic)	Prohibited	July 2019	Voluntary reduction
	Diisooctyl phthalate (DIOP)	All parts (Organic)	1,000 mg/kg	May 2024	France waste-generating products leg.
PCBs, PCTs, PCNs		All parts	Prohibited	May 2004	POPs; EU REACH; Japan Chemical Law
Asbestos & its compounds		All parts	Prohibited	May 2004	EU REACH
Short-chain chlorinated paraffins (SCCPs)		All parts	Prohibited	April 2011	EU REACH, POPs
Medium-chain chlorinated paraffins (MCCPs)		All parts	1,000 mg/kg	July 2023	Voluntary reduction

Substance name *1)		Scope	Threshold Limit	Effective Date	References
Organotin compounds	**TBT, TPT, DBT**	All parts	Prohibited	January 2012	EU REACH; Voluntary reduction
	DOT				Voluntary reduction
PFOS & its salts *3)		All parts (Organic)	Prohibited	July 2023	POPs; Voluntary reduction
PFHxS & its salts		All parts (Organic)	Prohibited	October 2022	Swiss ORRChem; POPs
PFOA & its salts		All parts (Organic)	Prohibited	July 2023	POPs
LC PFCA & its salts (C9~C14)		All parts (Organic)	Prohibited	October 2022	EU REACH, Swiss ORRChem
TCEP, TDCPP		All parts (Organic)	1,000 mg/kg each	January 2019	USA D.C. Flame Retardant
PIP (3:1)		All parts (Organic)	Prohibited	July 2021	US TSCA PBT
TBBP-A		All parts (Organic)	900 mg/kg	January 2008	Voluntary reduction
HBCDD		All parts (Organic)	Prohibited	October 2015	Norway Product Regulation EU REACH
Beryllium (Be) & its compounds		All parts	1,000 mg/kg	January 2013	Voluntary reduction
Cobalt dichloride		All parts	Prohibited (Co: 1,000 mg/kg)	June 2011	Voluntary reduction
VOCs	**Benzene**	All parts	Prohibited	January 2019	Voluntary reduction
POPs	**HCBD, HCB, HCDD, PCDF, Penta-chlorobenzene, methoxychlor**	All parts	Prohibited	April 2004	POPs
	2,4,6-TTBP, PCTP, DecaBDE	All parts	Prohibited	December 2021	US TSCA PBT
	UV-328, Dechlorane Plus	All parts	Prohibited	November 2023	POPs
DMF (Dimethylfumarate)		All parts	0.1 mg/kg	May 2009	EU 2009/251/EC, EU REACH
PCP (pentachlorophenol) & its compounds		All parts	Prohibited	May 2024	EU REACH; POPs
Ozone-depleting substances (ODS)	**CFCs, HCFCs, HBFCs, HFCs, Halons, etc.**	All parts	Prohibited	August 2023	Montreal Protocol; EU ODS/F-gas. US Clean Air Act
Radioactive materials		All parts	Prohibited	December 2021	Voluntary reduction
DBDPE (Decabromo-diphenyl-ethane)		All parts	Prohibited	September 2023	EU REACH; Canada PCTSR
1,3-benzenediol (resorcinol)		All parts	1,000 mg/kg	May 2024	France Anti-Waste and Circular Economy law

Substance name *1)		Scope	Threshold Limit	Effective Date	References
PAHs		All parts	1,000 mg/kg each	May 2024	IEC 62474
Formaldehydes		All parts	0.08 mg/m3	May 2026	EU REACH
Mineral Oil	**MOAH (1~7 aromatic rings) MOSH (C16~C35)**	Printing ink in papers *4)	Prohibited	May 2024	France waste-generating products leg.

*1) For client-specified substances, exemptions can be made for the products for the corresponding client.

2) If test result of the metal coating by IEC 62321-7-1 is negative or less than 0.1 ug/cm2, it is acceptable.

*3) PFOS chemical formula: C8F17SO2X (X = OH, Metal salt (O-M+), halide, amide, and other related compounds including polymers)

* Only paper from packaging materials and printed material (manuals, warranties, etc.) for normal consumers.

[Table 4.2.1.]_2 Examples of Restricted Substances

Substance Name	Chemical Substance Examples	CAS No
10 RoHS Substances	Refer to 4.2.2. List of RoHS Substances	
Non-RoHS Phthalates	Bis(2-methoxyethyl) phthalate; Di (2-methoxyethyl phthate (DMEP)	117-82-8
	Di-“isodecyl” phthalate (DIDP)	26761-40-0
	Di-“isononyl” phthalate (DINP)	28553-12-0
	Dicyclohexyl phthalate (DCHP)	84-61-7
	Dihexyl phthalate (DnHP); Di-n-hexyl phthalate	84-75-3
	Diisopentyl phthalate (DIPP)	605-50-5
	Di-n-octyl phthalate (DnOP)	117-84-0
	Dipentyl phthalate (DPP or DnPP)	131-18-0
	N-pentyl-isopentylphthalate (nPIPP)	776297-69-9
	Diisooctyl phthalate (DIOP)	27554-26-3
PCBs, PCTs, PCNs	Polychlorinated bipheyls (PCB)	1336-36-3
	Polychlorinated terpheyls (PCT)	61788-33-8
	Polychlorinated naphthalenes (PCN)	70776-03-3
	Trichloronaphthalenes	1321-65-9
	Tetrachloronaphthalenes	1335-88-2
	Pentachloronaphthalenes	1321-64-8
	Octachloronaphthalenes	2234-13-1
	Monomethyl-tetrachloro-diphenyl methane (Ugilec 141)	76253-60-6
	Monomethyl-dibromo-diphenyl methane (DBBT)	99688-47-8
	Monomethyl-dichlorodiphenyl methane, Trade name: Ugilec121	81161-70-8
	2,4,4'-trichlorobiphenyl	7012-37-5
	2,2',5,5'-Tetrachlorobiphenyl (PCB 52)	35693-99-3
	2,4,5,2’,5’-pentachlorobiphenyl (PCB 101)	37680-73-3
	2,4,5,3',4'-Pentachlorobiphenyl (PCB 118)	37508-00-6
	2,2',3',4,4',5-Hexachlorobiphenyl (PCB 138)	35065-28-2
	2,2',4,4',5,5'-Hexachloro-1,1'-biphenyl (PCB 153)	35065-27-1
	2,3,4,5,2',4',5'-Heptachlorobiphenyl (PCB 180)	35065-29-3
	Other PCBs, PCTs, PCNs and its compounds	-
Asbestos Fibres	Actinolite	77536-66-4
	Amosite (Grunerite)	12172-73-5
	Anthophyllite	77536-67-5
	Asbestos	1332-21-4
	Chrysotile	12001-29-5
	Crocidolite	12001-28-4
	Tremolite	77536-68-6

	Other Asbestos and its compounds	-
Short-chain Chlorinated Paraffins (SCCPs)	ALKANES, C10-12, CHLORO	108171-26-2
	Alkanes, C10-13, CHLORO	85535-84-8
	ALKANES, C10-14, CHLORO	85681-73-8
	ALKANES, C10-21, CHLORO	84082-38-2
	ALKANES, C10-26, CHLORO	97659-46-6
	ALKANES, C10-32, CHLORO	84776-06-7
	ALKANES, C12-13, CHLORO	71011-12-6
	ALKANES, C12-14, CHLORO	85536-22-7
	ALKANES, C6-18, CHLORO	68920-70-7
	ALKANES, CHLORO	61788-76-9
	Other Alkane 10-13 Carbon chain and its compounds	-
Medium-chain Chlorinated Paraffins (MCCPs)	Medium-chain chlorinated paraffins, C14-C17	85535-85-9
Organotin Compounds		
TBT & TPT Compounds	Tributyltin (TBT)	56573-85-4
	Triphenyltin (TPT)	668-34-8
	Bis(tributyltin)oxide (TBTO)	56-35-9
	Coplymer of alkyl(c=8) acrylate,methyl methacrylate and tributyltin methacrylate	67772-01-4
	Methyl Methacrylate and tributyl tin methacrylate	26354-18-7
	Tributyl 2,3-dibromosuccinate	31732-71-5
	Tributyltin acetate	56-36-0
	Tributyltin bromide	1461-23-0
	Tributyltin chloride	1461-22-9
	Triisobutyltin chloride	7342-38-3
	Tributyltin fluoride	1983-10-4
	Tributyltin fumarate	6454-35-9
	Tributyltin laurate	3090-36-6
	Tributyltin naphthenate	85409-17-2
	Tributyltin phthalate	4782-29-0
	Tributyltin rosin salts	26239-64-5
	Tributyltin sulfamate	6517-25-5
	Tributyltin cyclopentane carbonate=mixture	5409-17-2
	Tributyltinmethacrylate	2155-70-6
	Triphenyltin acetate (fentin acetate)	900-95-8
	Triphenyltin chloride	639-58-7
	Triphenyltin chloro acetate	7094-94-2
	Triphenyltin fluoride (fentin fluoride)	379-52-2
	Triphenyltin hydroxide	76-87-9

