Philips Regulated

Substances List

Royal Philips Electronics List of Regulated Substances in Products, Product-Packaging and Transport Material

CSO-BP01-2013-001

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1 INTRODUCTION

At Philips we have been working to minimize the environmental impacts of our products, processes and services since 1970. Guided by the precautionary principle, Philips' philosophy is "prevention is better than cure". This means where there are threats of serious or irreversible harm to the environment and/or human health, the lack of scientific certainty should not be used as a reason for postponing cost-effective preventive measures. Policies can be developed that may go beyond legislative compliance based on scientific evidence and stakeholder consultation. Decisions for alternatives take into account the level of concern, commercial availability and technical feasibility of alternatives.

The above mentioned policies are reflected in the present document, the "Royal Philips Electronics List of Regulated Substances in Products, Product-Packaging and Transport Material", referred to herein as the "Philips Regulated Substances List" or RSL.

This or newer versions of the present RSL List can be found at Philips website:
http://www.philips.com/shared/global/assets/sustainability/rsl.pdf

1.1 Purpose

This document contains the Philips Regulated Substances List and its annexes. As part of our commitment to health, safety and the environment, Philips requires that all Products or Parts, Product-Packaging and Transport Material delivered to Philips and some manufacturing processes used to make Philips parts comply with all applicable requirements in this list. The list contains minimum requirements related to:

- Federal, state, county or municipal law, regulation, ordinance or code, and
- Philips own requirements

The RSL is part of Philips global policy and therefore included in Philips general purchasing conditions. Each supplier is required to ensure product compliance with this list.

In the past, Philips accepted a general confirmation from suppliers that they would comply with the substances restrictions we issued. Due to the changing nature of regulations, and in particular the introduction of the EU REACH regulation, we have had to change the way in which we collect regulatory compliance data for substances. That is why Philips decided to henceforth collect compliance data in accordance with the RSL at the part level for every product or product-packaging delivered to Philips. We will do so through a web-based Declaration Tool called BOMcheck as described in Section 2.1.

The RSL is aligned with the substances included in the BOMcheck declaration tool. Deviations in the current version of the RSL from BOMcheck are shown in Table 0:

Table 0: Substances restricted in product related applications, deviating from BOMcheck

(see Table 7 information and remarks 10, 12 and 13 for more on these substance restrictions):

Substances	*Maximum Concentration Limit in ppm (mg/kg)*	*Application*
Phthalates DEHP, BBP, DBP, DIDP and DNHP	*100*	*Applied in outer sleeves of cables/cords of headphones and headsets*
Phthalates DEHP, BBP and DBP	*1000*	*Applied for bags, pouches, mobile phone and other portable electronics replaceable covers or cases.*
Brominated Flame Retardants and PVC restricted in consumer products	*900/1000*	*BFR applied in printed wiring board laminate and plastic parts*

1.2 Scope

The requirements as set up in the Philips Regulated Substances List are a world-wide policy of Philips, even if local regulatory requirement may be less strict. Where there is a difference between the Philips requirements and the local regulatory requirements, the most stringent, i.e., most protective for health, safety and the environment applies. It is the supplier's responsibility to ensure that these requirements are met.

The scope of this guidance document includes all articles (i.e. materials, components, subassemblies, products, labels attached to products, etc.), product packaging (i.e. wood, paper or card-boxes, plastic material, containers, user manuals, labels, etc.), transport materials (wrapping foil, pallets, sleep sheets, containers, etc.), and some manufacturing processes as described in table 9. The restricted substances cannot be contained in the product or used in the manufacture of the product and its components above the designated thresholds for the controlled applications listed. Declarable substances that are used in articles or packaging materials must be declared according to the limits given in the respective table.

If the supplier needs clarification with respect to Philips' guidelines and rules presented here, they should discuss with the Philips Representative, which is generally the supplier account manager.

1.3 Deviations

In those cases where the supplier supplies or intends to supply articles to Philips that do not comply with the Philips RSL, the supplier needs to contact the Philips Supply Management organization immediately to resolve the issue.

Recycled content
Philips strongly promotes the use of recycled materials, in particular the use of recycled plastics. Philips realizes that the use of recycled materials may cause challenges in terms of guaranteeing compliance to all substances included in the Philips RSL. For issues related to Philips RSL compliance RSL for recycled materials, please contact Philips Supply Management for support. For non-legal obligations, it may be possible to obtain a waiver for presence of certain substances in recycled materials.

