Management standard for environment-related substances

Version：1.5

Revision history

Version	Revised date	Revised by	Revised content
1.0	2010-11-23	Luo jinhua	Creation of Document. Replace the standard as follow: <Limited / Embargo Material Management Standard for Product (For Chinese market) Q/TMC G09-2007>、<Limited / Embargo Material Management Standard for Product (For Oversea market) TS-D-M-0001>
1.1	2012-02-13	Luo jinhua	1. Update “5. Requirements for hazardous substances”, “Appendix A”, “Appendix B”, “Appendix C”and “Appendix E”, Delete “6. SVHC of TCL Communication”, Add “6. Requirements for conflict minerals”. 2. Update < Supplier’s environmental declaration >, Add < Declaration：Do not use conflict minerals >.
1.2	2012-04-26	Luo jinhua	1. Update “5. Requirements for restricted substances”. 2. Add “6.Voluntary restricted substances”. 3. Update the declaration and questionnaire.
1.3	2013-03-31	Luo jinhua	1. Update “4.2 test report”: Test report is valid for 2 years. English report. 2.Update “5.1.3 Further requirements on batteries”: Delete lead’s limit value. Add the mark requirements. 3. Update “5.2.2 Annex XVII restriction list”: Revise PCN’s limit value. Delete “Diphenylether, octabromo derivative(C12H2Br8O)”. 4. Update “5.3 Substances restricted by other regulations”: Add the requirements of POPs directive (No 850/2004). 5.Update “5.4 Halogen free”: Revise PVC’s limit value. 6. Update “6 Voluntary restricted substances”: Add limit value for “6.1 Hazardous substance”. Add “6.2 Rare metal”. 7. Update “7. Requirements for conflict minerals”: Delete Silver (Ag), Cobalt (Co), Palladium (Pd) and Nickel (Ni). 8. Update “8. Related document”: Add document ”Declaration：Not use conflict minerals” , “Packaging declaration of conformity” and “Declaration of conformity D05-008”. 9. Add “Reference test method” for substances. 10. Delete “Appendix A: SVHC candidate list”. 11. Update “Appendix A: Exemptions list of EU RoHS directive” and “Appendix D: References”.

1.4	2014-10-07	Luo jinhua	1） Update “Appendix A: Exemptions list of EU RoHS directive”. 2） Update “5.3 Substances restricted by other regulations and standards”: ① Add the requirements for three phthalate, requirements from “UL ISR 110 (ULE)” and “Kcell customer”. ② Update the requirement of PAH, the new requirement is to become effective on and from July 1, 2015. 3） Revise the laboratory requirements of “4.2 Test report（TR）”. 4） Update some requirements and description.
1.5	2017-09-20	Luo jinhua	1） Update the requirements of MSDS 2） Update the requirements of ‘5.1 RoHS directive, packaging directive and battery directive’：add four phthalates of RoHS2.0
	2018-07-01	Luo jinhua	1） Update the requirements of test report 2） Update ‘5.3 Substances restricted by other regulations and standards’
	2018-10-10	Luo jinhua	1） Add the requirements of ‘environmental attribute’ 2） Update ‘5.3 Substances restricted by other regulations and standards’ 3） Update ‘Appendix A: Exemptions list of EU RoHS directive’ 4） Delete ‘Voluntary restricted substances’

Content

1 Purpose

The purpose of requirements concerning chemical substances in 'Product and its components, auxiliary materials used in production, clamping fixture, tool' is to:

• Ensure TCT products compliance with the requirements of regulations and customers.

• Minimise harmful effects to human health and environment from TCT products.

2 Scope of application

'Product and its components, auxiliary materials used in production, clamping fixture, tool' must fufill the requirements in this standard.

Unless otherwise specified, the requirements in this standard are valid for each separate homogeneous material in the products. Wherever overlapping restrictions/requirements concerning the same substance, the strictest restriction/requirement is valid. The content of hazardous substance shall below the limit value in this standard, the exempt materials refer to the latest requirements in the laws.

All references in this standard, refer to the latest version of the standards and laws. When new substances are added to the lists (e.g. SVHC candidate list) that are referred to in this standard, the updated lists are being the effective content in this standard. And the requirements for these new substances shall be fulfilled according to the standards and regulations, unless otherwise specified.

Note that the requirements apply to materials in products. This means that it is not sufficient to secure compliance for raw material as it is used in production; avoiding contamination during the manufacturing process and during storage and transport is also necessary.