	Triphenyltin N, N" -dimethyldithiocarbamate	1803-12-9
	Triphenyltin fatty acid ((9-11) salt)	18380-71-7
	Triphenyltin fatty acid ((9-11) salt)	18380-72-8
	Triphenyltin fatty acid ((9-11) salt)	47672-31-1
	Triphenyltin fatty acid ((9-11) salt)	94850-90-5
	Tributyltin maleate	14275-57-1
	Other Organictin and its compounds	-
DBT Compounds	Dibutyl tin (DBT)	1002-53-5
	Dibutyltin dimaleate	10192-92-4
	Dibutyltin diacetate	1067-33-0
	Dibutyltin dilauryl mercaptide	1185-81-5
	Dibutyltin dioleate	13323-62-1
	Dibutyltin dipalmitate	13323-63-2
	Dibutyltin disalicylate	14214-24-5
	Di-n-butyltin bis (methyl maleate)	15546-11-9
	Dibutytin di (2-ethylhexyl maleate)	15546-12-0
	Di-n-butyltin di(monobutyl)maleate	15546-16-4
	Bis (acetato) dibutyltin	17523-06-7
	Dibutyltin dihexanoate	19704-60-0
	Dibutyltin S, S'-bis (isooctyl mercaptoacetate)	26636-01-1
	Dibutyltin bis(octylthioglycolate)	2781-09-1
	Dibutyltin dibutoxide	3349-36-8
	Dibutyltin dioctanoate	4731-77-5
	Dibutyltin dibenzoate	5847-54-1
	Dibutyltin distearate	5847-55-2
	Diisobutyltin oxide	61947-30-6
	Dibutyltin dichloride (DBTC)	683-18-1
	Dibutyltin bis (benzyl maleate)	7324-74-5
	Dibutyltin hydrogen borate	75113-37-0
	Dibutyltin dilaurate	77-58-7
	Dibutyltin maleate	78-04-6
	Dibutyltin mercaptopropionate	78-06-8
	Dibutyltin mercaptoacetate	78-20-6
	Dibutyltin oxide (DBTO)	818-08-6
	Dibutyltin linoleate	85391-79-3
	Dibutyltin isooctanoate	85702-74-5
	Dibutyltin linolenate	95873-60-2
	Dibutyltin diisostearate	59963-28-9
	Dibutyltin dibutyrate	28660-63-1
	Dibutyltin bis (isooctylmaleate)	25168-21-2
	Other Dibutyltin (DBT) compounds	-

DOT Compounds	Dioctyl tin (DOT)	15231-44-4
	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	15571-58-1
	Dioctyltin bis (isooctyl maleate) (DOT)	33568-99-9
	Dioctyltin dichloride (DOT)	3542-36-7
	Dioctyltin dilaurate (DOT)	3648-18-8
	Dioctyltin maleate (DOT)	16091-18-2
	Dioctyltin oxide (DOT)	870-08-6
	Dioctyltin (DOT) compounds	-
	Other tri-substituted organostannic compounds	-
PFAS		
PFOS, its salts & PFOSF	Perfluoroctane Sulfonates (PFOS) C8F17SO2X, where X = OR, NR or other derivative	-
	Perfluorooctane sulfonic acid and its salts	1763-23-1
	Perfluorooctane sulfonyl fluoride	307-35-7
	Heptadecafluorooctanesulphonic acid, compound with 2,2'-iminodiethanol (1:1)	70225-14-8
	Potassium heptadecafluorooctane-1-sulphonate	2795-39-3
	Lithium heptadecafluorooctanesulphonate	29457-72-5
	Tetraethylammonium heptadecafluorooctanesulphonate	56773-42-3
	Ammonium heptadecafluorooctanesulphonate	29081-56-9
	Heptadecafluorooctanesulphonamide	754-91-6
	PFOS Ion	45298-90-6
	PFOS Triphenylsulfonium Salt	144089-15-6
	PFOS Sodium Salt	4021-47-0
	1-Decanaminium, N-decyl-N,N-dimethyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonic acid (1:1)	251099-16-8
	N-ethylheptadecafluorooctanesulphonamide	4151-50-2
	Heptadecafluoro-N-methyloctanesulphonamide	31506-32-8
	N-ethylheptadecafluoro-N-(2-hydroxyethyl) octane sulphonamide	1691-99-2
PFOA, its salts and PFOA-related compounds	Pentadecafluorooctanoic acid (PFOA)	335-67-1
	Ammonium pentadecafluorooctanoate (APFO)	3825-26-1
	Perfluorooctanoic acid sodium salt	335-95-5
	Perfluorooctanoic acid potassium salt	2395-00-8
	Silver perfluorooctanoate	335-93-3
	Perfluorooctanoyl fluoride	335-66-0
	Methyl perfluorooctanoate	376-27-2
	Ethyl perfluorooctanoate	3108-24-5
	Other PFOAs	-
PFCA, its salts and PFCA related compounds (C9~C14)	Pentacosafluorotridecanoic acid	72629-94-8
	Tricosafluoroundecanoic acid	307-55-1
	Henicosafluoroundecanoic acid	2058-94-8
	Perfluorononan-1-oic-acid	375-95-1
	Heptacosafluorotetradecanoic acid	376-06-7
	Nonadecafluorodecanoic acid	335-76-2
	Perfluorooctyl iodide	507-63-1
	Tetrahydroperfluoro-1- decanol	678-39-7
	Perfluoro-1-dodecanol	865-86-1

	Perfluorodecyl iodide	2043-53-0
	1,1,2,2-Tetrahydroperfluorododecyl iodide	2043-54-1
	Perfluorodecylethyl acrylate	17741-60-5
	1,1,2,2-Tetrahydroperfluorodecyl acrylate	27905-45-9
	1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12-Pentacosafluoro-14-iodotetradecane	30046-31-2
	3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-Pentacosafluorotetradecan1-ol	39239-77-5
	3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,16-Nonacosafluorohexadecan-1-ol	60699-51-6
	1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8 ,8,9,9,10,10,11,11,12,12,13 ,13,14,14-Nonacosafluoro-16- iodohexadecane	65510-55-6
	Sodium;2-methylpropane-1- sulfonate	68187-47-3
	1,1,2,2- Tetrahydroperfluoroalkyl (C8-C14) alcohol	68391-08-2
	Thiols, C8-20, gammaomega-perfluoro, telomers with acrylamide	70969-47-0
	Silicic acid (H4SiO4), sodium salt (1:2), reaction products with chlorotrimethylsilane and 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluoro-1-decanol	125476-71-3
	Thiols, C4-20, gammaomega-perfluoro, telomers with acrylamide and acrylic acid, sodium salts	1078712-88-5
	1-Propanaminium, 3-aminoN-(carboxymethyl)-N,Ndimethyl-, N-(2-((gammaomega-perfluoro-C4-20-alkyl)thio)acetyl) derivs., inner salts	1078715-61-3
	Polyfluoroalkyl betaine (generic)	-
	Modified fluoroalkyl urethane (generic)	-
	Perfluorinated polyamine (generic)	-
PFHxS, its salts and PFHxS-related compounds	Perfluorohexane-1-sulphonic acid (PFHxS)	355-46-4
	Tridecafluorohexanesulphonic acid, compound with 2,2'-iminodiethanol (1:1)	70225-16-0
	Ammonium perfluorohexane-1-sulphonate	68259-08-5
	Potassium perfluorohexane-1-sulphonate	3871-99-6
	Methanaminium, N-[4-[[4-(dimethylamino) phenyl] [4-(ethylamino)-1-naphthalenyl] methylene]-2,5-cyclohexadien-1-ylidene]-N-methyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	1310480-27-3
	Methanaminium, N-[4-[[4-(dimethylamino) phenyl] [4-(phenylamino)-1-naphthalenyl] methylene]-2,5-cyclohexadien-1-ylidene]-N-methyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	1310480-28-4
	Gamma-Cyclodextrin, compd. with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic acid ion (1-) (1:1)	1329995-69-8
	Sulfonium, triphenyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	144116-10-9
	Quinolinium, 1-(carboxymethyl)-4-[2-[4-[4-(2,2-diphenylethenyl) phenyl]-1,2,3,3a,4,8b-hexahydrocyclopent[b]indol-7'-yl] ethenyl]-,	1462414-59-0