1.4 Thresholds

While the substances information for parts, products, and packaging is collected through BOMcheck, suppliers still need to validate that their goods comply with the RSL by comparing their BOMcheck declarations with the RSL. In this respect you need to consider two thresholds:

1. Maximum concentration limit for restricted substances
2. Maximum concentration limit for declarable substances

Maximum concentration limit for restricted substances

Royal Philips Electronics accepts that certain materials contain a certain amount of naturally occurring restricted substances. However, when a substance is present in products, parts, product packaging or transport materials at values above the listed maximum concentration limit, the substance is restricted (not allowed to be present) and the good cannot be intentionally used for Philips products. Thresholds can represent legal limits, or refer to currently accepted analysis thresholds.

Restricted substances (e.g. RoHS) are measured at homogeneous level, so these thresholds must be declared on homogeneous material level. Use of substances exempted for use in some specific applications, as mentioned in legislation, is allowed. However, it must be declared through BOMcheck accordingly.

Maximum concentration limit for declarable substances

Declarable substances (e.g., REACH SVHCs) are substances which use needs to be monitored due to regulatory requirement or because Philips wants to monitor their use from a precautionary point of view. Use of these substances is permitted, unless otherwise specified, but must be reported above the maximum concentration limit. In this case the maximum concentration limit functions as a threshold above which you must provide the exact concentration of the declarable substance present in the relevant part, article or packaging. Basic understanding and interpretations of definitions like homogeneous material, w/w of REACH, articles definition, etc. are presented in Annex 1.

2 SUPPLIER DECLARATION PROCESS

2.1 Declaration Tool

As referred to in Section 1.1., Philips will collect substances information for its parts, products, product packaging, and transport packaging because regulations such as RoHS and REACH require us to maintain regulatory compliance evidence at that level. Philips has decided to utilize BOMcheck as a tool to help collect chemical substances information from suppliers (www.bomcheck.net). BOMcheck is an industry platform used by a large number of companies, and represents an efficient tool that helps suppliers follow up on the many legal requirements and provide smooth communication with the customers and in particular with suppliers up the supply chain. BOMcheck is primarily a regulatory compliance tool designed specifically to enable suppliers to provide declarations for RoHS, REACH, and any other restricted and declarable substances legislation through detailed substances reports. BOMcheck also allows suppliers to provide Full Material Declaration (FMD) of their articles. The benefit of FMD is that suppliers can upload the total chemical composition of their articles once (unless the formulation of supplied articles changes), while BOMcheck will then check your compliance status automatically every time regulatory changes are introduced.

2.2 Demonstrating compliance to the RSL through BOMcheck

Suppliers are requested to make declarations in BOMcheck for all articles (i.e. materials, components, subassemblies, products, labels attached to products, etc.), packaging materials (i.e., wood, paper or card-boxes, plastic material, containers, user manuals, labels, etc.), transport materials (wrapping foil, pallets, sleep sheets, containers, etc.), and some manufacturing processes (as described in the specific table. The Table below explains under which conditions BOMcheck declarations are compliant with the RSL. In case there are issues in fulfilling the requirements, contacting Philips Supplier Management is necessary.

Table number	Compliant when above limit?
Table 0	Not allowed; (not included in BOMCheck tool; ensure compliance)
Table 1 *(see remark 1)*	Not allowed
Table 2	Not allowed
Table 3	Compliant for declarable substances, not allowed for restricted substances
Table 4	Not allowed
Table 5	Compliant for declarable substances
Table 6	Compliant for declarable substances, not allowed for restricted substances
Table 7	Not allowed
Table 8	Not allowed
Table 9	Not allowed

1. Philips Healthcare products need to be RoHS compliant one year ahead (22nd July 2013) of the legislative date. RoHS substances need to be declared in all cases. See also remark 2 in Table 1

3 PRODUCTS CONTENT RESTRICTIONS AND DECLARATIONS

TABLE 1: RoHS Substances Restrictions in all product-related applications

"Restrictions are derived from EU RoHS Directive. Similar legislation is increasingly adopted in other regions. The restrictions in this Table apply to all Philips articles (both EEE and non-EEE; see remark 2 and 3 for exemptions) in all regions."

