



## **Restricted Substances List (RSL) Management**

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## 1. Purpose

Fairphone aims to lead the electrical and electronic industry, advocating for the reduction, restriction or prohibition hazardous substances in both industry resource selection and upstream supplier procurement practices. Researchers, designers, and sustainable suppliers will be able to not only comply with regulations, industrial code of conduct, global eco-labeling requirements and customer demands but also reduce the impact of environmental and human health and safety.

## 2. Scope

The specifications outlined in this document encompass global hazardous substances legislation, ecolabeling scheme, industry practices and customer expectations, all of which are applicable to all Fairphone products. Materials, components, parts, and packages that are incorporated in or used to produce Fairphone products must adhere to the requirements of this specification. This list is not meant as an exhaustive list for hazardous substances and does not substitute legal obligation. This list is maintained by Fairphone and can be updated at any time in consultation with stakeholders or any other research that yields new insights on substances that Fairphone would like to control or phase out. Suppliers should take action to meet or exceed this specification, applicable legal legislation, and latest eco-label requirements.

## 3. Definitions

**3.1 Fairphone products:** products include any smartphones, tablets, earbuds, spare parts, and related accessories as well as its packages.

**3.2 Banned substances:** substances which cannot be used or found in Fairphone products. If there is a test analysis, the test result of the substance must be undetected.

**3.3 Restricted substances:** substances which cannot be used or found in Fairphone products with specific threshold values defined by regulatory, industry code of conduct, ecolabeling scheme, customer demands or Fairphone.

**3.4 Packaging materials:** packaging materials include inks, coating, painting, plastic film, user guide, quick start guide, sticker, label, staple etc.

**3.5 Technical analysis document:** Reports or any documents must be examined by technical analysis method, for example, test reports released by ISO17025 qualified test laboratory, SDS, data sheet etc.

**3.6 FMD (Full Material Declaration):** FMD should refer to IPC1752A and/or IEC 62474 standard.

**3.7 SDS (Safety Data Sheet):** SDS (former name was MSDS, Material safety data sheet) is a document that contains detailed information about the safety and health impacting aspects of various substances. All chemical substances should be disclosed and composed of each substance's name, contained percentage, and CAS number. If there are any commercial confidential concerns, Fairphone reserves the right to have the CAS number to ensure all substances information transparently.

**3.8 PPM (Parts Per Million):** PPM is a unit of measurement for weight percentage and can be expressed as milligrams per liter (mg/L). For example: 1,000ppm equivalent to 0.1% (w/w%).

**3.9 Threshold limit:** the maximum concentration.

**3.10 CAS number (Chemical Abstract System):** CAS numbers are assigned to chemicals for unique identification.

**3.11 NC (Non-compliance):** NC means a failure to meet this specification and requires corrective and preventive actions. Suppliers must notify Fairphone as

early as possible if there are any NC findings in any materials, components, parts, and packages used to produce Fairphone products.

**3.12 GPM system:** Green Product Management, on-line software tools to manage chemical substances so that collected data will be used for evaluating hazardous substance requirements and meet legislation requirements.

## 4. Contents of requirements

Recently, more and more hazardous substances have been found or reported based on global experts and organization to surveillance.

### 4.1 Hazardous substances management

Hazardous substances management will be required with three different classifications:

Class 1 – Banned / restricted substances.

Class 2 – Reporting and plan to phase-out substances.

Class 3 – Future replacement substances.

#### 4.1.1 Class 1 – Banned / restricted substances list

Substances listed in class 1, suppliers are mandated to ensure all the materials, components, parts, and packages used in Fairphone products must comply with those requirements with specific threshold limits requirement. Some chemical substances must be proven with technical analysis documents.

**Table 4.1\_ Used in Electrical and electronics equipment list**

Substances	CAS No. / identifier	Threshold limit (ppm)	Scope	Reference	Remark
Alkylphenols	1578241-51-6	Banned	All materials		
All asbestos	1332-21-4	Banned	All materials		
Antimony (Sb) and its compound	7440-36-0	800	Sb		
		1000	SB2O3		
Arsenic (As) and its compound	7440-38-2	Banned	Painting, ink, sterilizer, antiseptic		
		50	Glass display, camera lens, camera protective glass		
		100	Other parts		Semiconductor substrates and dopants (ie. GaAs semiconductors)
		1000	Metal (e.g. copper alloys)		
Benzenamine, N-phenyl-, reaction	68921-45-9	Banned	All materials		