	1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	
	Iodonium, diphenyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	153443-35-7
	Methanaminium, N,N,N-trimethyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic acid (1:1)	189274-31-5
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, compd.with 2-methyl-2-propanamine (1:1)	202189-84-2
	Iodonium, bis[4-(1,1-dimethylethyl)phenyl]-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	213740-81-9
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, gallium salt (9CI)	341035-71-0
	Sulfonium, bis(4-methylphenyl)phenyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6 tridecafluoro-1-hexanesulfonate (1:1)	341548-85-4
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, scandium(3+) salt (3:1)	350836-93-0
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, neodymium(3+) salt (3:1)	41184-65-0
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, yttrium(3+) salt (3:1)	41242-12-0
	Sulfonium, (thiodi-4,1-phenylene)bis[diphenyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic acid (1:2)	421555-73-9
	Iodonium, bis[4-(1,1-dimethylpropyl)phenyl]-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic	421555-74-0
	Sulfonium, tris[4-(1,1-dimethylethyl)phenyl]-, 1,1,2, 2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	425670-70-8
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, lithium salt (1:1)	55120-77-9
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, zinc salt	70136-72-0
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, compd. with N,N-diethylethanamine (1:1)	72033-41-1
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, sodium salt	82382-12-5
	Iodonium, bis[(1,1-dimethylethyl)phenyl]-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic acid (1:1)(9CI)	866621-50-3
	Sulfonium, (4-methylphenyl)diphenyl-, 1,1,2,2,3,3, 4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	910606-39-2
	Sulfonium, [4-[(2-methyl-1-oxo-2-propen-1-yl)oxy]phenyl]diphenyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	911027-68-4

	Sulfonium, [4-[(2-methyl-1-oxo-2-propenyl)oxy]phenyl]diphenyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic acid (1:1), polymer with 2-ethyltricyclohexanesulfonic acid (1:1), polymer with 2-ethyltricyclohexanesulfonic acid (1:1), polymer with 2-ethyltricyclohexanesulfonic acid (1:1), polymer with 2-ethyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate,3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-methyl-2-propenoate and tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate	911027-69-5
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, cesium salt (1:1)	92011-17-1
	Dibenzo[k,n][1,4,7,10,13]tetraoxathiacyclopentadeciniu m, 19-[4-(1,1-dimethylethyl)phenyl]-6,7,9,10,12,13-hexahydro-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	928049-42-7
	Ethanaminium, N-[4-[[4-(diethylamino) phenyl] [4-(ethylamino)-1-naphthalenyl] methylene]-2,5-cyclohexadien-1-ylidene]-N-ethyl-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	1310480-24-0
	1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, compd. With pyrrolidine (1:1)	1187817-57-7
	N,N,N-triethylethanaminium tridecafluorohexane-1-sulfonate	108427-55-0
	Phosphonium, triphenyl(phenylmethyl)-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1)	1000597-52-3
	N,N,N-tributylbutan-1-aminium tridecafluorohexane-1-sulfonate	108427-54-9
TCEP, TDCPP	Tris(2-chloroethyl) phosphate (TCEP)	115-96-8
	Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)	13674-87-8
PIP (3:1)	Phenol, Isopropylated Phosphate (3:1)	68937-41-7
TBBP-A	3,5,3',5'-Tetrabromo-bisphenol A (TBBPA)	79-94-7
HBCDD	Hexabromocyclododecane	25637-99-4
	Alpha-hexabromocyclododecane	134237-50-6
	Beta-hexabromocyclododecane	134237-51-7
	Gamma-hexabromocyclododecane	134237-52-8
	1,2,5,6,9,10-hexabromocyclodecane	3194-55-6
	Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified:	-
Beryllium & its compounds	Beryllium metal	7440-41-7
	Beryllium oxide	1304-56-9
	Beryllium carbonate	66104-24-3
	Beryllium chloride	7787-47-5
	Beryllium fluoride	7787-49-7
	Beryllium hydroxide	13327-32-7
	Beryllium nitrate	13597-99-4
	Beryllium phosphate	13598-15-7

	Beryllium sulfate	13510-49-1
	Beryllium sulphate tetrahydrate	7787-56-6
	BERYLLIUM ALUMINUM SILICATE	1302-52-9
	BERYLLIUM COPPER	11133-98-5
	Beryllium-aluminium alloy	12770-50-2
	Other Beryllium and its compounds	-
Cobalt Dichloride	Cobalt dichloride	7646-79-9
* Cobalt (Co)	Cobalt	7440-48-4
VOCs	Benzene	71-43-2
POPs	Hexachlorobutadiene (HCBD)	87-68-3
	PCDD (Polychlorinated dibenzo-p-dioxins)	-
	PCDF (Polychlorinated dibenzofurans)	-
	HCB (Hexachlorobenzene)	118-74-1
	Pentachlorobenzene	608-93-5
	Bis(pentabromophenyl) ether; Decabromodiphenyl ether (DecaBDE)	1163-19-5
	2,4,6-Tris(tert-butyl) phenol (2,4,6-TTBP)	732-26-3
	Pentachlorothiophenol (PCTP); Pentachlorobenzenethiol	133-49-3
	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	25973-55-1
	Methoxychlor	72-43-5
Dechlorane plus and its isomers	(1S,2S,5R,6R,9S,10S,13R,14R)-1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo[12.2.1.1^{6,9}.0^{2,13}.0^{5,10}]octadeca-7,15-diene	135821-03-3
	(1S,2S,5S,6S,9R,10R,13R,14R)-1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo[12.2.1.1^{6,9}.0^{2,13}.0^{5,10}]octadeca-7,15-diene	135821-74-8
	1,6,7,8,9,14,15,16,17,17,18,18-dodecachloropentacyclo[12.2.1.16,9.02,13.05,10]octadeca-7,15-diene	13560-89-9
	rel-(1R,4S,4aS,6aR,7R,10S,10aS,12aR)-1,2,3,4,7,8,9,10,13,13,14,14-dodecachloro-1,4,4a,5,6,6a,7,10,10a,11,12,12a-dodecahydro-1,4:7,10-dimethanodibenzo[a,e]cyclooctene	-
	rel-(1R,4S,4aS,6aS,7S,10R,10aR,12aR)-1,2,3,4,7,8,9,10,13,13,14,14-dodecachloro-1,4,4a,5,6,6a,7,10,10a,11,12,12a-dodecahydro-1,4:7,10-dimethanodibenzo[a,e]cyclooctene	-
DMF	Dimethylfumarate	624-49-7
PCP & its compounds	Pentachlorophenol (PCP)	87-86-5
	Carbonic acid, 1,1-dimethylethyl pentachlorophenyl ester	18942-25-1
	Acetic acid, 2,2,2-trichloro-, 2,3,4,5,6-pentachlorophenyl ester	2879-60-9

	Acetic acid, 2,2-dichloro-, 2,3,4,5,6-pentachlorophenyl ester	19745-69-8
	Pentachloroanisole	1825-21-4
	Pentachlorophenate as monohydrate	27735-64-4
	Pentachloro[1,1'-biphenyl]	25429-29-2
	Sodium pentachlorophenolate	131-52-2
	Perchlorophenyl 5-oxo-L-prolinate	28990-85-4
	Pentachlorophenyl laurate	3772-94-9
	Potassium pentachlorophenolate	7778-73-6
	Pentachlorophenol esters	-
	Pentachlorophenol salts	-
	Pentachlorophenyl N-[[(4-methoxyphenyl) methoxy] carbonyl]-L-serinate	23234-97-1
	Perchlorophenyl S-benzyl-N-(benzyloxycarbonyl)-L-cysteinate	13673-54-6
	Perchlorophenyl N-(benzyloxycarbonyl)-L-isoleucinate	13673-53-5
	N2-benzyl pentachlorophenyl N2-carboxy-L-(2-aminoglutaramate)	13673-51-3
	Zinc bis(pentachlorophenolate)	2917-32-0
	Other Pentachlorophenol and its salts	-
Ozone Depleting Substances)		
CFCs	CFC-11 ($CFCl_3$)	75-69-4
	CFC-111 (C_2FCl_5)	354-56-3
	CFC-112 ($C_2F_2Cl_4$)	28605-74-5
	CFC-113 ($C_2F_3Cl_3$)	76-13-1
	CFC-114 ($C_2F_4Cl_2$)	1320-37-2
	CFC-115 (C_2F_5Cl)	76-15-3
	CFC-12 (CF_2Cl_2)	75-71-8
	CFC-13 (CF_3Cl)	75-72-9
	CFC-211 (C_3FCl_7)	135401-87-5
	CFC-212 ($C_3F_2Cl_6$)	3182-26-1
	CFC-213 ($C_3F_3Cl_5$)	2354-06-5
	CFC-214 ($C_3F_4Cl_4$)	2268-46-4
	CFC-215 ($C_3F_5Cl_3$)	1652-81-9
	CFC-216 ($C_3F_6Cl_2$)	661-97-2
	CFC-217 (C_3F_7Cl)	422-86-6
	Other fully halogenated CFCs	-
Halons	Halon-1202 (CBr_2F_2)	75-61-6
	Halon-1211 (CF_2BrCl)	353-59-3
	Halon-1301 (CF_3Br)	75-63-8
	Halon-2402 ($C_2F_4Br_2$)	124-73-2
Hydrochloro-fluorocarbons	HCFC-121 (C_2HFCl_4)	354-14-3
	HCFC-122 ($C_2HF_2Cl_3$)	354-21-2
	HCFC-123 ($C_2HF_3Cl_2$)	306-83-2
	HCFC-124 (C_2HF_4Cl)	2837-89-0
	HCFC-131 ($C_2H_2FCl_3$)	134237-34-6
	HCFC-132 ($C_2H_2F_2Cl_2$)	25915-78-0
	HCFC-133 ($C_2H_2F_3Cl$)	75-88-7
	HCFC-141 ($C_2H_3FCl_2$)	25167-88-8