Substances	Maximum Concentration Limit ppm (mg/kg)
Cadmium and Cadmium compounds	100
Hexavalent Chromium compounds (remark 3)	1000
Lead and Lead compounds *(remark 2 and 3)*	1000
Mercury and Mercury compounds *(remark 4)*	1000
Polybrominated diphenyl ethers (PBDEs) *(remark 5)*	1000
Polybrominated biphenyls (PBBs) *(remark 5)*	1000

2. The restrictions do not apply to the exemptions in the European Directive RoHS (2011/65/EU). They also do not apply to batteries- and automotive applications as these are covered by other legislation (see e.g. EU battery directive (2006/66/EU; see also Table 4), the European ELV directive (2000/53/EC and the amendment 2011/37/EU).The list of EU RoHS exemptions, EU battery directives and EU ELV directive can be found in BOMcheck. Heavy metal restrictions for batteries and packaging are given in Tables 4 and 7, respectively.
3. Philips Healthcare products need to be free of Hexavalent Chromium compounds, Lead and Lead compounds one year ahead of the RoHS legislative date (i.e. by 22nd July 2013). Other RoHS substances are already restricted due to Philips policy and other legislation (e.g. article 67 in REACH). Substances need to be declared in case of exemptions.
4. For Lighting Products the products should also comply with the Ecodesign /ERP directive 2009/125/EC (Implementing measure EC No 245/2009). Therefore, use of Mercury in lamps should be labelled on the package. A declaration via BOMCheck is required including: (1) providing the amount of Mercury per lamp in x,x mg; and (2) indicating the relevant ROHS exemption number within the section on RoHS in BOMCheck tool.
5. Polybrominated diphenylethers (PBDE) are the same as polybrominated biphenylethers (PBBE); polybrominated diphenyloxides (PBDO) are the same as polybrominated biphenyl oxides (PBBO). For other Brominated Flame Retardants, see Table 6.

TABLE 2: REACH Article 67 Legislations Substances Restrictions which may be found in hardware and electrical and electronic equipment

These substances are equivalent to the relevant restrictions as included in article 67 of the EU REACH regulation. However, Philips enforces these limits worldwide

Substances	Maximum Concentration Limit ppm (mg/kg) or as given in the table	Application
Asbestos (all types)	Not intentionally added	All applications
Dibutyltin (DBT) compounds	1000	0.1% by weight of tin in a material
Dioctyltin (DOT) compounds	1000	Application in any textiles or toys and childcare products; 0.1% by weight of tin in a material
Tri-substituted organostannic compounds	1000	0.1% by weight of tin in a material
Toys and childcare products		

Substances	**Maximum Concentration Limit ppm (mg/kg) or as given in the table**	**Application**
Selected Phthalates Group 1 (BBP, DBP, DEHP)	1000	Plasticised material when used in toys and childcare articles
Selected Phthalates Group 2 (DIDP, DINP, DNOP)	1000	Plasticised material when used in toys and childcare articles which can be placed in the mouth
Dielectrics		
Monomethyl dibromodiphenyl methane (DBBT)	No content permitted	
Monomethyl dichlorodiphenyl methane (Ugilec 121 or Ugilec 21)	No content permitted	
Monomethyl tetrachlorodiphenyl methane (Ugilec 141)	No content permitted	
Polychlorinated biphenyls (PCBs)	No content permitted	
Polychlorinated terphenyls (PCTs)	No content permitted	
Substances which are restricted if part comes into contact with skin		
Azo Colourants containing certain amines	No content permitted	Not permitted in textile and leather articles which may come into direct and prolonged contact with skin
Nickel and nickel alloys *(see remark 6)*	0,5µg/cm^2/week	Only in direct and prolonged skin contact applications
Tris-(1-aziridinyl) phosphinoxide	No content permitted	Not permitted in textile articles which may come into contact with skin
Tri-(2,3-dibromo-propyl) phosphate	No content permitted	Not permitted in textile articles which may come into contact with skin
Pesticides, biocides and wood preservatives		
Dimethylfumarate	not intentionally added	
Pentachlorophenol (PCP)	1000	In any substance or preparation
Tar oils and creosotes	No content permitted	In wood or wooden material
Substances which are liquids at room temperature		
Benzene	Content must be < 0.0005% w/w in toys and < 0.1% w/w in any substance or preparation	For substances and preparations (e.g. cleaners)
Nonylphenol and nonylphenol ethoxylates compounds	1000	In any substance or preparation
1,2,4-Trichlorobenzene	1000	In any substance or preparation and as residue in materials or emissions

6. 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.

TABLE 3: Substances restricted or declarable by other legislation in product related applications