Substances		CAS No. / identifier	Threshold limit (ppm)	Scope	Reference	Remark
products with styrene and 2,4,4-trimethylpentene (BNST)						
Benzidine and Benzidine dihydrochloride		92-87-5 531-85-1	Banned	All materials		
Beryllium (Be) and its compound		List A	Banned	Beryllium oxide (BeO)		
			800	All parts & components in all products		
Benzo[a]pyrene		50-32-8	Banned	All materials		
Benzene, benzol, benzene		71-43-2	Banned	All materials		
Biocidal substances according to BPR Regulation (EU) 528/2012		EU BPR	Banned	All materials		
Bisphenol-A (BPA) Bisphenol-S (BPS) Bisphenol-AF (BPAF)		80-05-7 80-09-1 1478-61-1	Banned	PC (Polycarbonate) for food contact parts, Epoxy resin		
			50	Other parts		
Cadmium (Cd) and its compound		7440-43-9	10	Leather, rubber, plastics, inks, plains, textiles, bond (adhesives), plastic surface, battery cell, pack and solder.		No exemption permitted in glass
			50	Other materials		
Chlorinated hydrocarbons	Chloroparaffins (Chlorinated paraffins) SCCP (C10~C13 ; Cl > 50 weight %)	List B	Banned	All materials		
	Chloroparaffins (Chlorinated paraffins) MCCP (C14~C17 ; Cl > 50 weight %)	List B	Banned	All materials		
	Polychlorinated biphenyls (PCBs)	List C	Banned	All materials		
	Polychlorinated terphenyls (PCTs)	List C	Banned	All materials		
	Polychlorinated naphthalenes (PCNs)	List D	Banned	All materials		
	Hexachlorobenzene	118-74-1	1000	All materials		
	Trichlorobenzene	120-82-1	Banned	All materials		

Substances		CAS No. / identifier	Threshold limit (ppm)	Scope	Reference	Remark
	PCP - pentachlorophenol	87-86-5	Banned	All materials		
Cobalt Dichloride		7646-79-9	Banned	All materials		
Dimethyl Fumarate (DMF)		624-49-7	Banned	All materials		
Formaldehyde		50-00-0	0.05	Plywood		
			75	Textile material		
Halogen	Halogenated flame retardants according to TCO Certified 9	-	Banned	Product housing and PCB board (bare) $\geq 0.5g$		
	BFRs (Brominated Flame Retardants)	List E	900	All plastic materials $< 0.5g$		Substances listed in " <a href="#">TCO Certified Accepted Substance List</a> " are permitted, except Red-P (Red phosphorous)
	CFRs (Chlorinated Flame Retardants)	List E	900			
	TBBA, TBBPA (Tetrabromobisphenol A)	79-94-7	900			
	Bromine and chlorine compounds according to Swedish law: Lag (2016:1067)	-	Banned	All plastic materials $\geq 25g$ and PCB board (bare)		
	Hexabromocyclododecane HBCDD	3194-55-6	Banned	Other parts		
	PBBs, PBDEs	EU RoHS	Banned	All materials		
Halogenated diphenyl methanes	Ugilec 141-Monomethyl tetrachloro diphenyl methane	76253-60-6	Banned	All materials		
	DBBT-Monomethyl dibromo diphenyl methane	99688-47-8	Banned	All materials		
Halogenated hydrocarbons	nPB (n-bromopropane , 1-Bromopropane)	106-94-5	Banned	All materials		
	Tetrachloroethylene (perchloroethylene)	127-18-4	Banned	All materials		
	Trichloroethylene	79-01-6	Banned	All materials		

Substances		CAS No. / identifier	Threshold limit (ppm)	Scope	Reference	Remark
	FCs – fluorocarbons	75-43-4	Banned	All materials		
	PFOS - Perfluorooctane sulphionate related substances	List F	Banned	All materials		
	PFOA -perfluorooctane acid	335-67-1	Banned	All materials		
	PCDDs -Polychlorinated dibenzodioxins	-	Banned	All materials		
	PCDFs -Polychlorinated dibenzofurans	35882-46-9	Banned	All materials		
	HCH -Hexachlorocyclohexane isomers	-	Banned	All materials		
	nPB (n-bromopropane , 1-Bromopropane)	106-94-5	Banned	All materials		
Hexavalent Chromium (Cr6+) and its compound		18540-29-9	Banned	Leather, metal treatment including plating / PVD / anodizing		
			500	other materials		
Hexachlorobutadiene (HCBD)		87-68-3	Banned	All materials		US TSCA
n-Hexane		110-54-3	1000	All materials		
Lead (Pb) and its compound		7439-92-1	Banned	Copper alloy		No exemption (RoHS, 6c) permitted
			40	Battery cell and pack		
			50	Plastics, inks, paints/coating, textiles, rubber, paper, bond (adhesives), leather and resin. Note: Insulation of wires, cables and cords are defined as plastics (including rubbers)		
			100	Exterior parts that can contact the end user's skin, even if it is an EU RoHS Lead (Pb) exception, for parts and materials for consumer products designed or intended primarily for children 12 years age of younger.		

