

Royal Philips Electronics List of Restricted Substances in Products

Articles (*i.e.* materials, components, subassemblies, products) delivered to and used in Royal Philips must be free of the "Restricted substances" as mentioned in this list.

This or newer versions of the present list can be found at Philips website:

www.philips.com/about/sustainability/howwework/ourproductsandprocesses/chemicalsubstances.page

A: Restricted Substances in all applications

Substances	Restriction Threshold ppm (mg/kg) ¹	
Asbestos (all types)	10	
Benzoapyrene	20	Short duration skin contact (≤ 30 sec)
	1	Long duration skin contact (> 30 sec)
Beryllium and Beryllium compounds (<i>see remark e</i>)	1000	
Cadmium and Cadmium compounds (in plastics) (<i>see remark d</i>)	100 ¹	
Cadmium and Cadmium compounds (in metal alloys) (<i>see remark a</i>)	100	
Hexavalent Chromium (Cr 6+) and Cr (6+) compounds (<i>see remark b</i>)	1000	
Lead and Lead compounds (<i>see remarks a, b and c</i>)	1000	
Lead and lead compounds in outer sleeves of cables, according to Proposition 65 legislation, USA	300	
Mercury and Mercury compounds (<i>see remark a, d</i>)	1000 ¹	
Monomethyl tetrachlorodiphenyl methane (Ugilec 141)	10	
Monomethyl dichlorodiphenyl methane (Ugilec 121 or Ugilec 21)	10	
Monomethyl dibromodiphenyl methane (DBBT)	10	
Ozone depleting substances (<i>see remark f</i>)	1	
Pentachlorophenol (PCP) and its salts and esters	10	
Perfluorooctane sulfonates (PFOS's) compounds (<i>see remark g</i>)	1000	
Polybrominated diphenyl ethers (PBDEs) (<i>see remark h</i>)	1000	
Polybrominated biphenyls (PBBs)	1000	
Polychlorinated biphenyls (PCBs)	10	
Polychlorinated terphenyls (PCTs)	10	
Sum of all Polycyclic aromatic hydrocarbons (PAHs) (16 mentioned in EPA list)	200	Short duration skin contact (≤ 30 sec)
	10	Long duration skin contact (> 30 sec)

- a. The restriction does not apply to exemptions in European Directive RoHS (2002/95/EC) - see Annex 1. Nevertheless declaration is still needed. The exemption for deca-BDE is not accepted by Philips.
- b. Does not apply to Medical equipment, which is presently excluded from the EU RoHS Directive. Neither does it apply to the exemptions in EU-RoHS.
- c. Lead-based soldering in electronic circuit boards and other electric applications is exempted in automotive applications under the European ELV directive (2000/53/EC).
- d. Mercury is allowed only in gas discharge lamps with certain conditions referred in EU RoHS exemptions. For Cadmium (in plastics only) and Mercury and their compounds declaration is obligatory above 50 ppm.
- e. Be is exempted in the following applications: i) Be metal and BeO used in X-Ray applications, ii) BeO as ceramic heat-resistant in semiconductors, and iii) Be metal alloy (BeCu) in RF shielding in MR applications. In other applications where no alternatives exist, exemptions may be granted. Waiver procedure as given in the Framework of Chemical Substances in Products and

¹ Above this restriction threshold the substance is restricted and declaration of the substance is obliged. In fact, restricted substances are not to be intentionally used, that is, Royal Philips Electronics accepts that certain materials contain a certain amount of naturally occurring restricted substances. Thresholds can represent legal limits, or refer to currently accepted analysing thresholds. Furthermore these thresholds should be declared on component level. Substances are measured in homogeneous materials. Exemptions of specific applications, mentioned in legislation, are also exempted.

Processes Document must be followed

(www.philips.com/shared/assets/global/sustainability/RoyalPhilipsElectronicsChemicalsSubstancesUsageProcedure.pdf)

- f. Ozone depleting substances, as published in 2000 in the Montreal protocol on substances that deplete the ozone layer: CFCs (Chlorofluorocarbons), HCFCs (Hydrogenated chlorofluorocarbons), Halons, Methyl Bromide, HBFCs (Hydrobromofluorocarbons), 1,1,1-Trichloroethane, Carbon tetrachloride and bromochloromethane.
- g. Textile and coated materials: 1 µg/m² of the coated material. Derogations (exemptions) proposed in the directive are collected in Annex 1.
- h. Polybrominated diphenylethers (PBDE) are the same as polybrominated biphenylethers (PBBE); polybrominated diphenyloxides (PBDO) are the same as polybrominated biphenyl oxides (PBBO).