Substances	**Maximum concentration limit ppm (mg/kg) or as given in the Table**	**Application**
Formaldehyde	No intentionally added content	In composite wood products or components (plywood, particle board and MDF) and textiles
Lead and lead compounds	300	Applied in outer sleeves of cables/cords with thermoset or thermoplastic coatings, according to Proposition 65 legislation, USA
Ozone depleting substances	Not intentionally added	All applications
Perfluoroctane sulfonates (PFOS's) compounds	1000	
Sulfur Hexafluoride	Specific permission needed	All applications
Polychlorinated and polybrominated dioxins and furans	No content permitted	
Radioactive substances	No intentionally added content	
Plasticisers, flame retardants, dielectrics		
Polychloronaphtalenes	No intentionally added	> 3 Cl atoms; applied as stabilizer and flame retardant in plastics
Alkanes, C10-13, chloro (SCCP; Short chained chlorinated paraffins)	No intentionally added content	
Parts used in medical devices or in toys and childcare products		
Lead and lead compounds	*100*	*Applied in accessible parts in toys and childcare products*
Lead and lead compounds	90	Applied in paint in toys and childcare products
BPA (Bisphenol A)	No content permitted	In food containers marketed to children under three years old
BPA (Bisphenol A)	Declare	Declare if manufactured from raw materials using BPA or derived of BPA and if used in medical devices and part comes into contact with patient or patient fluids (e.g., via intravenous, inhalation, oral exposure, contact with skin, or as an implant).
Phthalates *(remark 7)*	Declare	for parts of a device (or a device itself) intended to administer and/or remove medicines, body liquids or other substances to or from the body, or devices intended for transport and storage of such body fluids or substances

7. Includes the following phthalates: Bis(2-methoxyethyl)phthalate (EC# 204-212-6, CAS 117-82-8), Bis (2-ethylhexyl)phthalate (DEHP; EC# 204-211-0, CAS 117-81-7), Dibutyl phthalate (DBP; EC# 201-557-4, CAS 84-74-2), N-pentyl-isopentylphthalate (EC# 284-032-2, CAS 84777-06-0), Di-n-pentyl phthalate (EC# 205-017-9, CAS 131-18-0), Diisopentylphthalate (EC# 210-088-4, CAS 605-50-5), Benzyl butyl phthalate (BBP; EC# 201-622-7, CAS 85-68-7), and Diisobutyl phthalate (DIBP) 84-69-5 as per the Medical Devices Directive (MDD) 93/42/EEC as amended by Directive 2007/47/EC, Essential Requirement 7.5

TABLE 4: Substance Legislative Restrictions in Batteries (remark 8)

Substances	Maximum concentration limit ppm (mg/kg)
Cadmium (all batteries)	10
Mercury for all batteries	1
Lead and lead compounds in alkaline zinc-manganese dioxide batteries	40
Lead and lead compounds in non-alkaline zinc-manganese dioxide batteries	1000

8. Cadmium use is exempted for batteries used in emergency lighting (see European Battery directive (2006/66/EU; and for some spare parts for electric vehicles (2000/53/EC and the amendment 2011/37/EU). Lead and lead compounds use is exempted for batteries in automotive applications (see European ELV directive (2000/53/EC and the amendment 2011/37/EU).

TABLE 5: REACH Candidate List Substances Declaration used in all product and product-packaging related applications (Article 33)

Due to the fact that the European Chemicals Agency updates this list at least twice a year, we refer to the http://echa.europa.eu/chem_data/candidate_list_table_en.asp for the most recent list of candidate substances. BOMcheck will also contain the most recent list of SVHC and separates between those SVHC which are likely to be found in electronics and those that are not. Please see the lists for substances likely to be present in product and packaging applications in the following link: Link to BOMcheck.

The use of SVHC is allowed (unless otherwise stated in any of the other Tables in the RSL). However, when the concentration on article level is found to be above the limits stated here, declaration is obligatory. For definitions, such as “Article”, please see the Annex 1.

TABLE 6: Industry Specific Substances Restrictions and Declarations in all product-related applications

(see Table 0 on page 3 for the specific Philips deviations from the Industry list as listed in the BOMcheck tool)

Substances	**Maximum Concentration or declaration Limit ppm (mg/kg)**
Restricted substances	
Beryllium and Beryllium oxide *(see remark 9)*	1000
Phenols (remark 10)	1000
Phthalates DEHP, BBP, DBP, DIDP and DNHP Applied in outer sleeves of cables/cords of headphones and headsets (remark 11)	100
Phthalates DEHP, BBP and DBP Applied for bags, pouches, mobile phone and other portable electronics replaceable covers or cases (remark 11)	1000
Substances restricted in lighting products	
Antimony compounds in glass in lamp bulbs	1000
Arsenic compounds glass in lamp bulbs	1000
PAH (Polycyclic aromatic hydrocarbons) in potting material for electronic ballast of lamps	50
Substances restricted if part comes into contact with skin	
Azo Colourants *(see remark 12)*	30
Benzoapyrene in short duration skin contact (≤ 30 sec)	20
Benzoapyrene in long duration skin contact (> 30 sec)	1
Sum of PAHs in short duration skin contact (≤ 30 sec)	200
Sum of PAHs in long duration skin contact (> 30 sec)	10
Brominated Flame Retardants and PVC – <u>restricted</u> in consumer products and <u>declarable</u> in professional Lighting products and Medical devices (see remarks 13, 14)	
Brominated Flame Retardants in printed wiring board laminate including HBCDD, but other than PBBs, PBDEs ; restriction/declaration threshold for total bromine concentration by weight in homogeneous material used in printed wiring laminates *(see remark 13)*	900
Brominated Flame Retardants including HBCDD but other than PBB and PBDE in any plastics parts; restriction/declaration threshold for total bromine concentration by weight in homogeneous material used in plastics *(see remark 13)*	1000
Polyvinyl Chlorine (PVC) in total chlorine concentration by weight in homogeneous material (see remark 14)	1000
Chlorinated Flame Retardants - declarable	
Chlorinated Flame Retardants in printed wiring board laminate; declaration threshold for total chlorine concentration by weight in homogeneous material used in plastics	900
Chlorinated Flame Retardants in any plastics parts; declaration threshold for total chlorine concentration by weight in homogeneous material used in plastics	1000
Other Substances - declarable	
Antimony trioxide in plastic materials;	1000
Phthalates (see remark 15)	1000