Substances		CAS No. / identifier	Threshold limit (ppm)	Scope	Reference	Remark
			800	All other materials		
Mercury (Hg) and its compound		7439-97-6	Banned	Display backlight panel (LEDs)		
			Banned	Battery cell and pack		
			3mg/lamp	CCFL used in Notebook and monitor		
			500	Leather, textile		
			800	All other materials		
MOAH		-	1000	Inks		
		-	≤ 1	Inks containing 3 to 7 aromatic rings MOAH		
MOSH		-	1000	Inks		
Nanomaterial		-	Banned	All materials		Recommendation 2011/696/EU France Decree No. 2012-232, Environmental Code Article L. 523-4
Nickel (Ni) and its compound		7440-02-0	Banned	Stainless steel, alloys shall not be detected on surface parts in direct and prolonged skin contact of people. It's maximum emission must not exceed 0.2 µg/cm <sup>2</sup> * week		
Nonylphenol, Nonylphenoethoxylates and related substances		25154-52-3 9016-45-9	Banned	All materials		
Octylphenol related substances		9002-93-1	Banned	All materials		
Organophosphate flame retardants (OPFRs)	Tris(2-chloroethyl) phosphate (TCEP)	115-96-8	1000	All plastic materials		
	Tris(2-chloro-1-methyl ethyl) phosphate (TCPP)	13674-84-5				
	Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)	13674-87-8				
Ozone-depleting substances	CFCs - chlorofluorocarbons	-	Banned	All materials		
	HCFCs - chlorofluorohydrocarbons	-	Banned	All materials		
	Methylene chloride (Dichloromethane)	75-09-2	Banned	All materials		

Substances		CAS No. / identifier	Threshold limit (ppm)	Scope	Reference	Remark
	Carbon tetrachloride	56-23-5	Banned	All materials		
	Methyl chloroform = 1,1,1-Trichloroethane 1,1,1-	71-55-6	Banned	All materials		
	Halon-1211, Halon-1301, Halon-2402	-	Banned	All materials		
	HBFCs-Hydrobromofluorocarbons	-	Banned	All materials		
	Methyl bromide (Bromomethane)	74-83-9	Banned	All materials		
	Chlorobromomethane	74-97-5	Banned	All materials		
	Sulfur hexafluoride	2551-62-4	Banned	All materials		
	PFCs-Perfluorocarbon compounds	-	Banned	All materials		
	HFCs - fluoro hydrocarbons	-	Banned	All materials		
	Ozone Depleting Substances based on Montreal Protocol	Montreal Protocol	Banned	All materials		
	EU deplete the Ozone layer Regulation (EC) 1005/2009	EU Ozone regulation	EU Ozone regulation	All materials		
Organic tin compounds	Tributyltin (TBT)	List G	Banned	All materials		
	triphenyl tin (TPT)					
	Triphenyltin oxide (TPTO)	List G				
	Dibutyltin (DBT)	List H				
	Dioctyltin (DOT)					
Perchlorates	7601-89-0	1000	All materials			
PFASs	-	Banned	Plastic parts, rubber, PCB bare board and surface coating, painting; excluded electric components			
Phosphorus compounds	-	Banned	Plastic parts & rubber and PCB board			Reactive type of Phosphorus

Substances		CAS No. / identifier	Threshold limit (ppm)	Scope	Reference	Remark
				(bare) excluded electric components		compounds is allowable. Additive type is prohibited. Swedish law:Lag (2016:1067)
Polycyclic aromatic hydrocarbons (PAHs) according to AfPS GS 2019:01 PAK and REACH Regulation Annex XVII		List I	Banned	All plastic, rubber, and woods materials		
Phthalates	BBP, DBP, DEHP, DEP, DHUNP, DIBP, DIHP, DIPP, DnHP, DMEP, DMP, DPP	List J	100 (each)	All plastic materials		
			1000 (sum)			
	DIDP+DINP+DNOP		1000 (sum)			
PVC		9002-86-2	Banned	All materials		
Specific benzotriazole (UV-320)		3846-71-7	Banned	All materials		
USA TSCA 1. Decabromodiphenyl ether (DecaBDE) 2. Phenol, isopropylated phosphate (3:1) (PIP (3:1)) 3. 2,4,6-三(叔丁基)苯酚 2,4,6-tris(tert-butyl) phenol (2,4,6-TTBP) 4. Hexachlorobutadiene (HCBd) 5. Pentachlorothiophenol (PCTP)		1.1163-19-5 2. 68937-41-7 3. 732-26-3 4. 87-68-3 5. 133-49-3	Banned	All materials		
Tetrachlorobenzene (TeCB)		634-90-2 634-66-2	Banned	All materials		
Radioactive substances		-	Banned	All materials		
Red phosphorus		7723-14-0	Banned	All plastic/rubber materials, includes any connectors, jackets, socket outlet which used for protecting current carry parts.		
Yellow phosphorus		12185-10-3	Banned			
Volatile Organic Compound (VOC) according to Directive 1999/13/EC	TVOC	EU VOCs	5mg/m3	All materials		
	Benzene		100			
	Toluene		1000			
EU POPs (Persistent organic pollutants) according to Regulation (EU) 2019/1021 and its amendment		EU POPs	EU POPs	All materials		
REACH Regulation	SVHC (SCIP is prohibited)	ECHA website	1000	All articles		No exemption for all articles (SCIP is not allowable)

Substances		CAS No. / identifier	Threshold limit (ppm)	Scope	Reference	Remark
	Annex XVII		Refer to Annex XVII entries	All articles and components applicable to Annex XVII		
Battery Directive 2006/66/EC		EU BATT	EU BATT	Battery		2006/66/EC will be repealed by new Battery regulation (EU) No 2023/1542
California Proposition 65 (CP65)		CP65	CP65	All materials contact with ski directly		Limitation will refer to <a href="#">CP65 list</a>
TPCH and its amendments 1. Pb, Cd, Hg, Cr6+ 2. Phthalates 3. PFASs		TPCH	1.Sum≤100 2.Sum≤100 3.Bands	All packaging		