	HCFC-141b (CH3CFCl2)	1717-00-6
	HCFC-142 (C2H3F2Cl)	25497-29-4
	HCFC-142b (CH3CF2Cl)	75-68-3
	HCFC-151 (C2H4FCl)	1615-75-4
	HCFC-21 (CHFCl2)	75-43-4
	HCFC-22 (CHF2Cl)	75-45-6
	HCFC-221 (C3HFCl6)	134237-35-7
	HCFC-222 (C3HF2Cl5)	134237-36-8
	HCFC-223 (C3HF3Cl4)	134237-37-9
	HCFC-224 (C3HF4Cl3)	134237-38-0
	HCFC-225 (C3HF5Cl2)	128903-21-9
	HCFC-225ca (CF3CF2CHCl2)	422-56-0
	HCFC-225cb (CF2ClCF2CHClF)	507-55-1
	HCFC-226 (C3HF6Cl)	134308-72-8
	HCFC-231 (C3H2FCl5)	134190-48-0
	HCFC-232 (C3H2F2Cl4)	134237-39-1
	HCFC-233 (C3H2F3Cl3)	134237-40-4
	HCFC-234 (C3H2F4Cl2)	127564-83-4
	HCFC-235 (C3H2F5Cl)	134237-41-5
	HCFC-241 (C3H3FCl4)	134190-49-1
	HCFC-242 (C3H3F2Cl3)	134237-42-6
	HCFC-243 (C3H3F3Cl2)	134237-43-7
	HCFC-244 (C3H3F4Cl)	134190-50-4
	HCFC-251 (C3H4FCl3)	134190-51-5
	HCFC-252 (C3H4F2Cl2)	134190-52-6
	HCFC-253 (C3H4F3Cl)	134237-44-8
	HCFC-261 (C3H5FCl2)	134237-45-9
	HCFC-262 (C3H5F2Cl)	134190-53-7
	HCFC-271 (C3H6FCl)	134190-54-8
	HCFC-31 (CH2FCl)	593-70-4
Hydrobromo-fluorocarbons	HBFC-121B4 (C2HFBr4)	306-80-9
	HBFC-122B3 (C2HF2Br3)	-
	HBFC-123B2 (C2HF3Br2)	354-04-1
	HBFC-124B1 (C2HF4Br)	124-72-1
	HBFC-131B3 (C2H2FBr3)	-
	HBFC-132B2 (C2H2F2Br2)	75-82-1
	HBFC-133B1 (C2H2F3Br)	421-06-7
	HBFC-141B2 (C2H3FBr2)	358-97-4
	HBFC-142B1 (C2H3F2Br)	-
	HBFC-151B1 (C2H4FBr)	762-49-2
	HBFC-21B2 (CHFBr2)	1868-53-7
	HBFC-221B6 (C3HFBr6)	-
	HBFC-222B5 (C3HF2Br5)	-
	HBFC-223B4 (C3HF3Br4)	-
	HBFC-224B3 (C3HF4Br3)	-
	HBFC-225B2 (C3HF5Br2)	431-78-7
	HBFC-226B1 (C3HF6Br)	-
	HBFC-22B1 (CHF2Br)	1511-62-2
	HBFC-231B5 (C3H2FBr5)	-
	HBFC-232B4 (C3H2F2Br4)	-
	HBFC-233B3 (C3H2F3Br3)	-
	HBFC-234B2 (C3H2F4Br2)	-
	HBFC-235B1 (C3H2F5Br)	460-88-8

	HBFC-241B4 (C3H3FBr4)	-
	HBFC-242B3 (C3H3F2Br3)	70192-80-2
	HBFC-243B2 (C3H3F3Br2)	431-21-0
	HBFC-244B1 (C3H3F4Br)	679-84-5
	HBFC-251B1 (C3H4FBr3)	75372-14-4
	HBFC-252B2 (C3H4F2Br2)	460-25-3
	HBFC-253B1 (C3H4F3Br)	421-46-5
	HBFC-261B2 (C3H5FBr2)	51584-26-0
	HBFC-262B1 (C3H5F2Br)	-
	HBFC-271B1 (C3H6FBr)	352-91-0
	HBFC-31B1 (CH2FBr)	373-52-4
Methyl bromide (CH3Br)	1-bromopropane	106-94-5
	Bromoethane	74-96-4
Others	Methyl chloride (CH3Cl)	74-87-3
	1,1,1-Trichloroethane or Methyl chloroform (C2H3Cl3)	71-55-6
	Trifluoromethyl iodide (CF3I)	2314-97-8
	Bromochloromethane (CH2BrCl)	74-97-5
	Carbon tetrachloride (CCl4)	56-23-5
Radioactive Materials	Uranium-238	7440-61-1
	Radon	10043-92-2
	Americium-241	14596-10-2
	Thorium-232	7440-29-1
	Cesium (Radioactive Isotopes only)	7440-46-2
	Cs-137	010045-97-3
	Strontium (Radioactive Isotopes only)	7440-24-6
	Sr-90	10098-97-2
	Other radioactive substances	-
DBDPE	Decabromodiphenyl ethane	84852-53-9
1, 3-benzenediol	Resorcinol	108-46-3
PAHs	Polycyclic aromatic hydrocarbons	-
	Benzo[def]chrysene (Benzo[a]pyrene)	50-32-8
	Chrysene	218-01-9
	Benz[a]anthracene	56-55-3
	Benzo[ghi]perylene	191-24-2
	Benzo[k]fluoranthene	207-08-9
	Fluoranthene	206-44-0
	Phenanthrene	85-01-8
	Pyrene	129-00-0
Mineral Oil	MOAH, Mineral Oil Aromatic Hydrocarbons (Aromatic rings 1~7)	-
	MOSH, Mineral Oil Saturated Hydrocarbons (C16~C35)	-
Formaldehyde emissions	-	50-00-0

4.2.2. RoHS Substances

The substances listed below in [Table 4.2.2.] _1 are restricted substances regulated by the EU RoHS Directive, and detailed analytical data must be submitted for the listed 10 restricted substances based on the 4.3.

[Table 4.2.2.] _1 10 RoHS restricted Substances

1) Cadmium & its compounds 2) Lead & its compounds 3) Mercury & its compounds 4) Hexavalent chromium and its compounds 5) PBBs 6) PBDEs 7) BBP 8) DBP 9) DEHP 10) DIBP

[Table 4.2.2.] _2 Examples of 10 RoHS restricted Substances

Substance Name	Chemical Substance Examples	CAS No
Cadmium & its compounds (Cd)	Cadmium	7440-43-9
	Cadmium alloys	-
	Cadmium oxide	1306-19-0
	Cadmium sulphide	1306-23-6
	Cadmium carbonate	513-78-0
	Cadmium chloride	10108-64-2
	Cadmium nitrate	10325-94-7
	Cadmium nitrate tetrahydrate	10022-68-1
	Cadmium sulphate	10124-36-4
	Cadmium sulphate	31119-53-6
	Cadmium stearate	2223-93-0
	Cadmium fluoride	7790-79-6
	Other cadmium compounds	-
Lead & its compounds (Pb)	Lead (II)metaborate	10214-39-8
	Silicic acid, lead salt	11120-22-2
	Lead antimonite	13510-89-9
	Lead hydrogen arsenate	7784-40-9
	Lead (II)arsenite	10031-13-7
	Lead sulfochromate yellow (C.I. Pigment Yellow 34) This substance is identified in the Colour Index by Colour Index Constitution Number, C.I. 77603.	1344-37-2
	Lead molybdate	10190-55-3
	Calcium plumbate	12013-69-3
	Tetramethyl lead	75-74-1
	Tetraethyllead	78-00-2
	Trilead bis(carbonate)dihydroxide	1319-46-6
	Lead selenide	12069-00-0
	Lead titanium trioxide	12060-00-3
	Lead sulfate; sulphuric acid, lead salt	15739-80-7

	Lead chromate	7758-97-6
	Lead(II) bis(methanesulfonate)	17570-76-2
	Lead dipicrate	6477-64-1
	Lead styphnate	15245-44-0
	Trilead diarsenate	3687-31-8
	Lead chromate molybdate sulphate red (C.I. Pigment Red 104) This substance is identified in the Colour Index by Colour Index Constitution Number, C.I. 77605.	12656-85-8
	Pyrochlore, antimony lead yellow This substance is identified in the Colour Index by Colour Index Constitution Number, C.I. 77588.	8012-00-8
	Lead titanium zirconium oxide	12626-81-2
	Silicic acid (H2Si2O5), 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
	Lead oxide sulfate	12036-76-9
	Acetic acid, lead salt, basic	51404-69-4
	[Phthalato(2-)]dioxotrilead	69011-06-9
	Dioxobis(stearato)trilead	12578-12-0
	Pentalead tetraoxide sulphate	12065-90-6
	Trilead dioxide phosphonate	12141-20-7
	Fatty acids, C16-18, lead salts	91031-62-8
	Sulfurous acid, lead salt, dibasic	62229-08-7
	Lead cyanamidate	20837-86-9
	Other Lead compounds	-
Mercury & its compounds (Hg)	Mercury	7439-97-6
	Mercury alloys;amalgam	-
	Mercury(I)oxide	15829-53-5
	Mercury(II)oxide	21908-53-2
	Mercury(I)chloride	10112-91-1
	Mercury(II)chloride	7487-94-7
	Mercury(II)nitrate	10045-94-0
	Mercury(I)sulfate	7783-35-9
	Mercury(II)fulminate	628-86-4
	Mercury(II)acetate	1600-27-7
	Methylmercury salts	e.g. 22967-92-6
	Ethylmercury salts	-