9. Beryllium and Beryllium oxide are 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 (e.g., BeCu), if no feasible technological alternative exist.

10. Increasing number of phenols are becoming regulated under legislation in the EU. In view of the increasing concern and attention focussed on phenols, a precautionary approach isntaken to restrict the allowable concentration of phenols in parts to < 0.1% w/w. This restriction includes the following phenols:
    - 4-(1,1,3,3-tetramethylbutyl)phenol, (4-tert-Octylphenol)
    - 4-(para)-nonylphenol
    - 4-nonylphenol
    - Nonyl phenol
    - Octylphenol
11. The full name of the banned phthalates and their CAS-numbers are: Di(2-ethylhexyl) phthalate (DEHP) CAS 117-81-7, Butyl benzyl phthalate (BBP) CAS 85-68-7, Di-n-butyl phthalate (DBP) CAS 84-74-2, Di-isodecyl phthalate (DIDP) CAS 68515-49-1 and Di-n-hexyl phthalate (DNHP) CAS 84-75-3.These substances are restricted in these specific applications due to labeling requirements under Proposition 65 Legislation in California, USA.
12. This restriction of Azo dyes goes beyond the legal restriction under REACH article 67 (see Table 2) as Philips restricts the use of Azo dyes in all applications that come into contact with the skin, and not only for textiles and leather.
13. Philips is pursuing a phase out of the use BFRs in consumer products newly put on the market. Therefore, the use of BFRs needs to be declared to Philips via the BOMCheck tool. For Philips consumer products organobromine compounds in the form of flame retardants should not be used in parts, components, materials, or products in concentrations equal to or greater than 0.09% (900 ppm maximum of Bromine) by weight in any homogeneous material. BFRs are declarable for professional Lighting products and Medical devices.
14. Philips is pursuing a phase out of the use of PVC, in consumer products newly put on the market. Therefore, the use of PVC needs to be declared to Philips via the BOMCheck tool. For Philips consumer products organochlorine compounds in the form of polyvinyl chloride or polyvinyl chloride congeners should not be used in parts, components, materials, or products in concentrations equal to or greater than 0.1% (1000 ppm maximum of Chlorine) by weight in any homogeneous material. PVC is declarable for professional Lighting products and Medical devices.
15. The following phthalates need to be declared:

Phthalate	CAS No.	Name
DEHP	117-81-7	Bis (2-ethylhexyl)phthalate; Di (2-ethylhexyl) phthalate
DBP	84-74-2	Dibutyl phthalate; Di-n-butyl phthalate
BBP	85-68-7	Benzyl butyl phthalate; Butyl benzyl phthalate
DIBP	84-69-5	Diisobutyl phthalate; Di-i-butyl phthalate
DINP	28553-12-0; 68515-48-0	Di-isononyl phthalate; Diisononyl phthalate
DIDP	26761-40-0; 68515-49-1	Di-isodecyl phthalate; Diisodecyl phthalate
DNOP	117-84-0	Di-n-octyl phthalate
DNHP	84-75-3	Di-n-hexyl phthalate
DIHP	71888-89-6	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters,
DHNUP	68515-42-4	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear
DMEP	117-82-8	Bis(2-methoxyethyl) phthalate

TABLE 7: Restrictions in Product-Packaging

Legislative Substances	**Maximum concentration limit ppm (mg/kg)**
Sum of Heavy metals (Cd, Hg, Cr(6+) and Pb)	100
Dimethyl fumarate (e.g. in silica gel bags)	No intentionally added content
Arsenic compounds, applied for wood packaging	No intentionally added content
Formaldehyde content in packaging *(see remark 16)*	1000
Industry substances	
Polyvinyl chloride (PVC) and compounds in PVC	1000
Expanded polystyrene (EPS) material in any consumer product	Not permitted