Table 4.2\_Used in packaging materials list

Substances		CAS No. or identifier	Threshold limit (ppm)	Scope	Exemption
Chlorine and CFC/HCFC		7782-50-5	Banned	All packaging materials	
Cd + Pb + Hg + Cr6+ according to EU Directive 1994/62/EC and its amendments		7440-43-9 18540-29-9 7439-97-6 7439-92-1	100	Sum of all packaging materials	
Expandable Polystyrene (EPS)		14235-54-2	Banned	All packaging materials	
Halogen	Hexabromocyclododecane HBCDD	7782-50-5 7726-95-6	Banned	EPS, HIPS	
	Br or Cl		900 (each)	All packaging materials Br: 900, Cl: 900	
	Br + Cl		1500 (Sum)	All packaging materials Br + Cl: 1500	
Lead and its compound		7439-92-1	Banned	All packaging materials	
Methylbenzene (Toluene) Dimethylbenzene		108-88-3 95-72-7	0.2mg/m3	Pallet	
Phthalates		List J	Banned	All packaging materials (delete original) DINP+DIDP+DNOP<1000 Each <800	
REACH Regulation – SVHC and Annex XVII		ECHA website see reference	1000	All packaging materials and no exemption permitted	SCIP registration is not Allowable

Substances	CAS No. or identifier	Threshold limit (ppm)	Scope	Exemption
MTPL (so called TPCH)	US MTPL (TPCH)	100	All packaging materials	

Table 4.3\_Used in manufacturing processes

Substances	CAS No. or identifier	Threshold limit (ppm)	Scope	Exemption
Arsenic and its compounds	7440-38-2	Banned	Manufacturing	
Benzene	71-43-2	Banned	Manufacturing	
1-Bromopropane	3106-94-5	Banned	Manufacturing	
Cumene	98-82-8	Banned	Manufacturing	
1,2-Dichloroethane	107-06-2	Banned	Manufacturing	
Dichloromethane (Methylene Chloride)	75-09-2	Banned	Manufacturing	
Diethylene glycol dimethyl ether	111-96-6	Banned	Manufacturing	
Dimethylformamide	68-12-2	Banned	Manufacturing	
2-Ethoxyethanol (ethylene glycol monoethyl ether)	110-80-5	Banned	Manufacturing	
2-Ethoxyethyl acetate (ethylene glycol monoethyl ether acetate)	111-15-9	Banned	Manufacturing	
Ethylbenzene	100-41-4	Banned	Manufacturing	
Formaldehyde	50-00-0	Banned	Manufacturing	
n-Hexane	110-54-3	Banned	Manufacturing	
Methanol	67-56-1	Banned	Manufacturing	
2-Methoxyethanol (ethylene glycol monomethyl ether)	109-86-4	Banned	Manufacturing	

Substances	CAS No. or identifier	Threshold limit (ppm)	Scope	Exemption
Methyl isobutyl ketone	108-10-1	Banned	Manufacturing	
Nitromethane	75-52-5	Banned	Manufacturing	
N-Methyl-Pyrrolidone (NMP)	872-50-4	Banned	Manufacturing	Allowed for use in photoresist stripping
Ozone layer depleting substances	-	Banned	Manufacturing	
Pentachloroethane	76-01-7	Banned	Manufacturing	
1,1,1,2-Tetrachloroethane	630-20-6	Banned	Manufacturing	
1,1,2,2-Tetrachloroethane	79-34-5	Banned	Manufacturing	
Tetrachloroethylene	127-18-4	Banned	Manufacturing	
Tetrahydrofurfuryl alcohol	97-99-4	Banned	Manufacturing	
Trichloroethylene (TCE) and other chlorinated organic solvents and compounds (e.g. 1,1,1-trichloroethane)	79-01-6 71-55-6	Banned	Manufacturing	
Trichloromethane (Chloroform)	67-66-3	Banned	Manufacturing	
Toluene	108-88-3	Banned	Manufacturing	
Xylene	1330-20-7	Banned	Manufacturing	

#### 4.1.2 Class 2 – Reporting and plan to phase-out substances

Substances may be researchable or be discovered any substitutes but need more time to research and evaluate the feasibility or functionality to ensure the new substitutes will be compatible without any impacts of components or products' original performance, design, or functions and Fairphone will review the phase-out possibility and schedule proper timing to reduce or remove from Fairphone products. And suppliers have the responsibility to report to Fairphone and provide the technical documentations as a reference.

