

## 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.

### A: Restricted Substances in all applications

Substances	Restriction Threshold ppm (mg/kg) <sup>1</sup>
Asbestos (all types)	10
Beryllium and Beryllium compounds	1000
Cadmium and Cadmium compounds (in plastics)	100 <sup>1</sup>
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 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 d</i> )	1000 <sup>1</sup>
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 e</i> )	1
Pentachlorophenol (PCP) and its salts and esters	10
Polychlorinated biphenyls (PCBs)	10
Polychlorinated terphenyls (PCTs)	10
Polybrominated diphenyl ethers (PBDEs) ( <i>see remark f</i> )	1000
Polybrominated biphenyls (PBBs)	1000

- The restriction does not apply to exemptions in European Directive RoHS (2002/95/EC).
- 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.
- Lead-based soldering in electronic circuit boards and other electric applications is exempted in **automotive applications** under the European ELV directive (2000/53/EC).
- Mercury is allowed only in **gas discharge lamps** with certain conditions referred in EU RoHS.
- 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.
- 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) <sup>1</sup>
Arsenic compounds, applied for wood packaging	10
PVC and PVC blends ( <i>see remark g</i> )	1000
Sum of Heavy metals (Cd, Hg, Cr(6+) and Pb)	100

- IC packing is exempted

<sup>1</sup> Above this restriction threshold the substance is restricted and declaration of the substance is obliged. **For Cadmium (in plastics only) and Mercury and their compounds declaration is needed above 50 ppm.** 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. Nevertheless declaration is still needed.

**C: Additionally Restricted Substances when used in specific applications**

Substances	Restriction Threshold ppm (mg/kg) <sup>1</sup>	Remark
Azocolourants	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	
Nickel and nickel alloys ( <i>see remark h</i> )	0,5µg/cm <sup>2</sup> /week	Only in direct and prolonged skin contact applications
Phthalates ( <i>see remark h</i> )	1000	Applied in toys and childcare articles
Antimony in soda lime glass	1000	Only applied in lamps
Arsenic in soda lime and borosilicate glass	1000	
Benzene	5	As residue in materials
Chlorobenzene	100	
Formaldehyde	0.1	
Organostannic compounds	1000	Organic Tin compounds (TBT, TPT and TBTO), applied in paints and as pigments and as agents for anti-oxidizing, anti-bacterial, anti-fungal, anti-septic, anti-staining and anti-fouling.
Phenol and phenolic compounds ( <i>see remark i</i> )	50 mg/l	Applied in toys and childcare articles and laminates of printed wiring boards
Polycyclic aromatic hydrocarbons (PAHs)	50	Applied in applications, such as potting material for electronic ballast
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

- h. 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.
- i. **CE (Consumer Electronics)** requirements for phenol in laminates of printed wiring boards:
- **Smell Emission** : <200 odor unit/m<sup>2</sup>/day  
Test method: Measured in duplo according to NVN2820 (or NEN-EN 13725:2003) by TNO Apeldoorn, the Netherlands, with 10 dm<sup>2</sup> of single sided copper cladded 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).

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