16. For Formaldehyde emissions from packaging see also details on materials and limits in Table 8 (out-gassing).

4 PRODUCT, PACKAGING AND TRANSPORT CONTENT RESTRICTIONS FOR WHICH BOMCHECK DECLARATION AT COMPANY LEVEL IS REQUIRED

TABLE 8: Emissions from products and packaging during transport

Residues or outgassing from products and packaging	**Maximum concentration limit ppm (mg/kg)**
Formaldehyde emissions from hardwood plywood, other wood-based materials and non-wood materials (see remark 17)	0.05 - 0.12
Carbonmonoxide	25
Carbon dioxide	5000/5 vol. %
Cyanide	0.9
Ammonia	20
Sulfurylfluoride	2.5
Chloropicrine	0.1
Dichloroethane	1.5
Benzene	1
Styrene	25
Toluene	40
Xylene	48
Fumigants and biocides used in or transport material and shipping containers	**Maximum concentration limit ppm (mg/kg)**
Methyl bromide *(see remark 18)*	No active fumigation (0.25)
Phosphine or any other fumigant *(see remark 19)*	No active fumigation (0.1)
Any biocide used in treatment of (wood) packaging or transport material not approved in EU Biocides Directive or other local legislation	No content allowed

17. Formaldehyde emission from materials: Emission from hardwood plywood (HWPW) veneer core is 0.05 ppm after 1-Jan-2010. HWPW composite core emission limit is 0.05 ppm from 1-July-2012. Emission limit from particle board (PB) is 0.09 ppm from 1-Jan-2011. Emission limit from medium density fibreboard (MDF)) is 0.11 ppm from 1-Jan-2011. Emission limit from thin medium density fibreboard (MDF)) is 0.13 ppm from 1-Jan-2012. Composite wood is defined by California Code of Regulations (CCR), Title 17, Section 93120.1. Refer to CCR, Title 17, Section 93120.9 for test methods. TWA value of 0.12ppm is for non-wood materials in accordance with Dutch emission regulations as published Staatscourant 28-December-2006, nr. 252 / p. 23.
18. No active fumigation allowed. Limits are expressed as Time-Weighted Average (TWA) values in shipping containers and refer to residues left from earlier fumigations.

TABLE 9: Substances restricted in Manufacturing Processes

Substances	Maximum concentration limit ppm (mg/kg)	Application
Hexavalent Chromium (Cr 6+) and compounds *(see remark 19)*	Not permitted	Not permitted in passivation processes
Ozone Depleting Substances *(see remark 20)*	Not permitted	Not permitted in any manufacturing processes

19. 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 passivation process.
20. Use of Ozone Depleting Substances in processes is subject of federal excise tax law applied to all imported electronics in USA. The substances are also internationally banned under UNEP Montreal Protocol on Substances that Deplete the Ozone Layer and incorporated in the REACH Regulation under article 67.

ANNEX 1 – Definitions and interpretation of certain terms

1.1. Declaration on homogeneous material (EU RoHS) level vs. Article (EU REACH) level

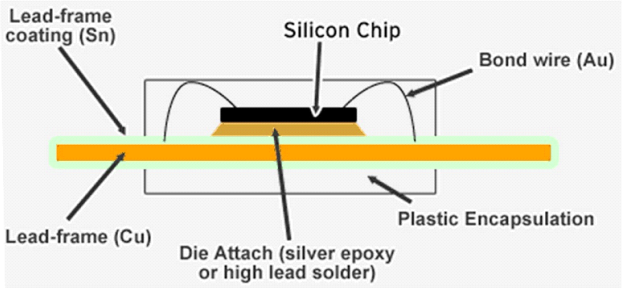


Figure 1: Material breakdown of an Integrated Circuit (IC) component (to be considered as Article in this example)

Substance 'X' < 0.1% at Homogeneous Material level means:

- Plastic encapsulation → X < 0.1%
- Bond wire → X < 0.1%
- Silicon ship → X < 0.1%
- Lead Frame coating (Cu) → X < 0.1%
- Lead Frame coating (Sn) → X < 0.1%
- Die Attach → X < 0.1%
- Etc.