	Propylmercury salts	-
	Phenylmercury salts	-
	Methoxyethyl-mercury salts	-
	Dialkylmercury	-
	Diphenylmercury	587-85-9
	Mercuric sulfide	1344-48-5
	Mercuric chloride	33631-63-9
	Other mercury compounds	-
Hexavalent chromium and its compounds (Cr6+)	Chromium trioxide	1333-82-0
	Lithium chromate	14307-35-8
	Sodium chromate	7775-11-3
	Potassium chromate	7789-00-6
	Patassium chlorochromate	16037-50-6
	Ammonium chromate	7788-98-9
	Copper chromate	13548-42-0
	Magnesium chromate	13423-61-5
	Calcium chromate	13765-19-0
	Strontium chromate	7789-06-2
	Barium Chromate	10294-40-3
	Lead chromate (orange pigment)	1344-38-3
	Dichromium zinc tetraoxide	12018-19-8
	Zinc chromate	13530-65-9
	Zinc dichromate	14018-95-2
	Sodium dichromate	10588-01-9
	Sodium dichromate dihydrate	7789-12-0
	Ammonium dichromate	7789-09-5
	Calcium dichromate	14307-33-6
	Chromic acid	7738-94-5
	Dichromic acid	13530-68-2
	Copper chromite	12053-18-8
	Zinc dichromate	14018-95-2
	Potassium dichromate	7778-50-9
	Other chromium compound	-
Polybrominated Biphenyl (PBBs)		59536-65-1
Monobromodiphenyl	2-Bromobiphenyl	2052-07-5
	3-bromobiphenyl	2113-57-7
	Monobromobiphenyl (mixed isomers)	26264-10-8
	4-bromobiphenyl	92-66-0
Dibromobiphenyl	2,2'-dibromobiphenyl	13029-09-9
	3,3'-dibromobiphenyl	16400-51-4
	4,4'-dibromobiphenyl	92-86-4
Tribromobiphenyl	1,2,3-tribromo-4-phenylbenzene	51202-79-0
	1,2-dibromo-3-(4-bromophenyl) benzene	945669-02-3
	1,2-dibromo-4-(2-bromophenyl) benzene	859930-83-9
	1,3-dibromo-2-(2-bromophenyl) benzene	507241-82-9
	1,3-dibromo-5-(2-bromophenyl) benzene	855255-45-7
	1,3-dibromo-5-(3-bromophenyl) benzene	855255-44-6
	2,2',4-Tribromobiphenyl	144978-90-5
	2,2',5-Tribromobiphenyl	59080-34-1
	2,3',4-Tribromobiphenyl	144978-86-9

	3,4',5-Tribromobiphenyl	72416-87-6
Tetrabromobiphenyl	1,2,3,4-tetrabromo-5-phenylbenzene	115245-09-5
	1,2,3-tribromo-4-(4-bromophenyl) benzene	855255-52-6
	1,2,3-tribromo-5-(3,4-dibromophenyl) benzene	56307-79-0
	1,2,4-tribromo-5-(2-bromophenyl) benzene	958802-46-5
	1,2,4-tribromo-5-(4-bromophenyl) benzene	855255-51-5
	1,2-dibromo-3-(3,4-dibromophenyl) benzene	40088-45-7
	2,2',4,5'-Tetrabromobiphenyl	60044-24-8
	3,3',5,5'-Tetrabromobiphenyl	16400-50-3
Pentabromobiphenyl	1,2,4-tribromo-3-(3,4-dibromophenyl)benzene	144978-89-2
	2,2',4,5,5'-Pentabromobiphenyl	67888-96-4
Hexabromobiphenyl	1,2,3,4-tetrabromo-5-(2,3-dibromophenyl)benzene	245657-50-5
	1,2,3,4-tetrabromo-5-(2,5-dibromophenyl)benzene	120991-47-1
	1,2,3,5-tetrabromo-4-(3,4-dibromophenyl)benzene	144978-87-0
	1,2,3-tribromo-4-(2,4,6-tribromophenyl)benzene	955955-55-2
	1,2,4-tribromo-3-(2,3,6-tribromophenyl)benzene	955955-53-0
	1,2,4-tribromo-5-(2,3,5-tribromophenyl)benzene	144978-88-1
	1,2,5-tribromo-3-(2,4,6-tribromophenyl)benzene	955955-54-1
	2,2',4,4',6,6'-Hexabromobiphenyl	59261-08-4
	2,3,3',4,4',5'-Hexabromobiphenyl	84303-47-9
	2,4,5,2',4',5'-Hexabromobiphenyl	59080-40-9
	Hexabromobiphenyl(Firemaster FF-1)	67774-32-7
	Hexabromobiphenyl(Firemaster BP-6)	59536-65-1
	Hexabromo-1,1'-biphenyl	36355-01-8
Heptabromobiphenyl	1,2,3,4,5-pentabromo-6-(2,3-dibromophenyl)benzene	35194-78-6
	1,2,3,4,5-pentabromo-6-(2,4-dibromophenyl)benzene	942505-33-1
	1,2,3,4,5-pentabromo-6-(2,5-dibromophenyl)benzene	245657-57-2
	1,2,3,4,5-pentabromo-6-(3,5-dibromophenyl)benzene	955955-60-9
	1,2,3,5-tetrabromo-4-(2,3,4-tribromophenyl)benzene	942505-32-0
	1,2,3,5-tetrabromo-4-(2,3,5-tribromophenyl)benzene	475200-12-5
	1,2,3,5-tetrabromo-4-(2,4,5-tribromophenyl)benzene	942505-34-2
	1,2,3,5-tetrabromo-4-(3,4,5-tribromophenyl)benzene	942505-35-3
	1,2,4,5-tetrabromo-3-(2,3,4-tribromophenyl)benzene	955955-58-5
	1,2,4,5-tetrabromo-3-(3,4,5-tribromophenyl)benzene	955955-61-0
Octabromobiphenyl	1,2,3,4,5-pentabromo-6-(2,4,5-tribromophenyl) benzene	942505-36-4
	1,2,3,4,5-pentabromo-6-(3,4,5-tribromophenyl) benzene	915039-12-2
	Octabromobiphenyl	61288-13-9
	Octabromobiphenyl	67889-00-3
Nonabromobiphenyl	Nonabromo-1,1'-biphenyl	27753-52-2
Decabromobiphenyl	Decabromo-1,1'-biphenyl	13654-09-6
PBDEs (Polybrominated Diphenyl Ether)		
Monobromodiphenyl ether	1-Bromo-2-phenoxy-benzene	7025-06-1
	1-bromo-3-phenoxybenzene	6876-00-2
	4-bromophenyl phenyl ether	101-55-3
	Monobromodiphenyl ether (mixed isomers)	36563-47-0
Dibromodiphenyl ether	1,2-dibromo-3-phenoxybenzene	53563-56-7
	1-bromo-3-(3-bromophenoxy)benzene	6903-63-5
	Benzene, 1,1'-oxybis-, bromo derivs.	90193-67-2
	Benzene, 1,1'-oxybis[2-bromo-	51452-87-0
	Benzene, 1,3-dibromo-2-phenoxy-	51930-04-2
	Benzene, 1-bromo-3-(4-bromophenoxy)-	83694-71-7