B: Additionally Restricted Substances in product packaging

Substances	Restriction Threshold ppm (mg/kg) ²
Arsenic compounds, applied for wood packaging	10
Formaldehyde emission from composite wood packaging/transport material (Limit Formaldehyde emission from Hardwood Plywood (HWPW)) (<i>see remark l</i>)	0.1 (0.08)
Methyl bromide in gassing treatment of wood packaging/transport material	1
Polyvinyl chloride (PVC) and PVC blends	1000
Sum of Heavy metals (Cd, Hg, Cr(6+) and Pb)	100

C: Additionally Restricted Substances in Batteries

Substances	Restriction Threshold ppm (mg/kg) ²
Cadmium (all batteries) (<i>see remark b</i>)	20
Mercury for all batteries (excl button cells) (<i>see remark i</i>)	5
Mercury for button cells (<i>see remark j</i>)	20 000

- i. Threshold Mercury for all batteries in China is 1 ppm
- j. This is equal to 2% w/w for mercury (Hg) for button cells

D: Additionally Restricted Substances when used in specific applications

Substances	Restriction Threshold ppm (mg/kg) ²	Remark
Antimony in soda lime glass	1000	Only applied in lamps
Arsenic in soda lime and borosilicate glass	1000	
Azo Colourants	30	Only in direct and prolonged skin contact applications, when e.g., applied in leather and textiles
Tris-(1-aziridinyl) phosphin oxide	10	
Tri-(2,3-dibromo-propyl) phosphate	10	
Benzene	5	As residue in materials
Formaldehyde (<i>see remark l</i>) (Limit Formaldehyde emission HWPW)	0.1 (0.08)	
Hexachlorobenzene and Trichlorobenzene	100	
Nickel and nickel alloys (<i>see remark k</i>)	0,5µg/cm ² /week	Only in direct and prolonged skin contact applications
Organostannic compounds	1000	Organic Tin compounds (TBT, TPT and TBTO),

² Above this restriction threshold the substance is restricted and declaration of the substance is obliged. In fact, restricted substances are not to be intentionally used, that is, Royal Philips Electronics accepts that certain materials contain a certain amount of naturally occurring restricted substances. Thresholds can represent legal limits, or refer to currently accepted analysing thresholds. Furthermore these thresholds should be declared on component level. Substances are measured in homogeneous materials. Exemptions of specific applications, mentioned in legislation, are also exempted.

		applied in paints and as pigments and as agents for anti-oxidizing, anti-bacterial, anti-fungal, anti-septic, anti-staining and anti-fouling.
PAHs	50	In applications such as potting material for electronic ballast
Phthalates (<i>see remark k</i>)	1000	Applied in toys and childcare articles
Phenol and phenolic compounds (<i>see remark m</i>)	50 mg/l	Applied in toys and childcare articles and laminates of printed wiring boards
Polychloronaphtalenes	10	> 3 Cl atoms; applied as stabilizer and flame retardant in plastics
Short-chain chlorinated paraffins	1000	(C10-C13); applied in paints and as flame retardant in PVC

- k. Does not apply to Medical devices and associated equipment. Medical device safety standards require biocompatibility testing to ensure that chemical substances, which may contact patients during use per the device's intended use, do not pose a health risk, specifically with respect to biocompatibility.
- l. Formaldehyde: Emission from composite wood products, parts, and packaging. Emission from HWPW from 1 Jan 2010 onwards set to 0.05 ppm. Composite wood is defined by California Code of Regulations (CCR), Title 17, 93120.1. Refer to CCR, title 17, 93120.9 for test methods.
- m. CL (Consumer Lifestyle) requirements for phenol in laminates of printed wiring boards:
- Emission to the air: <200 odor unit/m²/day
Test method: Measured in duplo according to NVN2820 (or NEN-EN 13725:2003) by TNO Apeldoorn, the Netherlands, with 10 dm² of single sided copper added laminate after 3 days at room temperature in a PTFE bag of approximately 40 l.
 - Phenol monomer : <50 mg/l phenolics
Test method: Phenolics content in water (according to ISO 6439) after shaking for 23 hours a mixture of 75 g of milled (to 3 mm) laminate in 1.5 l of demineralized water at pH 4).