Substance 'X' < 0.1% at Article level means:

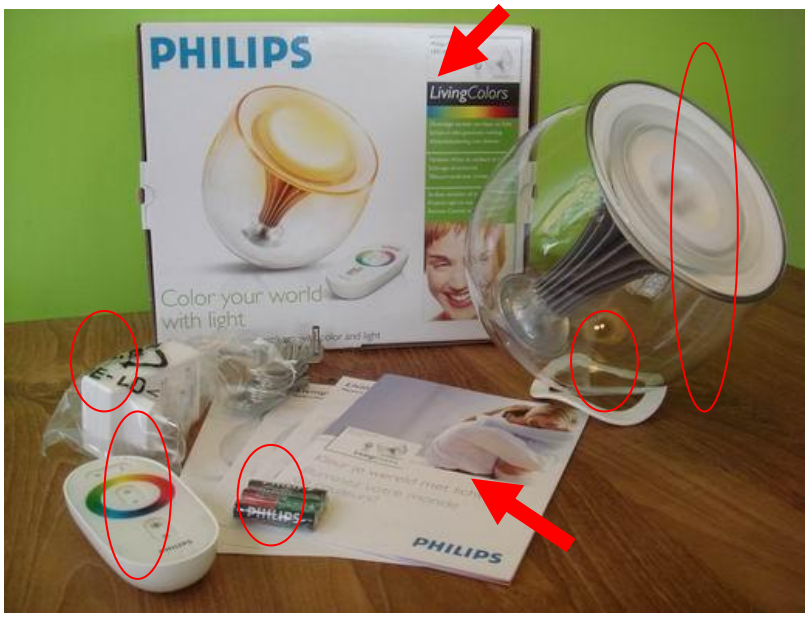
X [Plastic encapsulation + Bond wire + Silicon ship + Lead Frame coating (Cu) + Lead Frame coating (Sn) + Die Attach + ...] **< 0.1%**

Note that some parts within the article may contain higher levels (>0.1%) of this substance X, but because the final content of that substance must be calculated in respect to the complete article it can very well be that the concentration at article level is still <0.1%

1.2. Article Definition

According to REACH legislation Article is defined as follows: "An article means 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". As such, an Article can be anything varying from a small component, a sub-assembly, an accessory, finished product or product-packaging material.

Current Philips interpretation of article when applied to a finished consumer product is a follows: "articles can, in general terms, be seen as all "loosen or separated" parts in a box". For example:



1 Product → 10 Articles

1. 1x lamp
2. 1x remote control
3. 1x foot (stand) of the lamp
4. 1x power adapter
5. 1x battery pack containing 3 batteries
6. 1x cardboard packaging
7. 1x plastic packaging of adapter
8. 1x plastic wrap batteries
9. 1x EPS cushions – not visible
10. 1x all manuals / books

Figure 2: Finished consumer product. Illustration of Article definition

1.3. Homogenous Materials

A homogenous material is a single substance such as a thermoplastic, for example the PVC insulation on insulated copper wire. Components such as capacitors, transistors and semiconductor packages are not regarded as "materials" but instead contain several different homogenous materials. For example, a semiconductor package will contain at least six homogenous materials as shown In Figure 1. The RoHS materials restrictions apply to each of these individual homogenous materials.