**Table 4.4\_ Reporting and plan to phase-out substances list**

Substances	CAS No. or identifier	Reporting threshold limit (ppm)	Scope	Exemption	Expected review date
Bismuth (Bi) and its compound	7740-69-9	1000	All materials		Annual review
Cobalt and its compound	7440-48-4	1000	All materials	Except Battery	Annual review
Fragrance substances (Musk xylene and Musk ketone)	-	1000	All materials		Annual review
Selenium and its compounds	7782-49-2	1000	All materials		Annual review
Surfactants	-	1000	All materials		Annual review
Triclosan	3380-34-5	Use	All materials		Annual review
1 3-propanesultone	1120-71-4	1000	Battery	No exemption permitted	Annual review

**4.1.3 Class 3 – Future replacement substances**

Substances for which no substitutes are currently available due to limited existing technical research and/or design must be documented in the “Future replacement substances” list. This list serves the purpose of ongoing evaluation to identify potential new substitutes. Subsequently, these substances may be reclassified to either class 2 or class 1 levels for future phasing-out or banned/restricted. The strategic reclassification aims to mitigate the impact on environmental and human health and safety, aligning with our commitment to reduce adverse effects.

**Table 4.5\_Future replacement substances list**

Substances	CAS no.	Greenscreen	Expected review date
magnesium oxide	1309-48-4	BM-3dg	Annual review
Limestone	1317-65-3	BM-3dg	Annual review
calcium carbonate	471-34-1	BM-3	Annual review
Blue GLA	147-14-8	BM-3	Annual review
aluminium oxide	1344-28-1	BM-2	Annual review
calcium oxide	1305-78-8	BM-2	Annual review

Substances	CAS no.	Greenscreen	Expected review date
aluminium hydroxide	21645-51-2	BM-2	Annual review
Phosphorus	7723-14-0	BM-2	Annual review
2-butoxyethanol	111-76-2	BM-2	Annual review
Poly(dimethylsiloxane), hydroxy terminated	70131-67-8	BM-2	Annual review
butan-1-ol	71-36-3	BM-2	Annual review
dl-lactic acid	598-82-3	BM-2	Annual review
2-methylpropan-1-ol	78-83-1	BM-2	Annual review
Barium sulfate	7727-43-7	BM-2	Annual review
Ethanol	64-17-5	BM-2	Annual review
Aluminum	7429-90-5	BM-1	Annual review
Silicon dioxide	7631-86-9	BM-1	Annual review
Silver	7440-22-4	BM-1	Annual review
Trimethoxy(methyl)silane	1185-55-3	BM-1	Annual review
Diiron trioxide	1309-37-1	BM-1	Annual review
Carbon black	1333-86-4	BM-1	Annual review
Actigel	112945-52-5	BM-1	Annual review
Zinc oxide	1314-13-2	BM-1	Annual review
4,4'-sopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	BM-1	Annual review
Talc (Mg <sub>3</sub> H <sub>2</sub> (SiO <sub>3</sub> ) <sub>4</sub> )	14807-96-6	BM-1	Annual review
Solvent naphtha (petroleum), heavy arom	64742-94-5	BM-1	Annual review
Quartz (SiO <sub>2</sub> )	14808-60-7	BM-1	Annual review

Substances	CAS no.	Greenscreen	Expected review date
Calcium fluoride	7789-75-5	BM-1	Annual review
Chromium (III) oxide	1308-38-9	BM-1	Annual review
Aluminium fluoride	7748-18-1	BM-1	Annual review
n-hexane	110-54-3	BM-1	Annual review
Bismaleimide (B)	105391-33-1	BM-1	Annual review
3-Methoxy-3-methylbutyl acetate	103429-90-9	BM-1	Annual review
Tetrahydrofurfuryl acrylate	2399-48-6	BM-1	Annual review
Fumed silica	99439-28-8	BM-1	Annual review
Poly(tetrafluoroethylene, PTFE	9002-84-0	BM-1	Annual review
Lead	7439-92-1	BM-1	Annual review
Siloxanes and silicones, di-Me, vinyl group-terminated	68083-19-2	BM-1	Annual review
1-methyl-2-pyrrolidone	872-50-4	BM-1	Annual review
Diboron trioxide	1303-86-2	BM-1	Annual review
Octamethylcyclotetrasiloxane	556-67-2	BM-1	Annual review
Methanol	67-56-1	BM-1	Annual review
Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)-, hydrolysis products with silica	68909-20-6	BM-1	Annual review
Magnesium silicate monohydrate (Talc)	14807-96-6	BM-1	Annual review
Toluene	108-88-3	BM-1	Annual review

## 4.2 Technical documentations requirement

#### **4.2.1 Test reports and SDS (Safety data sheet)**

More details requirement can refer to “SOP on Collection and Management of Information on Hazardous Substances, FPCMV001”

#### **4.2.2 FMD (Full material declaration) and GP BOM**

FMD form (FPFMD-001) can be used, or GPM system assigned by Fairphone to submit required documents with GP BOM. (as minimum, test reports, SDS, datasheet and/or components specification/datasheet., others may be required by Fairphone separately if necessary). Suppliers shall submit each material SDS, datasheet, and technical reports for reviewing. Suppliers shall ensure all information and documents are correct and ensure all materials, components and parts comply with regulatory requirements, ecolabeling scheme criteria, customer demands and this Fairphone specification.

#### **4.2.3 Process Chemicals Data Collection (PCDC) Tool**

The PCDC tool needs to be completed for the process chemicals used related to the production of Fairphone products, which provides insights in the risk profiles of chemicals used such as cleaners or solvents. At minimum, all final assembly partners need to complete this, which is necessary for both TCO certification and CEPN commitments.