E: Additionally Restricted Substances used in specific industrial processes

Substances	Restriction
Hexavalent Chromium (Cr 6+) and Cr (6+) compounds used in plating processes (<i>see remark n, b</i>)	Not allowed in plating processes
Ozone Depleting Substances (<i>see remark o</i>)	Not allowed in processes

- n. Due to the difficulties to control the plating Cr6+ process, posing compliance risks of products brought to the market by Philips, this substance must not be used in any plating or passivation process.
- o. Use of Ozone Depleting Substances in processes is subject of federal excise tax law applied to all imported electronics in USA.

ANNEX 1 - List of Exemptions and Derogations (as of 15 May 2008)

RoHS Legislation (2002/95/EC)

Nr	Description	Remark
1	Mercury in compact fluorescent lamps not exceeding 5 mg per lamp.	
2	Mercury in straight fluorescent lamps for general purposes not exceeding:	
2.1	— halophosphate 10 mg	
2.2	— triphosphate with normal lifetime 5 mg	
2.3	— triphosphate with long lifetime 8 mg.	
3	Mercury in straight fluorescent lamps for special purposes.	
4	Mercury in other lamps not specifically mentioned in this Annex.	
5	Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.	
6	Lead as an alloying element in steel containing up to 0,35 % lead by weight, aluminium containing up to 0,4 % lead by weight and as a copper alloy containing up to 4 % lead by weight.	
7.1	— Lead in high melting temperature type solders (i.e. lead based alloys containing 85 % by weight or more lead)	
7.2	— lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunications	
7.3	— lead in electronic ceramic parts (e.g. piezoelectronic devices).	
8	Cadmium and its compounds in electrical contacts and cadmium plating except for applications banned under Directive 91/338/EEC (1) amending Directive 76/769/EEC (2) relating to restrictions on the marketing and use of certain dangerous substances and preparations.	
9	Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators.	
9a	Deca-BDE in polymeric applications (exemption valid until 1 July 2008).	This exemption is being removed by the EU from the list of exemptions per July 1st, 08. Furthermore, this exemption is not accepted by Philips – see Table A
9b	Lead in lead-bronze bearing shells and bushes.	
11	Lead used in compliant pin connector systems.	
12	Lead as a coating material for the thermal conduction module c-ring.	
13	Lead and cadmium in optical and filter glass.	
14	Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80% and less than 85% by weight	
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages.	
16	Lead in linear incandescent lamps	
17	Lead halide in High Intensity Discharge (HID) lamps used for professional reprography applications	
18	Lead as activator in the fluorescent powder... of discharge lamps when used as sun tanning lamps (...) as well as (...) specialty lamps for diazo-printing reprography, lithography (...)	
19	Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact energy saving lamps (ESL)	
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs)	
21	Lead and cadmium in printing inks for the application of enamels on borosilicate glass.	
22	Lead as impurity in RIG (rare earth iron garnet) Faraday rotators used for fibre optic communications systems.	
23	Lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with NiFe lead frames until and lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with copper lead-frames.	
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors.	

25	Lead oxide in plasma display panels (PDP) and surface conduction electron emitter displays (SED) used in structural elements; notably in the front and rear glass dielectric layer, the bus electrode, the black stripe, the address electrode, the barrier ribs, the seal frit and frit ring as well as in print pastes.	
26	Lead oxide in the glass envelope of Black Light Blue (BLB) lamps.	
27	Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125 dB SPL and above) loudspeakers.	
28	Hexavalent chromium in corrosive preventive coatings of unpainted metal sheetings and fasteners used for corrosion protection and Electromagnetic Interference Shielding in equipment falling under category three of Directive 2002/96/EC (IT and telecommunications equipment).	Expired - Exemption granted until 1 July 2007.
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC.	
30	Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more.	
31	Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting).	
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes.	

EU Directive (2006/122/ECOF) on marketing and use of perfluorooctane sulfonates

Nr	Description	Remark
(a)	Photoresists or anti reflective coatings for photolithography processes	
(b)	Photographic coatings applied to films, papers, or printing plates,	
(c)	mist suppressants for non decorative hard chromium (VI) plating and wetting agents for use in controlled electroplating systems where the amount of PFOS released into the environment is minimised	This exemption is not accepted by Philips as Cr 6+ plating process is restricted (see Table E)

ANNEX 2 - Examples of CAS Numbers, Legal and Regulatory Information and Use

(This list is not comprehensive, and should be used for reference purposes only)