ANNEX 2 – Revision History

Date Revision	Short Explanation
February 2013	• Version C, CSO-BP01-2013-001 • Lead and lead compounds in primary alkaline zinc-manganese dioxide batteries to 40 ppm in line with China Standard: GB 24427-2009 • Lead and lead compounds in non-alkaline zinc-manganese dioxide batteries to 1000 ppm in line with Brazil Legislation (CONAMA Resolution 401/2008) • Cadmium in batteries to 10 ppm in line with change in Swiss legislation (20 ppm) and Korean legislation (10 ppm) • RSL further aligned with BOMCheck and legislation (addition of antimony trioxide in plastics to Table 6, SF6 to Table 3 (Austrian Legislation), thresholds for dimethylfumurate, organo stannic compounds and arsenic compounds in products and/or packaging • Certain tin compounds (DBT and DOT) moved from table 6to Table 2 (REACH article 67) • Phthalates in some applications moved from Tables 2 and 3 to Table 6 and further specified which phthalates need to be declared if not asked elsewhere in the RSL. • Ozone depleting substances and PFOS moved from Table 2 to Table 6, • Phenols in Table 6 have been further specified. • Philips policy on PVC and bromine and Chlorine flame retardants have been slightly adapted in Table 6. • Added Diisobutyl phthalate (DIBP) 84-69-5 in footnote 7 to align with the essential requirements of the EU Medical Devices Directive.
15.09.2011	• Version B, CSO-BP01-2011-001 • Clarified in Section 1.1 where the RSL deviates from BOMcheck • Changed Lead and lead compounds restriction limit from 300 to 100ppm in line with US legislation. • Reorganised sequence of the Tables and a number of substances so it is the same sequence as BOMcheck (www.bomcheck.net) • paragraph explaining different thresholds moved from chapter 2.2 to chapter 1.4 • Added clarification that waivers may be obtained to stimulate use of recycled content in chapter 1.3 • added chapter 2.3 Demonstrating compliance through BOMcheck • Revision in Chapter 3 moved completely to Annex II • Adjusted the schedule for Medical devices' RoHS compliancy in Chapter 3, Table 1 • Added hyperlink to RoHs recast in Official Journal of European Union and to BOMcheck with ELV and RoHS exemptions in Chapter 3, Table 1 • Adjusted table sub-header to "toys and childcare products" in Chapter 3, Table 2 • Organostannic compounds restriction corrected to "tri-substituted organostannic compounds"in Chapter 3, Table 2 • Dioctyltin and Dibutyltin compounds restriction added to Chapter 3, Table 6. • Removed remarks from asbestos, Ozone depleting substances, PFOS exemptions in Chapter 3, Table 2Added new legislation concerning the phthalates use, based on Proposition 65 of California, USA, to Chapter 3, Table 3 • Added a remark on the phthalates in the scope of new Proposition 65 regulation in Chapter 3, Table 3 • Added CAS-numbers and corrected faulty EC numbers for medical devices phthalates remark in Chapter 3, Table 3 • Formaldehyde, radioactive substances and lead advisory remarks removed in Chapter 3, Table 3 • Added new batteries regulations to Chapter 3, Table 4 • Cadmium remark for Medical devices removed from Chapter 3, Table 4 • Added word "declarations" to better describe the contents of Chapter 3, Table 6 contents • Removed explanatory remark for PAH compounds in Chapter 4, Table 5 • Arsenic compounds concentration limit changed from 10 ppm to "no content permitted" in Chapter 3, Table 6 • Removed the substances table for REACH Candidate list substances and added a reference to BOMcheck as source of information for Chapter 3, Table 7 • Old Table 7 contents moved to be part of Chapter 3, Table 3 • Old Table 8 contents moved to be part of Chapter 3, Table 3 • Annex I on RoHS exemptions removed • Annex II with examples on CAS-names removed
22-3- 2010	• Version A, CSO-BP01-2010-001 • The Philips Regulated Substances List covers not only restricted, but also declarable substances and,

	therefore, replaces both the Restricted and Relevant Substances Lists in Products (CSO-BP01-2006-11 and CSO-BP01-2006-12). • The layout of the Philips RSL was aligned with the BOMCheck IT Tool. • Inclusion of BOMCheck substances, such as tars oils, creosotes, and dioxins. • Hg declaration - ErP(2009/125/EC) Implementing measure EC No 245/2009 and Philips policy for Lighting products in anticipation of the revision the EU ROHS exemption list. • List of exemptions of Annex 1 updated (new exemptions added according to Decision 2009/443/EC. Expired exemptions are crossed out). • Updated Annex 1 with exemptions for ROHS Categories 8 and 9 in anticipation of ROHS Recast. • The List has been broadened from Substances in products to other relevant applications like packaging and transport material. Also regulated declarable substances as requested by REACH have been included. • Dimethylfumarate restricted in all applications according to Decision 2009/251/EC. • Restriction of Phenol and Phenolic compounds in PCB's was removed, as there is no reason to believe it still represents a problem in this application. • SCCP are no longer restricted but declarable, in line with the REACH regulation. • PVC and BFR declaration should comply with Industry guide – IEC 61249-2-21. • Expanded Polystyrene (EPS) restricted when used in consumer products. • Limits for (gas) emissions from products, product-packaging and transport material as to fulfil with Dutch requirements (http://www.vrominspectie.nl/actueel/publicaties/uitvoering-motie-poppe-boelhouwer-containers-met-gevaarlijke-gassen.aspx). Substances being controlled are Carbon monoxide, Carbon dioxide, Cyanide, Ammonia, Sulfurylfluoride, Chloropicrine, Dichloroethane, Benzene, Styrene, Toluene and Xylene and fumigants, Phosphine and Methyl bromide.
1-1-2009	• Lead in Childcare products according to USA requirements was added. • Beryllium: exemption Be metal alloy added (where no feasible technological alternative exist). • EU ROHS substances for medical devices were added to the restricted List with a phase-out date of 1-1-2013. • Formaldehyde emission levels from composite wood have been changed according to California legislation • Restriction to Cr6+ in processes limited to passivation processes • EU ROHS exemptions lists is replaced by the December 3 2008 EU Commission proposal • Annex 1.1 is added with an explanation on homogeneous and article product declaration
7-8-2008	• 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. • Perfluoroctane 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	• 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.