#### **4.2.4 Plastic material form, see annex 2**

All plastic parts which weights exceed 5 gram (includes) must demonstrate in this form. Technical documents evidence shall provide if recycled material used in plastic parts.

#### **4.2.5 Package material form, see annex 3**

All packages shall demonstrate in this form. Technical documents evidence shall provide if recycled or biomass material used in package materials. Only FSC 100%, PEFC or Naturland or similar standard certified materials can be used in Fairphone packages. Only water based or vegetable oil based ink material can be used in Fairphone packages. Paper and cardboard in the packaging must contain at least the following proportions of recycled filberts,  
Paperboard: 80%, Corrugated cardboard: 25%, Solid fibreboard: 40%, Wound tubes: 90%

#### **4.3 CAPA (Corrective and Preventive action) for NC (non-conformity) process**

If any NC has been raised, suppliers must notify Fairphone immediately and report the findings and shall quarantine all parts associated with the submission and provide containment measures, corrective actions, and schedule for providing a new sample of materials, components, parts and packages for further examination to ensure new samples will continuously comply with this specification.

#### **4.4 Changes process**

Any changes must report to Fairphone immediately and ensure alternative materials, components, parts or packages continuously comply with this

specification and update required documents.

#### 4.5 Substances used in production / manufacturing process

4.5.1 Restrictions for use of chemicals in manufacturing processes are listed in section “Table 4.3\_Used in manufacturing processes”. In addition, Lead Free and Halogen Free management needs to be in place at the production line to prevent contamination of Fairphone products with potential hazardous substances.

4.5.2 In case it is found that banned chemicals, chemicals that exceed the aforementioned restrictions or high-risk chemicals are used in manufacturing processes, the supplier will implement safer alternatives. Fairphone may support the identification and implementation of safer alternatives in cooperation with the supplier.

#### 5. Effective date

This specification will take effect after 1 month from the date of releasing. During the transition period, the previous version is still in effect.

#### 6. References

- **AfPS PAHs:** German AfPS GS 2019:01 PAK.
- **Battery Directive:** Directive 2006/66/EC, batteries and accumulators and waste batteries and accumulators, and its amendments, so called BATT Directive, which has been replaced by Regulation (EU) 2023/1542 by July 2023 and will be repealed with effect from 18 August 2025.
- **Blue angel:** The Germany ecolabel established by German Federal Government.
- **BPR Regulation:** Biocidal Product Regulation (EU) 528/2012 and its amendments.
- **CEPN:** The Clean Electronics Production Network unites diverse stakeholders to establish the approach to eliminate workers' exposure to toxic chemicals in the electronics supply chain.
- **Eco Rating labeling scheme:** Eco Rating consortium established by EU leading mobile operators such as Deutsche Telekom, Orange, Telefónica (operating under the O2 and Movistar brands), Telia Company and Vodafone
- **EPEAT UL110:** UL110 is the standard for sustainability for Mobile Phones referred and used for the application of Electronic Product Environmental Assessment Tool, EPEAT established by US EPA and IEEE
- **Fairphone Doc.:** FPCMV001 “SOP on Collection and Management of Information on Hazardous Substances”
- **Fairphone Doc.:** FPFMD-001 “Reporting Full material declaration”, see annex 1
- **French MOAH, MOSH:** French's Ministry for Ecological Transition regulates two categories of mineral oil and their requirements according to Articles D543-45-1 and D543-213, as well as Decree No. 2020-1725 on the “Environment Code” and its amendment requires MOAH and MOSH.
- **Greenscreen:** GreenScreen® for Safer Chemicals is a method of comparative Chemical Hazard Assessment (CHA) that can be used for identifying chemicals of high concern and safer alternatives. GreenScreen was developed by and is a project of Clean Production Action.
- **MTPL (so called TPCH):** USA Toxic in Packaging ClearingHouse update MTPL (Model Toxics in Packaging Legislation). <https://toxicsinpackaging.org/>

- **MTPL (so called TPCH):** Model Toxics in Packaging Legislation (MTPL) maintained by The Toxics in Packaging Clearinghouse (TPCH).
- **Nanomaterial:** Recommendation 2011/696/EU,
- **Package Directive:** Directive 94/62/EC, packaging and packaging waste, and its amendments, so called PPW Directive.
- **Pinfa:** Pinfa is the Phosphorus, Inorganic and Nitrogen Flame Retardants Association (PINFA), Pinfa represents the manufacturers and users of non-halogenated phosphorus, inorganic and nitrogen flame retardants (PIN FRs)
- **POPs Directive:** Regulation (EU) 2019/1021, persistent organic pollutants (POPs) and its amendments
- **Prop65:** California proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986
- **REACH Regulation:** Regulation (EU) No 1907/2006, Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) and its amendments. ECHA website can be referred, see the link <https://echa.europa.eu/>, particular for the requirements of SVHC which are regularly updated by ECHA <https://echa.europa.eu/candidate-list-table> and Restriction substance set up in Annex XVII which are regularly updated by ECHA <https://echa.europa.eu/substances-restricted-under-reach> .
- **RoHS 2 Directive:** Directive 2011/65/EU, EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment and its amendment Directive 2015/863/EU.
- **Sweden Act (2016:1067):** Act concerning tax levied on chemicals in certain electronic items.
- **TCO Certified:** created by Swedish Confederation of Professional Employees for electrical products like display and smartphone.
- **TCO Certified accepted substances list:** TCO refer GreenScreen® for Safer Chemicals tools to identify a pathway to safer alternatives.
- **TSCA:** The Toxic Substances Control Act (TSCA) of 1976.
- **VOCs Directive:** Directive 1999/13/EC, the limitation of emissions of volatile organic compounds (VOCs) due to the use of organic solvents in certain activities and installations
- **WEEE Directive:** Directive 2012/19/EU, waste electrical and electronic equipment, and its amendments.