Material/ Substance Family	Examples of substances covered	CAS Numbers	Legal and Regulatory Information	Examples of Use
Asbestos	Asbestos and Asbestos Materials Actinolite Amosite (Grunerite) Anthophyllite Chrysotile Crocidolite Tremolite	1332-21-4 77536-66-4 12172-73-5 77536-67-5 12001-29-5 12001-28-4 77536-68-6	76/769/EEC 83/478/EEC; 85/610/EEC; 87/217/EEC; 91/659/EEC; 99/77/EEC	Brake lining pad, insulator, filler, abrasive, insulator, filler, pigment, paint, talc, adiabatic material
Azo colourants	4-Aminobiphenyl Benzidine 4-Chloro-o-toluidine 2-Naphthylamine o-Aminoazotoluene 5-Nitro-o-toluidine 4-Chloroaniline 4-methoxy-m-phenylenediamine 4,4.-Diaminodipheylmethane 3,3.-Dichlorobenzidine 3,3.-Dimethoxybenzidine 3,3.-Dimethylbenzidine 4,4.-methylenedi-o-toluidine p-Cresidine 4,4.-Methylene-bis-(2-chloro-anilene) 4,4.-Oxydianiline 4,4.-Thiodianiline o-Toluidine 4-Methyl-m-phenylenediamine 2,4,5-Trimethylaniline o-Anisidine 4-amino azobenzene	92-67-1 92-87-5 95-69-2 91-59-8 97-56-3 99-55-8 106-47-8 615-05-4 101-77-9 91-94-1 119-90-4 119-93-7 838-88-0 120-71-8 101-14-4 101-80-4 139-65-1 95-53-4 95-80-7 137-17-7 90-04-0 60-09-03	76/769/EEC 2002/61/EEC; 2003/03/EEC	Pigment, dyes, colorant
Beryllium and Beryllium compounds	Beryllium Metal Beryllium Carbonate Beryllium Chloride Beryllium Copper Alloy (and other metal Alloys containing greater amounts of Beryllium) Beryllium Fluoride Beryllium Hydroxide Beryllium Nitrate Beryllium Phosphate Beryllium Sulfate Beryllium Sulphate Tetrahydrate Beryllium-Aluminum Alloy Beryllium oxide	7440-41-7 66104-24-3 7787-47-5 7787-49-7 13327-32-7 13597-99-4 13598-15-7 13510-49-1 7787-56-6 12770-50-2 1304-56-9	Under consideration for restriction in the EE industry (RoHS Review) (Carc. Cat. 2; R49 T+; R26 T; R25-48/23 Xi; R36/37/38 R43)	Ceramics, electronic components, metal alloy, copper beryllium alloy, catalyst, precipitation hardening alloy, copper- beryllium alloy for springs, solder In ceramics as thermo (cooling) device
Cadmium/ Cadmium Compounds	Cadmium Cadmium oxide Cadmium sulfide Cadmium chloride Cadmium sulfate Other cadmium compounds	7440-43-9 1306-19-0 1306-23-6 10108-64-2 10124-36-4 -	76/769/EEC 91/338/EEC; 91/157/EEC, 93/86/EEC; 2000/53/EEC (EU/ELV); 2002/95/EC (EU/RoHS); 94/62/EEC; 2006/66/EC (Batterie)	Pigment, anti-corrosion surface treatment, electric and electronic materials, optical material, stabilizer, plating, pigment for resin, fluorescent, electrode, solder, electric contact, contact point, zinc plating, stabilizer for PVC Batteries
DBBT (monomethyl dibromodiphenyl methane)		99688-47-8	76/769/EEC, 91/339/EEC	Insulation oil, lubricant oil, electrical insulation medium, solvent, electrolytic solution