	Bis(4-bromophenyl) ether	2050-47-7
Tribromodiphenyl ether	2,4-dibromo-1-(4-bromophenoxy)benzene	41318-75-6
	Benzene, 1,4-dibromo-2-(4-bromophenoxy)-	65075-08-3
	Diphenyl ether, tribromo derivative	49690-94-0
Tetrabromo-diphenyl ether	1,2-dibromo-4-(2,4-dibromophenoxy)benzene	189084-61-5
	1,2-dibromo-4-(2,6-dibromophenoxy)benzene	189084-62-6
	1,2-dibromo-4-(3,4-dibromophenoxy)benzene	93703-48-1
	1,2-dibromo-4-(3,5-dibromophenoxy)benzene	446254-48-4
	1,3,5-tribromo-2-(4-bromophenoxy)benzene	189084-63-7
	1,3-dibromo-2-(2,4-dibromophenoxy)benzene	189084-57-9
	1,3-Dibromo-5-(3,5-dibromophenoxy)benzene	103173-66-6
	2,2',3,4'-Tetrabromodiphenyl ether	446254-18-8
	2,2',3,4-Tetrabromodiphenyl ether	337513-68-5
	2,2',3,5'-Tetrabromodiphenyl ether	446254-20-2
	2,2',3,5-Tetrabromodiphenyl ether	446254-19-9
	2,2',3,6'-Tetrabromodiphenyl ether	446254-22-4
	2,2',4,5'-tetrabromodiphenyl ether	243982-82-3
	2,2',4,5-Tetrabromodiphenyl ether	337513-55-0
	2,2',4,6-Tetrabromodiphenyl ether	446254-23-5
	2,2',5,5'-Tetrabromodiphenyl ether	446254-24-6
	2,2',5,6'-Tetrabromodiphenyl ether	446254-25-7
	2,3,4,4'-Tetrabromodiphenyl ether	446254-31-5
	2,3,4,5-Tetrabromodiphenyl ether	446254-32-6
	2,3,4',5-Tetrabromodiphenyl ether	446254-34-8
	2,3',4,5'-Tetrabromodiphenyl ether	446254-38-2
	2,3',4,5-Tetrabromodiphenyl ether	446254-37-1
	2,3',4',5'-Tetrabromodiphenyl ether	446254-43-9
	2,3',4',5-Tetrabromodiphenyl ether	446254-39-3
	2,3,4,6-Tetrabromodiphenyl ether	446254-33-7
	2,3',4,6-Tetrabromodiphenyl ether	327185-09-1
	2,3',5,5'-Tetrabromodiphenyl ether	446254-40-6
	2,3',5',6-Tetrabromodiphenyl ether	446254-41-7
	2,4,4',5-Tetrabromodiphenyl ether	446254-42-8
	2,4-dibromo-1-(2,4-dibromophenoxy)benzene	5436-43-1
	3,3',4,5-Tetrabromodiphenyl ether	446254-45-1
	3,4,4',5-Tetrabromodiphenyl ether	446254-50-8
	Benzene, 1,1'-oxybis-, 1,1'-oxybis[tetrabromo-	56958-48-6
	Diphenyl ether, tetrabromo derivative	40088-47-9
	Commercial pentabromodiphenyl ether	60348-60-9
Pentabromo-diphenyl ether	1,2,3-tribromo-4-(2,4-dibromophenoxy)benzene	182346-21-0
	1,3,5-Tribromo-2-(2,4-dibromophenoxy)benzene	189084-64-8
	1,3,5-tribromo-2-(3,4-dibromophenoxy)benzene	189084-66-0
	2,2',3,3',5-Pentabromodiphenyl ether	446254-51-9
	2,2',3,4,5'-Pentabromodiphenyl ether	446254-54-2
	2,2',3,4,5-Pentabromodiphenyl ether	446254-53-1
	2,2',3,4',5'-Pentabromodiphenyl ether	446254-64-4
	2,2',3,4',5-Pentabromodiphenyl ether	446254-57-5
	2,2',3,4,6-Pentabromodiphenyl ether	446254-55-3
	2,2',3,4',6'-Pentabromodiphenyl ether	38463-82-0
	2,2',3,5,5'-Pentabromodiphenyl ether	446254-59-7
	2,2',3,5,6'-Pentabromodiphenyl ether	446254-61-1
	2,2',4,5,5'-Pentabromodiphenyl ether	446254-65-5
	2,2',4,5,6'-Pentabromodiphenyl ether	446254-66-6

	2,2',4,5',6-Pentabromodiphenyl ether	446254-67-7
	2,3,3',4,4'-Pentabromodiphenyl ether	373594-78-6
	2,3,3',4,5'-Pentabromodiphenyl ether	446254-71-3
	2,3,3',4,5-Pentabromodiphenyl ether	446254-69-9
	2,3,3',4,6-Pentabromodiphenyl ether	446254-72-4
	2,3,3',5,5'-Pentabromodiphenyl ether	446254-74-6
	2,3,4,4',5-Pentabromodiphenyl ether	446254-77-9
	2,3',4,4',5-Pentabromodiphenyl ether	446254-80-4
	2,3,4,4',6-Pentabromodiphenyl ether	446254-78-0
	2,3,4,5,6-Pentabromodiphenyl ether	189084-65-9
	Diphenyl ether, pentabromo derivative	32534-81-9
Hexabromo-diphenyl ether	1,2,3-tribromo-4-(2,4,5-tribromophenoxy)benzene	182677-30-1
	1,2,4-tribromo-5-(2,4,5-tribromophenoxy)benzene	68631-49-2
	1,3,5-Tribromo-2-(2,4,6-tribromophenoxy)benzene	35854-94-5
	2,2',3,4,4',6'-Hexabromodiphenyl ether	243982-83-4
	2,3,4,4',5,6-hexabromodiphenyl ether	189084-58-0
	Benzene, 1,2,4,5-tetrabromo-3-(2,4-dibromophenoxy)-	116995-33-6
	Diphenyl ether, hexabromo derivative	36483-60-0
	Hexabromodiphenyl ether 154	207122-15-4
	Tribromo(tribromophenoxy)benzene	31153-30-7
Heptabromo-diphenyl ether	1,2,3,4,5-pentabromo-6-(2,4-dibromophenoxy) benzene	189084-67-1
	1,2,3,4-tetrabromo-5-(2,3,4-tribromophenoxy) benzene	327185-13-7
	2, 2', 3, 4', 5, 6 6' -heptabromodiphenyl ether	116995-32-5
	2,2',3,3',4,5',6-Heptabromodiphenyl ether	446255-22-7
	2,2',3,4,4',6,6'-Heptabromodiphenyl ether	207122-16-5
	2,3,3',4,4',5,6-Heptabromodiphenyl ether	189084-68-2
	Benzene, 1,2,3,5-tetrabromo-4-(2,4,6-tribromophenoxy)-	117948-63-7
	Diphenyl ether, heptabromo derivative	68928-80-3
Octabromo-diphenyl ether	1,2,3,4,5-pentabromo-6-(2,3,4-tribromophenoxy) benzene	446255-38-5
	1,2,3,4,5-pentabromo-6-(2,4,5-tribromophenoxy) benzene	337513-72-1
	1,2,3,5-tetrabromo-4-(2,3,4,6-tetrabromophenoxy) benzene	117964-21-3
	2,2',3,3',4,4',5,5'-Octabromodiphenyl ether	85446-17-9
	Diphenyl ether, octabromo derivative	32536-52-0
	Pentabromo(tetrabromophenoxy)benzene	63936-56-1
Decabromodiphenyl ether (DecaBDE)	Bis(pentabromophenyl) ether	1163-19-5
Phthalates	Benzyl butyl phthalate (BBP)	85-68-7
	Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7
	Dibutyl phthalate (DBP)	84-74-2
	Diisobutyl phthalate (DIBP)	84-69-5

4.2.3. Priority Management Substances other than RoHS Substances

The following substances are regulated by regulations other than the EU RoHS Directive, or materials with potential risk. For the substances subject to 4.3 management standards as listed below, detailed analytical data*1) must be confirmed.

[Table 4.2.3.]_1

Substance Name		CAS No	Target	Threshold Limit	References
Halogen *1)	Br	7726-95-6	All parts (organic)	900 mg/kg	Halogen Free
	Cl	7782-50-5		900 mg/kg	
	Br + Cl	-		1500 mg/kg	
	F	7782-41-4		50 mg/kg 2)	EU PFAS

*1) A chemical analysis report for halogen substances may be accepted for materials containing materials containing halogen substances.
2) When total F > 50 mg/kg, PFAS declaration must be submitted additionally for part approval (if not, the part approval can be rejected).

4.2.4. Substances with Potential Risks

Substance lists below are expected to be regulated in the future. Thus, if a substance contains over threshold, it needs to be monitored.

[Table 4.2.4.] _1

Substance Name	Scope	Note
EU REACH SVHC Candidates *1)	All parts	http://echa.europa.eu/web/guest/candidate-list-table
Substances restricted under EU REACH	All parts	https://echa.europa.eu/substances-restricted-under-reach
Substances permitted by EU REACH	All parts	https://echa.europa.eu/authorisation-list
IEC 62474 substances *2)	All parts	https://std.iec.ch/iec62474/iec62474.nsf/Index?open&q=060313
Endocrine Disruptor	All parts	Manage as EU SVHC
Indium Phosphide	All parts	CAS No: 22398-80-7
Triclosan	All parts	CAS No: 3380-34-5
LC-PFCA (long-chain perfluoroalkyl carboxylate, C9~C21)	All parts	US EPA TSCA SNUR, Stockholm convention (POPs) https://www.pops.int/
PFAS (per & poly fluoroalkyl substances)	All parts	https://echa.europa.eu/documents/10162/f605d4b5-7c17-7414-8823-b49b9fd43aea
CLP Substances (Annex VI, Table 3)	All parts	https://echa.europa.eu/information-on-chemicals/annex-vi-to-clp
PVC Additives	All parts	INVESTIGATION REPORT ON PVC AND PVC ADDITIVES (ECHA, Ver 1.0), Annex 1
Aromatic Brominated Flame Retardants	All parts	https://echa.europa.eu/documents/10162/89b22150-28d1-a745-5f8d-29791433dd52

*1) EU REACH SVHC candidate substances are updated annually (twice a year). Decide whether to use or not by checking the latest list from the European Environment Agency, the managing agency for REACH.