## Version history

Version	Effective Date of Amendment (DD/MM/YYYY)	Description	Author
1.0	05/12/2023	Initial release	Ted Jao Remco Kouwenhoven
2.0	14/05/2024	Add: additional 15 process chemicals are banned, following CEPN's 2nd Round Priority Chemicals. Added to "Table 4.3_Used in manufacturing processes".	Remco Kouwenhoven
3.0	31/03/2026	New: BPS, BPAF. Clarified: PFAS restriction includes surface treatments of components in scope. Adjusted: Phthalates threshold each, to ensure accum. regulatory compliance. Corrected: CAS number formaldehyde	Glide Wu





### Annex 3 – Corrugated recycle content rate calculation

Supplier must fill up Carton recycle content rate calculation to understand actual recycle content in carton.

A	B	C	D	G	H	I	J	K	L	O	P
Annex 3 Corrugated recycle content rate calculation (incl 3 or 5 layers) version 1.0, 2019/7/1											
5 layers carton 五层纸纸箱计算						3 layers carton 三层纸纸箱计算					
Carton recycle content rate calculation 纸箱回收料计算表						Carton recycle content rate calculation 纸箱回收料计算表					
纸别 Type	基重 Basic weight (lb=3527) <sup>1</sup>	压楞系数 take-up factor <sup>2</sup>	PCR添加量占比(%) PCR percentage (%) <sup>3</sup>	PCR回收原料含量(%) Post consumer recycled contained (%)	纸别 Type	基重 Basic weight (lb=3527) <sup>1</sup>	压楞系数 take-up factor <sup>2</sup>	PCR添加量占比(%) PCR percentage (%) <sup>3</sup>	PCR回收原料含量(%) Post consumer recycled contained (%)		
										无需填写O7此栏自动计算	
										无需填写G7此栏自动计算	
<b>备注Remark:</b>											
1 MCF 指纸种1000平方呎重量(lb); 公式转换 1 gsm2 = 4.8824 lb/MCF											
2 压楞系数: 指纸各公司产品而有所不同, 一般在压合物视系数值为1											
3 依据EPEAT要求:											
纸箱耐压强度 (B&T值) = 300 psi * 总回收原料含量至少需 25% - 50%											
纸箱耐压强度 (B&T值) = 300 psi * 总回收原料含量至少需 25% - 30%											



## Annex 5 – List of CAS number

### List A – Beryllium (Be) and its compound

Substances	CAS No. or identifier
Beryllium	7440-41-7
Beryllium oxide	1304-56-9
Beryllium boride (BeB <sub>2</sub> )	12228-40-9
Beryllium dibromide	7787-46-4
Acetic acid beryllium salt	543-81-7

### List B – SCCP (Short-chain chlorinated paraffins) and MCCP (Medium-chain chlorinated paraffins)

Substances	CAS No. or identifier
Alkanes, C10-13, chloro	85535-84-8
Alkanes, C10-12, chloro	108171-26-2
Alkanes, C12-13, chloro	71011-12-6
Alkanes, chloro	61788-76-9
Other Short Chain Chlorinated Paraffins	-
Tetradecane, chloro derivs.	198840-65-2
Alkanes, C14-16, chloro	1372804-76-6
Alkanes, C14-17, chloro	85535-85-9
di-, tri- and tetrachlorotetradecane	-
Chlorinated polyethylene	64754-90-1

### List C – PCBs (Polychlorinated biphenyls) and PCTs (Polychlorinated Terphenyls)

Substances	CAS No. or identifier
Polychlorinated Biphenyls	1336-36-3
polychlorinated terphenyls (PCT)	61788-33-8
Monomethyl-tetrachlorodiphenyl methane (Ugilec 141)	76253-60-6
Mono-methyl-dichloro-diphenyl methane (Ugilec 121)	-
Monomethyl-dibromo-diphenyl methane (DBBT)	99688-47-8
Aroclor	12767-79-2
Chlorodiphenyl (Aroclor 1260)	11096-82-5
Kanechlor 500	27323-18-8
Aroclor 1254	11097-69-1

Substances	CAS No. or identifier
Terphenyls	26140-60-3

## List D – PCNs (Polychlorinated naphthalenes)

Substances	CAS No. or identifier
Trichloronaphthalene	1321-65-9
Tetrachloronaphthalene	1335-88-2
Pentachloronaphthalene	1321-64-8
Octachloronaphthalene	2234-13-1