Material/ Substance Family	Examples of substances covered	CAS Numbers	Legal and Regulatory Information	Examples of Use
Formaldehyde		50-00-0	Emission to the air and skin contact (baby, textile and composite wood/packaging applications) Germany: Chem Verbot V Denmark: statut. order nr 289 Austria, Norway, Poland, Lithuania, Finland, The Netherlands USA – CA (93120-93120.12, title 17, California Code of Regulations)	Residues and degradation products of plastics (aminoplasts, urea- and melamine resins, foam plastics, vulcanization accelerators, basis for synthetic tannins, biocides, adhesives, Composite wood panel (including electronics with composite wood components and composite wood crates or pallets used for packaging) - Hardwood Plywood (HWPW), Particleboard (PB), and Medium Density Fiberboard (MDF)
Hexavalent Chromium/ Hexavalent Chromium Compounds	Chromium (VI) oxide Barium chromate Calcium chromate Chromic acetate Chromium trioxide Lead (II) chromate Sodium chromate Sodium dichromate Strontium chromate Potassium dichromate Potassium chromate Zinc chromate Other hexavalent chromium compounds	1333-82-0 10294-40-3 13765-19-0 1066-30-4 1333-82-0 7758-97-6 7775-11-3 10588-01-9 7789-06-2 7778-50-9 7789-00-6 13530-65-9 -	2000/53/EC (EU/ELV), 2002/95/EC (EU RoHS), 94/62/EEC,	Chromate treatment, paints adhesion enhancement, anti corrosion
Lead/Lead Compounds	Lead Lead (II) sulfate Lead (II) carbonate Lead hydrocarbonate Lead acetate Lead (II) acetate, trihydrate Lead phosphate Lead selenide Lead (IV) oxide Lead (II,IV) oxide Lead (II) sulfide Lead (II) oxide Lead (II) carbonate basic Lead hydroxidcarbonate Lead (II) phosphate Lead (II) chromate Lead (II) titanate Lead sulfate, sulphuric acid, lead salt Lead sulphate, tribasic Lead stearate Other lead compounds	7439-92-1 7446-14-2 598-63-0 1319-46-6 301-04-2 6080-56-4 7446-27-7 12069-00-0 1309-60-0 1314-41-6 1314-87-0 1317-36-8 1319-46-6 1344-36-1 7446-27-2 7758-97-6 12060-00-3 15739-80-7 12202-17-4 1072-35-1 56189-09-4	76/769/EEC 86/677/EEC, 91/157/EEC, 93/86/EEC, 2000/53/EC (EU/ELV), 2002/95/EC (EU/RoHS), 94/62/EEC,	Rubber hardener, pigment, paint, lubricant, plastic stabilizer, materials for battery, free-machining alloy, free-cutting steels, optical materials, X-ray shielding in CRT glass, electrical solder material, mechanical solder materials, curing agent, vulcanizing agent, ferroelectrics, resin stabilizer, plating, metal alloy, resin additives
Mercury/ Mercury Compounds	Mercury Mercuric chloride Mercury (II) chloride Mercuric sulfate Mercuric nitrate Mercuric (II) oxide Mercuric sulfide Other mercury compounds	7439-97-6 33631-63-9 7487-94-7 7783-35-9 10045-94-0 21908-53-2 1344-48-5 -	76/769/EEC, 86/677/EEC, 91/157/EEC +98/101/EEC, 2000/53/EC (EU/ELV), 2002/95/EC (EU/RoHS),	Fluorescent bulb, contact point material, pigment, anti-corrosion, high-efficiency phosphor, antibacterial treatment

Material/ Substance Family	Examples of substances covered	CAS Numbers	Legal and Regulatory Information	Examples of Use
			94/62/EEC 2006/66/EC (Batterie)	
Nickel/ Nickel alloys	Nickel	7440-02-0		nickel plating, metal and alloy
Organic Tin Compounds (Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO))	Bis(tri-n-butyltin) oxide Triphenyltin N,N'-dimethyldithiocarbamate Triphenyltin fluoride Triphenyltin acetate Triphenyltin chloride Triphenyltin hydroxide Triphenyltin fatty acid salts (C=9-11) Triphenyltin chloroacetate Tributyltin methacrylate Bis(tributyltin) fumarate Tributyltin fluoride Bis(tributyltin) 2,3-dibromosuccinate Tributyltin acetate Tributyltin laurate Bis(tributyltin) phthalate Copolymer of alkyl acrylate, methyl methacrylate and tributyltin methacrylate(alkyl; C=8) Tributyltin sulfamate Bis(tributyltin) maleate Tributyltin chloride Other Tributyl Tins & Triphenyl Tins	56-35-9 1803-12-9 379-52-2 900-95-8 639-58-7 76-87-9 47672-31-1 7094-94-2 2155-70-6 6454-35-9 1983-10-4 31732-71-5 56-36-0 3090-36-6 4782-29-0 - 6517-25-5 14275-57-1 1461-22-9 -	89/677/EEC, 99/51/EEC, Japanese law	TBT and TPT = Anti-oxidizer, antibacterial and antifungal agents, antifoulant TBTO = Antiseptic, antifungal agent, paint, pigment, antistaining
Ozone Depleting Substances				
Chloro Fluoro Carbons (CFCs)	Trichlorofluoromethane (CFC 11) Dichlorodifluoromethane (CFC12) Chlorotrifluoromethane (CFC 13) Pentachlorofluoroethane (CFC 111) Tetrachlorodifluoroethane (CFC 112) Trichlorotrifluoroethane (CFC 113) 1,1,2 Trichlorotrifluoroethane Dichlorotetrafluoroethane (CFC 114) Monochloropentafluoroethane (CFC 115) Heptachlorofluoropropane (CFC 211) Hexachlorodifluoropropane (CFC 212) Pentachlorotrifluoropropane (CFC 213) Tetrachlorotetrafluoropropane (CFC 214) 1,1,1,3-Tetrachlorotetrafluoropropane Trichloropentafluoropropane (CFC 215) 1,1,1-Trichloropentafluoropropane 1,2,3-Trichloropentafluoropropane Dichlorohexafluoropropane (CFC 216) Monochloroheptafluoropropane (CFC 217)	75-69-4 75-71-8 75-72-9 354-56-3 76-12-0 354-58-5 76-13-1 76-14-2 76-15-3 422-78-6 /135401-87-5 3182-26-1 2354-06-5/134237-31-3 29255-31-0 2268-46-4 1599-41-3 4259-43-2 76-17-5 661-97-2 422-86-6		
Halons (HCFCs)	Bromochlorodifluoromethane (Halon 1211) Bromotrifluoromethane (Halon 1301) Dibromotetrafluoroethane (Halon 2402)	353-59-3 75-63-8 124-73-2		
Chlorinated hydrocarbons (CHCs)	Carbon Tetrachloride (Tetrachloromethane) 1,1,1, - Trichloroethane (methyl chloroform)	56-23-5 71-55-6		
Methylbromide	Bromomethane (Methyl Bromide)	74-83-9		
Hydrobromofluorocarbons (HBFCs)	Bromodifluoromethane and isomers (HBFCs)	1511-62-2		
Hydrogenated chlorofluorocarbons	Dichlorofluoromethane (HCFC 21) Chlorodifluoromethane (HCFC 22) Chlorofluoromethane (HCFC 31)	75-43-4 75-45-6 593-70-4		