※ REACH SVHC (Substances of Very High Concern) candidates

Substances regularly declared by the EU REACH as having the same as or equivalent hazards to CMRs (carcinogenic, mutagenic, and reproductive toxicity), PBTs (persistent, bioaccumulative, toxicity), and vPvBs (very persistent, very bioaccumulative), and are subject to an information disclosure or notification obligation if they contain more than 0.1% by weight of the part.

→ CMRs (Carcinogenic, Mutagenic, Reproductive toxicity), PBT (Persistent, Bioaccumulative, Toxicity), vPvB (very Persistent very Bioaccumulative).

2) The use of IEC62474 substances must be reported. See the IEC 62474 website for a list of substances and thresholds.

4.3. Standards for Environmental Substances in Packaging

4.3.1. Definition of Packing Materials

Packaging material means the materials delivered to customer and are used for the storage, protection, handling and transport of products.

4.3.2. Standards for Environmental Substances in Packaging Materials

4.3.2.1. Related regulation: European Parliament and Council Directive 94/62/EC.

4.3.2.2. For a detailed list of substances and CAS No, refer to [Table 4.3.2.2.] _2. For packaging materials which no respective threshold limits are provided, apply the standards in "4.2. Standards for Environmental Substances in Products".

[Table 4.3.2.2.] _1 Standards for Environmental Substances in Packaging

Substance Name	Scope	Threshold Limit	Effective Date
cadmium, lead, mercury, hexavalent chromium	Packaging materials shipped to market	Total 80 mg/kg	May 2004
Ozone-depleting substances		Prohibited	May 2004
PVC		Prohibited	May 2004
Brominated flame retardant		Br 900 mg/kg	February 2005
Cobalt dichloride	silca gel, humidity indicator	Prohibited	June 2011

[Table 4.3.2.2.] _2 List of Environmental Substances in Packaging Materials

Substance Name	Target	Substance Name	CAS no.
cadmium, lead, mercury, hexavalent chromium	Packaging materials shipped to market	Refer to 4.2.2. List of RoHS Substances	-
Ozone-depleting substances (ODS)	Packaging materials shipped to market	Refer to 4.2.1. List of Restricted Substances	-
PVC	Packaging materials shipped to market	Polyvinyl Chloride (PVC)	93050-82-9
		Polyvinyl Chloride (PVC)	9002-86-2
		Polyvinylidene Chloride (PVDC)	9002-85-1
		Polyvinylimidazolinium Chloride (PVC)	81517-61-5
		Other PVC compounds	-
Brominated flame retardant	Packaging materials shipped to market	Bis(2,4,6-tribromophenyl) carbonate	67990-32-3
		Brominated trimethylphenyl-lindane	59789-51-4
		Bromo dichloromethane	75-27-4
		Bromo-/Chloro-alpha-olefin	82600-56-4
		Bromo-/Chloro-paraffins	68955-41-9
		Chlorinated and brominated phosphate ester	125997-20-8

		Decabromo-diphenyl-ethane	84852-53-9
		Dibromo-neopentyl-glycol	3296-90-0
		Dibromo-propanol	96-13-9
		Dibromo-styrene grafted PP	171091-06-8
		Ethylene-bis(5,6-dibromo-norbornane-2,3-dicarboximide)	52907-07-0
		N,N'-Ethylene –bis-(tetrabromo-phthalimide)	32588-76-4
		Pentabromo-benzyl bromide	38521-51-6
		Pentabromo-benzyl-acrylate, monomer	59447-55-1
		Pentabromo-benzyl-acrylate, polymer	59447-57-3
		Pentabromo-phenol	608-71-9
		Pentabromo-toluene	87-83-2
		Poly (2,6-dibromo-phenylene oxide)	69882-11-7
		Poly-dibromo-styrene	31780-26-4
		TBBS-bis-(2,3-dibromo-propyl-ether)	42757-55-1
		TBPA Na salt	25357-79-3
		TBPA, glycol-and propylene-oxide esters	75790-69-1
		Tetrabromo phthalic anhydride (TBPA)	632-79-1
		Tetrabromo-bisphenol S	39635-79-5
		Tetrabromo-cyclo-octane	31454-48-5
		Tetra-decabromo-diphenoxy-benzene	58965-66-5
		Tribromo-neopentyl-alcohol	36483-57-5
		Tribromo-phenyl-allyl-ether, unspecified	26762-91-4
		Tribromo-styrene	61368-34-1
		Tris-(2,3-dibromo-propyl)-isocyanurate	52434-90-9
		Tris(2,4-Dibromo-phenyl) phosphate	49690-63-3
		Tris(tribromo-neopentyl) phosphate	19186-97-1
		Vinyl bromide	593-60-2
		TBBA bis-(2-hydroxy-ethyl-ether)	4162-45-2
		TBBA carbonate oligomer	28906-13-0
		TBBA carbonate oligomer, 2,4,6-tribromo-phenol terminated	71342-77-3
		TBBA carbonate oligomer, phenoxy end capped	94334-64-2
		TBBA-(2,3-dibromo-propyl-ether)	21850-44-2
		TBBA, unspecified	30496-13-0
		TBBA-bis-(allyl-ether)	25327-89-3
		TBBA-bisphenol A-phosgene polymer	32844-27-2
		TBBA-dimethyl-ether	37853-61-5
		TBBA-epichlorhydrin oligomer	40039-93-8
		TBBA-TBBA-diglycidyl-ether oligomer	70682-74-5
		TBBA, 2,2-Bis (4-(2,3-Epoxypropyloxy) dibromophenyl) propane polymer	68928-70-1
		TBBA-polycarbonate	156042-31-8
		Other Brominated Flame Retardants	-
Cobalt dichloride	silica gel, humidity indicator	Cobalt dichloride	7646-79-9

5. Record Management

5.1. Retention Period

The results of measuring hazardous substances in newly developed and mass-produced parts shall be preserved in accordance with the document retention period standard (10 years) of the DS Division.

5.2. Record Handling

The Company should be able to provide results obtained from partner companies and internal measurement when requested by governments and customs of countries where products are exported, clients, and stakeholders. However, in the case of information classified as technical data under the Subcontracting/Win-Win Cooperation Act, the internal compliance guide shall be followed.

6. e-CIMS Management Standards

6.1. Purpose, Scope, Criteria of Eco-Partner Certification

6.1.1. Purpose

6.1.1.1. All partner companies with whom Samsung Electronics does business shall manage to eliminate harmful substances in products, parts, and raw materials, and improve them in an eco-conscious way, and establish an environmental quality management system that can fully respond to environmental regulations.

6.1.1.2. An Eco-Partner certification refers to a partner company that has established a management process to ensure that products and parts (raw materials) supplied to Samsung Electronics do not contain environmentally harmful substances and is recognized as being able to do business with Samsung Electronics on an ongoing basis.
* Eco-Partner: Environmental management activities that consider economy and the environment (Prefix of the words ‘ecology’ & ‘economy’)

6.1.2. Scope of Application

6.1.2.1. This applies to all partner companies that supply products and parts developed for the purpose of sales by Samsung Electronics.

6.1.2.2. * Molds, equipment, process consumables, software, client-specified parts, third-party branded products, mock-up trading partners, and Samsung affiliates are not subject to management.

6.1.3. Certification Criteria

The certification is granted by evaluating and certifying partner companies’ environmental management systems and compliance with the management standards of Samsung Electronics’ [DS] Standards for Control of Substances Used in Products, and is valid for two years.
However, partner companies included in “8.6.1. Environmental Management System Assessment Exclusions” may exclude environmental management system assessments.