## List E – BFRs (Brominated Flame Retardants) and CFRs (Chlorinated Flame Retardants)

Substances	CAS No. or identifier
Trichloronaphthalene	1321-65-9
Tetrachloronaphthalene	1335-88-2

## List F – PFOS (Perfluorooctane sulfonates)

Substances	CAS No. or identifier
PFOS	1763-23-1
PFOS Ion	45298-90-6
PFOS Potassium Salt	2795-39-3
PFOS Lithium Salt	29457-72-5
Heptadecafluoro-n-(2-hydroxyethyl)-n-methyloctanesulphonamide	24448-09-7
PFOS Triphenylsulfonium Salt	144089-15-6
PFOS Sodium Salt	4021-47-0
PFOS Ammonium Salt	29081-56-9
PFOS Amide	754-91-6
N-ethylheptadecafluoro-n-(2-hydroxyethyl)octanesulphonamide	1691-99-2
N-[(heptadecafluorooctyl)sulfonyl]-n-methyl-glycine	2355-31-9
Perfluorooctanesulfonyl fluoride	307-35-7
PFOS Tetraethylammonium Salt	56773-42-3
2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino] ethyl ester	376-14-7
1-Decanaminium, N-decyl-N,N-dimethyl-, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonate	251099-16-8

Substances	CAS No. or identifier
N-allylheptadecafluorooctanesulphonamide	423-86-9
heptadecafluorooctanesulphonamide	754-91-6
2-Propenoic acid, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester	423-82-5
2-Propenoic acid, 2-[butyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester	383-07-3
Perfluorooctane sulfonamidoacetic acid	2806-24-8
N-ethyl-n-((heptadecafluorooctyl)sulfonyl)-glycine	2991-50-6
1-Propanaminium, 3[(heptadecafluorooctyl)sulfonyl]amino]-N,N,N-trimethyl-, iodide	1652-63-7

## List G – Tributyl tin (TBT), Triphenyl tin (TPT) and Tirphenyl tin oxide (TPTO)

Substances	CAS No. or identifier
Tributyl tin bromide	1461-23-0
Tributyltin oxide	56-35-9
Tributyl tin acetate	56-36-0
Tributyl tin laurate	3090-36-6
Tributyl tin fluoride	1983-10-4
Triphenyl tin	668-34-8
Triphenyl tin chloride	639-58-7
Triphenyl tin hydroxide	76-87-9
Triphenyl tin acetate	900-95-8
Triphenyl tin fluoride	379-52-2

## List H – Dibutyltin (DBT) and Dioctyltin (DOT)

Substances	CAS No. or identifier
Dibutyltin oxide	818-08-6
Dibutyltin diacetate	1067-33-0
Dibutyltin dilaurate	77-58-7
Dibutyltin maleate	78-04-6

## List I – PAHs (Polycyclic aromatic hydrocarbons)

Substances	CAS No. or identifier
Naphthalene	91-20-3
Phenanthrene	85-01-8

Substances	CAS No. or identifier
Anthracene	120-12-7
Fluoranthene	206-44-0
Pyrene	129-00-0
Benzo[a]anthracene (BaA)	56-55-3
Chrysene (CHR)	218-01-9
Benzo[b]fluoranthene (BbFA)	205-99-2
Benzo[k]fluoranthene (BkFA)	207-08-9
Benzo[j]fluoranthene (BjFA)	205-82-3
Benzo[e]pyrene (BeP)	192-97-2
Benzo[a]pyrene (BaP)	50-32-8
Dibenzo[a,h]anthracene (DBAhA)	53-70-3
Indeno[1,2,3-cd]pyrene (IP)	193-39-5
Benzo[g,h,i]perylene (BghiP)	191-24-2

## List J – Phthalates

Substances	CAS No. or identifier
Benzyl butyl phthalate (BBP)	85-68-7
Dibutyl phthalate (DBP)	84-74-2
Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7
Diundecyl phthalate (DuDP)	3648-20-2
Diethyl phthalate (DEP)	84-66-2
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)	68515-42-4
Diisobutyl phthalate (DIBP)	84-69-5
Diisodecyl phthalate (DIDP)	26761-40-0
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)	71888-89-6
Dicyclohexyl phthalate (DCHP)	84-61-7
di-"isononyl" phthalate (DINP)	28553-12-0
Diisopentylphthalate (DiPP)	605-50-5
Dihexyl phthalate (DnHP)	84-75-3
Di-n-octylphthalate (DNOP)	117-84-0
Bis(2-methoxyethyl) phthalate (DMEP)	117-82-8
Dimethyl phthalate (DMP)	131-11-3
Diisohexyl phthalate (DiHP)	68515-50-4
Dipentyl phthalate (DPP)	84-62-8
Didecyl phthalate (DDP)	84-77-5

<b>Substances</b>	<b>CAS No. or identifier</b>
Di-n-pentyl phthalate (DnPP)	131-18-0
1,2-Benzenedicarboxylic acid, dipentylester, branched and linear (PiPP)	84777-06-0
N-pentyl-isopentylphthalate (PiPP)	776297-69-9
Bis(2-methoxyethyl) phthalate (DEMP BMEP)	117-82-8