Material/ Substance Family	Examples of substances covered	CAS Numbers	Legal and Regulatory Information	Examples of Use
Ozone Depleting Substances (Continued)	Tetrachlorofluoroethane (HCFC 121) Trichlorodifluoroethane (HCFC 122) Dichlorotrifluoroethane(HCFC 123) Chlorotetrafluoroethane (HCFC 124) Trichlorofluoroethane (HCFC 131) Dichlorodifluoroethane (HCFC 132) Chlorotrifluoroethane (HCFC 133) Dichlorofluoroethane(HCFC 141) Chlorodifluoroethane (HCFC 142) Hexachlorofluoropropane (HCFC 221) Pentachlorodifluoropropane (HCFC 222) Tetrachlorotrifluoropropane (HCFC 223) Trichlorotetrafluoropropane (HCFC 224) Dichloropentafluoropropane, (Ethyne, fluoro-) (HCFC 225) Chlorohexafluoropropane (HCFC 226) Pentachlorofluoropropane (HCFC 231) Tetrachlorodifluoropropane (HCFC 232) Trichlorotrifluoropropane (HCFC 233) Dichlorotetrafluoropropane (HCFC 234) Chloropentafluoropropane (HCFC 235) Tetrachlorofluoropropane (HCFC 241) Trichlorodifluoropropane (HCFC 242) Dichlorotrifluoropropane (HCFC 243) Chlorotetrafluoropropane (HCFC 244) Trichlorofluoropropane (HCFC 251) Dichlorodifluoropropane (HCFC 252) Chlorotrifluoropropane (HCFC 253) Dichlorofluoropropane (HCFC 261) Chlorodifluoropropane (HCFC 262) Chlorofluoropropane (HCFC 271) 2-chloro-2-fluoropropane And other hydrochlorofluorocarbon compounds	134237-32-4 41834-16-6 34077-87-7 63938-10-3 27154-33-2 25915-78-0 1330-45-6 1717-00-6 25497-29-4 134237-35-7 134237-36-8 134237-37-9 134237-38-0 127564-92-5 134308-72-8 134190-48-0 134237-39-1 134237-40-4 127564-83-4 134237-41-5 134190-49-1 134237-42-6 134237-43-7 134190-50-4 134190-51-5 134190-52-6 134237-44-8 134237-45-9 134190-53-7 134190-54-8 420-44-0 -		
Other CHCs	1,1,2,2-Tetrachloroethane 1,1,1,2-Tetrachloroethane Pentachloromethane Trichloromethane (Chloroform) 1,1,2-Trichloroethane 1,1-Dichloroethylene 1,1,1-Trichloroethane – methyl chloroform 1,1,2-trichloroethane Dichloromethane (C2H2Cl2) Trichloroethylene (C2HCl3) Perchloroethylene (C2Cl4)	79-34-5 630-20-6 76-01-7 67-66-3 79-00-5 75-35-4 71-55-6 75-09-2 79-01-6 127-18-4	76/769/EEC	
Perfluorooctane sulfonates (PFOS)	Ammonium heptadecafluoro- octanesulphonate Heptadecafluoro-1-octanesulfonic acid compound with diethanolamine Lithium perfluorooctane sulfonate Perfluorooctane sulfonic acid Potassium perfluorooctanesulfonate	29081-56-9 70225-14-8 29457-72-5 1763-23-1 2795-39-3	2006/122/ECOF	- Photoresists or anti reflective coatings for photolithography process - Transcription belt and rubber roller coatings for printers - Surface treatment agents (mist suppressants for Cr(VI) plating, dehydrator for chromate treatment, etching additives, pretreatment and post treatment agent etc) - Painting resin, Printed circuit board, Ceramic board, PTFE, Fluoric Resin.