[Table 6.1.3.]_1

Category	Evaluation Item		Expiration
	Standards for Environmental Substances in Products	Environmental Management System*1)	
Certified	Appropriate	80 or higher	2 years
Not Certified	Appropriate	Below 80	Business not allowed
	Inappropriate	-	

* Re-evaluation penalty: First - Re-evaluation within 1 month; Second - Trade suspension for 6 months; Third - Permanent trade suspension
*1) Documentation + on-site evaluation for new partner companies; only documentation evaluation for renewals

6.2. Environmental Management System Assessment Exclusions & Certification Process

6.2.1. Environment Management System Assessment Exclusions

6.2.1.1. Partner companies such as domestic/overseas global conglomerates stipulated in Article 8 Paragraph 5 of the standard for Partner Company Management (00Q3-0015K)

6.2.1.1.1. Domestic Conglomerates: Companies that are major shareholders, owning 30% or more of their stock, either directly or indirectly, and are enterprise groups subject to the limitations on mutual investment (announced by the Fair Trade Committee) or corporations (including foreign corporations) whose total assets exceed the threshold for designation as an enterprise group subject to the limitations on mutual investment

6.2.1.1.2. Overseas Conglomerates: Forbes 2000 or Fortune 500 companies

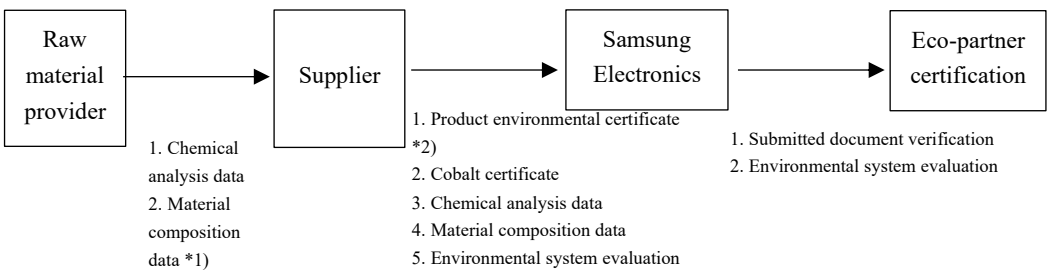
6.2.1.1.3. Partner companies in the semiconductor industry (IC supply, wafer, target, plating, fab materials)

6.2.1.1.4. Partner companies without manufacturing plants, such as warehouses, agents, designers, and purchasing agencies

6.2.1.1.5. Outsourced toll-processing companies (Only to whom the Company provides 100% of the materials)

6.2.1.1.6. Partner companies who provide only service materials

6.2.2. Certification Process



*1) Material composition data: Data or document on the chemical composition, CAS No. (EC No.), and content (e.g., Material Safety Data Sheet (MSDS), Mill Sheet, Material Declaration, etc.)

* Since a full patterned wafer meets the definition of a finished product under the OSHA Hazard Communication standard (29 CFR 1910.1200), a declaration (e.g., MSDS no issuance statement) can be used instead.

2) Product environmental certificate: A document that guarantees that the hazardous substance information submitted to Samsung Electronics is true; it is valid for one year but is automatically extended if there is no disagreement between the two companies until one month before expiration.

6.3. e-CIMS Management Standards: Implementation Method

6.3.1. Implementation Method

6.3.1.1. To be certified as an Eco-Partner, new partner companies must declare their compliance with Samsung Electronics' management standards by conducting an environmental management system self-assessment, submitting the results, and submitting product environmental certificates and cobalt-chloride-free certificates. After the initial Eco-Partner certification, the renewal evaluation upon expiration of the validity period is managed separately for Level-1 and Level-2 partner companies. During the eco-partner renewal evaluation, the inspector shall obtain evaluation samples and check the partner company's processes, such as test report and change management.

6.3.1.2. The Eco-Partner certification validity period and method are as follows:

[Table 6.3.1.2.] _1

Category	Level-1		**Level-2**
Target	injection, wire, rubber parts	printing, plated parts	**circuit, semiconductor, metalworking suppliers, etc.**
Period	1 year	**2 years**	
Method	Mandatory on-site evaluation	On-site evaluation if needed (document evaluation available)	

* Re-evaluation penalty: First - Re-evaluation within 1 month; Second - Trade suspension for 6 months; Third - Permanent trade suspension

6.3.1.3. When approving new products and parts, the validity period of the test report shall be 1 year. The chemical analysis shall be performed on a homogeneous material basis, and the results must also be written in English. Conformity to the Company's management standards shall be confirmed for substances that do not undergo a chemical analysis through the raw material composition chart and self-check sheet.

6.3.1.4. If there is a case of non-compliance with Samsung Electronics' management in products and parts supplied by partner companies, the Eco-Partner certification shall be

canceled, and the partner companies shall submit an improvement plan and conduct improvement activities. In addition, if the product or part is changed after obtaining the hazardous substance certification, it must be re-certified according to the Company's change management process.

6.4. e-CIMS Management Standards: Evaluation & Approval of New Parts

6.4.1. Purpose

This is a procedure for evaluating and approving the content of hazardous substances in raw materials and packaging materials supplied to the Company's business sites that are subject to hazardous substance assessment.

6.4.2. Scope of Application

[Table 6.4.2.] _1

Category	Business Site	Product Manufactured	Target Product
Domestic	Kiheung, Hwaseong, Pyeongtaek, Cheonan	wafer	wafer, chip in wafer, target, plating
	Onyang	PKG	All raw materials & packaging materials
Overseas	SAS	wafer	wafer, chip in wafer, target, plating
	SESS	PKG	All raw materials & packaging materials
	SCS	wafer	wafer, chip in wafer, target, plating

1) Items other than the target products of Kiheung, Hwaseong, Pyeongtaek, and Cheonan Campuses are excluded from the inspection as they are not process consumables that remain in the product.
2) Packaging materials from Kiheung, Hwaseong, Pyeongtaek, and Cheonan Campuses are excluded from the inspection as they are packaging materials for B2B products and are not subject to the packaging guide.
3) Client-designated materials and materials traded within the Company are not subject to the inspection as the vendor inspection exception is applied in the G-ERP (SAP) system.
4) For SAS entities, if the vendor and maker are the same for domestic business sites, they are excluded from the inspection as they are not subject to the inspection.
5) As outsourced assembly (PKG) materials are not subject to e-CIMS management procedures, implement separate management measures.

7. History Table of Enactment/Revision

Rev. No.	Written Date	As-was	To-be
0	23. 11. 27	-	Enactment
1	24. 05. 22	-	■ Article 2 (1. Scope of Application) - LED business unit → CSS team ■ Article 3 - 10. Raw material composition chart → Material composition data (definition was also modified) ■ Article 5 (2. List of Control of substances in products) A. Restricted Substances - Removal: MOAH (moved to Article 10) - Addition: Red P, DIOP, 1,3-benzendiol, PAHs C. Priority Management Substances other than RoHS Substances - Addition: F (fluorine) D. Substances with potential risks - Removal: Red P (moved to Article 9) - Formaldehyde → Formaldehyde emissions E. Target substances for newly developed product analysis (Finished product analysis) - 2 halogens (Br and Cl) → 3 halogens (F, Br and Cl) ■ Article 6 (2. Standards for Environmental Substances in Packaging Materials) - Addition: MOAH, MOSH ■ Appendix-2. (1. Eco-Partner Certification for Suppliers)

Rev. No.	Written Date	As-was	To-be
			E. Certification Process - Raw material composition chart → Material composition data (definition was also modified)
1.1	24.01.27		Red P deleted
2	25. 01. 22	-	■ Article32 (1. Scope of Application): - Define the scope of fabrication (FAB) materials included in this standard. ■ Article 3 - Addition: 7. Article ■ Article 5 (2. List of Control of substances in products) A. Restricted Substances - Addition: Formaldehyde (moved from D. Substances with potential risks), Mineral oil (moved from Article 10) C. Priority Management Substances other than RoHS Substances - Addition: CAS No. and threshold limits - Requirement for PFAS declaration when total F > 50 mg/kg was added D. Substances with potential risks - Addition: CLP substances, PVC additives, Aromatic brominated flame retardants - Removal: Formaldehyde (moved to A. Restricted Substances) ■ Article 6 (2. Standards for Environmental Substances in Packaging Materials)

<table>
<tr><th>Rev. No.</th><th>Written Date</th><th>As-was</th><th>To-be</th></tr>
<tr><td></td><td></td><td></td><td>- Removal: MOAH, MOSH (moved to Article 9, A. Restricted Substances)
■ Appendix-2. (Exemptions of Control of Substances)
- 7(a), 7(c)-1 Expiration date: 2024.7.21 → Valid (requested for renewal)</td></tr>
<tr><td>3</td><td>25. 09. 26</td><td>■ Article 9, A. Restricted Substances
- 3) PFOS chemical formula: C8F17SO2X [X = OH, Metal salt(O-M+)], derivatives containing halides, amides, and polymers.
■ Article 9, C. Management Substances other than RoHS Substances
■ Article 9, D. Substances with potential risks
<table><tr><td>Br·Cl·P Compounds</td><td>plastic, PCB</td><td>Sweden chemical tax *3)</td></tr></table>
3) The operation division shall limit the use of target substances for plastic parts weighing more than 25 grams and all PCB parts according to the target deduction rate.
- Tax 50% deduction: Manage additive Br·Cl compounds below 0.1% by weight.</td><td>■ Entire Document
- Blackacre, table of contents, numbering systems are applied as the EHS documents are standardized.
■ 4.2.1. Restricted Substances
- 3) PFOS chemical formula: C8F17SO2X (X = OH, Metal salt (O-M+), halide, amide, and other related compounds including polymers)
■ 4.2.3. Priority Management Substances other than RoHS Substances
- Organic parts are included in the Target.
■ 4.2.4. Substances with Potential Risk
- Swedish tax-related phrase is deleted
(as DS products are not applicable.)
- LC-PFCA (Long-chain perfluoroalkyl carboxylate, C9~C21) added ([Revision of DS Rules] Substances are added, and target range is expanded to meet the Stockholm Convention.)</td></tr>
</table>

Rev. No.	Written Date	As-was	To-be
		- Tax 90% deduction: Manage additive Br·Cl·P compounds and reactive Br·Cl compounds below 0.1% by weight.	