Material/ Substance Family	Examples of substances covered	CAS Numbers	Legal and Regulatory Information	Examples of Use
				- Coating in paper. - Paints, Colors, Pigment - Solder Flux, Cream Solder - Fluoric mold spat etc. - PFOS is used for a surfactant and a dispersion agent etc besides the mentioned use above.
Polychlorinated Biphenyls (PCBs) & Poly Chlorinated Terphenyls (PCTs)	Polychlorinated Biphenyls Aroclor Chlorodiphenyl (Aroclor 1260) Kanechlor 500 Aroclor 1254 Terphenyls Poly Chlorinated Terphenyls	1336-36-3 12767-79-2 11096-82-5 27323-18-8 11097-69-1 26140-60-3 61788-33-8	76/769/EEC	Insulation oil, lubricant oil, electrical insulation medium, solvent, electrolytic solution
Pentachlorophenol (PCP)	Pentachlorophenol (PCP) Pentachlorophenol, sodium salt other PCP salts and compounds	87-86-5 131-52-2	91/173/EEC, 99/51/EEC 94/783/EEC (Germany) 96/211/EEC (Denmark)	
Polybrominated Diphenylethers (PBDEs)	Poly Brominated Biphenyl Ether (PBBE) are same as Poly Brominated Dihenyl Ether (PBDE), Poly Brominated Diphenyl oxides (PBDO) and Poly Brominated Biphenyl oxides (PBBO)	32534-81-9	2002/95/EC (EU/RoHS), pentaBDE, 76/769/EEC +2003/11/EC	Flame retardant
Polybrominated Biphenyls (PBBs)	Bromobiphenyl and its ethers " " Decabromobiphenyl and its ethers " Dibromobiphenyl and its ethers " Heptabromobiphenylether Hexabromobiphenyl and its ethers " " Nonabromobiphenylether Octabromobiphenyl and its ethers " Pentabromobidphenyl ether Polybrominated Biphenyls Tetrabromobiphenyl and its ethers " Tribromobiphenyl ether	2052-07-5 (2-Bromobiphenyl) 2113-57-7 (3-Bromobiphenyl) 92-66-0 (4-Bromobiphenyl) 101-55-3 (ether) 13654-09-6 1163-19-5 (ether) 92-86-4 2050-47-7 (ether) 68928-80-3 59080-40-9 36355-01-8 (hexabromo-1,1.-biphenyl) 67774-32-7 (Firemaster FF-1) 36483-60-0 (ether) 63936-56-1 61288-13-9 32536-52-0 (ether) 32534-81-9 59536-65-1 40088-45-7 40088-47-9 (ether) 49690-94-0	2002/95/EEC (EU/RoHS)	Flame retardant
Polycyclic aromatic hydrocarbons (PAHs) (16 included in EPA list)	Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(g,h,i)perylene Benzo(a)pyrene	83-32-9 208-96-8 120-12-7 56-55-3 205-99-2 207-08-9 191-24-2 50-32-8	67/548/EEC 850/2004/EEC Unece Protocol 2005/69/EC German Stiftung Warentest based on 2001/95/EC and	Extender oils (used to give flexibility to rubber) (Tool) handles Cable sheaths

Material/ Substance Family	Examples of substances covered	CAS Numbers	Legal and Regulatory Information	Examples of Use
	Chrysene Dibenz(a,h)anthracene Fluorene Fluoranthene Indeno(1,2,3-c,d)pyrene Naphthalene Phenanthrene Pyrene (Polycyclic aromatic hydrocarbons)	218-01-9 53-70-3 86-73-7 206-44-0 193-39-5 91-20-3 85-01-08 129-00-0 (130498-29-2)	EC/1935/2004	
Shortchain Chlorinated Paraffins		63448-39-8	76/769/EEC +2002/45/EC	Plasticizer for PVC, flame retardant
Sum of Heavy metals (Cd, Hg, Cr(6+) and Pb)				Packaging
Tris(1-aziridinyl) phosphin oxide (TEPA)		545-55-1	76/769/EEC 83/264/EEC	Leather, textiles
Tris-(2,3-dibromo- propyl) phosphate		126-72-7	76/769/EEC 79/663/EEC	Leather, textiles
Ugilec 141 (tetrachlorodipheny l methane)		76253-60-6	76/769/EEC, 91/339/EEC	Insulation oil, lubricant oil, electrical insulation medium, solvent, electrolytic solution
Ugilec 121 (or Ugilec 21) (monomethyl dichlorodiphenyl methane)		-	76/769/EEC, 91/339/EEC	Insulation oil, lubricant oil, electrical insulation medium, solvent, electrolytic solution
Vinyl Chloride Polymer (PVC)				Packaging material, e.g. blisters and bags

ANNEX 3 – Revision History

Date Revision	Short Explanation
7-8-2008	<ul style="list-style-type: none"> • Beryllium: few exemptions and possibility for waivers were included. • Cadmium and Mercury declaration obligation above 50 ppm, moved from the footnote to one of the remarks just below the table for more visibility. There was no change on the content. • Perfluorooctane Sulfonates (PFOS's) compounds were added to the list as they will be restricted as from 27 June 2008 (EU DIRECTIVE 2006/122/ECOF). • Sum of all Polycyclic Aromatic Hydrocarbons (PAHs) (16 mentioned in EPA list) and Benzoapyrene: Those substances are included in the UNECE Protocol to be formalized in Regulation 850/2004/EEC on Persistent Organic Pollutants (POPs). Furthermore, also the "German Stiftung Warentest" or GS imposes this requirements for consumer products, based on the German transposition of the General Product Safety Directive (2001/95/EC) and the regulation on food contact materials (EC/1935/2004) to justify the legal basis for this requirement. • Formaldehyde: requirements have been split into two categories, namely in products (in e.g. wooden loudspeakers, bread roasters, etc.) and packaging material (incl. transportation material, like pellets). Official requirements exist in many countries, like Germany Chem Verbot V, Denmark statut. order nr 289, Austria, Norway, Poland, Lithuania, Finland, The Netherlands, USA – CA (93120-93120.12, title 17, California Code of Regulations). The limits in CA for HWPW were corrected. • Restricted Substances in Batteries: to follow legislation. • Chlorobenzene: general "chlorobenzene" was replaced by the two hazardous forms, hexachlorobenzene and trichlorobenzene (CMR 1 and 2, respectively). • Chromiun 6+ in plating process: Due to the difficulties to control the plating Cr6+ process, posing compliance risks of products brought to the market by Philips, it is proposed to fully restrict use of this substance in any plating or passivation process. • Ozone Depleting Substances in processes: ODCs are subject of federal excise tax law applied to all imported electronics in USA. As part of federal efforts to implement the Montreal Protocol, the U.S. tax code applies excise taxes on the importation of a range of products – including electronics – based on the use or presence of banned/restricted ODCs. These taxes apply even if the ODCs were only used as process chemicals in the manufacture of the products and were never intended to be in the finished product. While there is a minimis exception for certain types of products, this exception does not apply to electronics. Prove of non-use must be delivered in order to apply for exemption. • For clarity and help, annexes containing a list with exemptions and more detailed information about the substances of this list (CAS numbers, names, legislation information, use) were added.
1-1-2007	<ul style="list-style-type: none"> • Due to its toxicity (CMR category 1) and to prepare ourselves on REACH, Beryllium is made restricted now. • To solve problems at numerous suppliers, who only guarantee the ROHS limits, the restriction thresholds limits for Cd in plastics and Hg are changed to the ROHS limits (100 and 1000 ppm, respectively). To be sure that these supplied materials have Cd and Hg concentrations well below the legal ROHS limits, declaration above 50 ppm is introduced for these substances. Therefore also the text "declaration threshold" is changed into "restriction threshold" on the restricted substance list. • Some minor text changes are made for phthalates on the restricted list and lead reporting for PMS on the relevant list.