3 Term definition

1）Environment-related substance: Chemical substances listed in the environmental regulations and client's requirements.

2）Homogenous material: A material that cannot be mechanically disjointed into different materials. The term "mechanically disjointed" refers to mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes. Examples of homogenous materials are individual types of: plastics, ceramics, glass, metals, alloys, paper, board, resins, and coatings. Surface conversions such as chromating are also seen as separate "homogenous materials". Example an electric cable that consists of metal wires surrounded by non-metallic insulation materials – in this case the limit values would apply to each of the separable materials individually. Small electronic components, e.g. an individual transistor on a printed circuit board, can be seen as a non-disjointable and thus as a

"homogenous material" in this specification. The printed circuit board base, without soldering and components, can also be seen as non-disjointable "homogenous material".

3）Environmental attribute

Level	Environmental attribute classification	Requirements
Level1	RoHS	Fulfill the requirements that listed in <Management standard for environment-related substances T41001> chapter 5.1
Level 2	RoHS + REACH	Fulfill the requirements that listed in <Management standard for environment-related substances T41001>, except 'the HF requirement listed in chapter 5.4'
Level 3	RoHS + REACH + HF	Fulfill all the requirements that listed in <Management standard for environment-related substances T41001>

4 Requirements for documentation

4.1 Self declaration（SD）

- This self declaration (SD) is created by TCT according to this standard, e.g. <Environmental Declaration of Conformity>.
- The declaration is appropriate for all the suppliers of TCT, it has legal effect and becomes effective when supplier signs. Whenever supplier promises to compliant with the requirements, meanwhile, and be responsible for passing on the requirements in the supply chain.

4.2 Test report（TR）

- Test report shall be issued by the laboratory which comply with ISO/IEC 17025.
- Issued date shall be within one year. The consolidated test report shall be renewed before the oldest single test report included in it is one year old.
- Test report shall be legible and integral.
- Correct test method.
- English language report.
- Material number, sample name, serial number, version number, picture should be consistent with test material.
- The 'test method，method detection limit, sample quantity' should be listed in the test report.

- Test result should be in the allowable range of 'the limit value of this standard'.
- The test method should be correct.
- The test sample should be homogenous material.
- The 'test standard，test date, test equipment, test location' should be listed in the test report.

4.3 MSDS/SDS

Requirements of MSDS/SDS:

1）Chemical product and company identification	2）Haxards summarizing	3）Composition /information on ingredients	4）First-aid measures
5）Fire-fighting measures	6）Accidental release measures	7）Handling and storage	8）Exposure controls/personal protection
9）Physical and chemical properties	10）Stability and reactivity	11）Toxicological information	12）Toxicological information
13）Disposal condiderations	14）Transport information	15）Regulatory information	16）Other information

4.4 Other documents

- Questionnaire for environment-related substances.
- Chemical composition form.

4.5 The opportunity to provide documentations

- New product development.
- Change supplier or sub-supplier, change components or the raw materials.
- Chemical or productive technology change which will result in the hazardous substance changes in products.
- When TCT ask, supplier can provide the documentations related to products.

5 Requirements for restricted substances

5.1 RoHS directive, packaging directive and battery directive

Requirements of chapter 5.1 apply to all TCT products, these are mandatory requirements.

5.1.1 General requirements for all materials

Substance	Requirements of limit value (ppm = mg/kg)	Reference standard and regulation
Lead (Pb) and its compounds	Lead's limit value: ＜1000ppm. Exemption：e.g. Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35 % lead by weight; Lead as an alloying element in aluminium containing up to 0,4 % lead by weight; Copper alloy containing up to 4 % lead by weight; Lead in high melting temperature type solders.	2011/65/EU
Cadmium(Cd) and its compounds	Cadmium's limit value: ＜100ppm.	
Mercury(Hg) and its compounds	Mercury's limit value: ＜1000ppm.	
Hexavalent chromium(Cr6+) and its compounds	Hexavalent chromium's limit value: ＜1000ppm.	
Polybrominated biphenyl (PBB)	Limit value: ＜1000ppm. This requirement is not relevant for the materials glass, ceramics and metal.	
Polybrominated Diphenyl Ethers (PBDE)	Limit value: ＜1000ppm. This requirement is not relevant for the materials glass, ceramics and metal.	
Bis(2-ethylhexyl) phthalate（DEHP），CAS No.: 117-81-7	**＜1000ppm**	
Butyl benzyl phthalate（BBP），CAS No.: 85-68-7	**＜1000ppm**	
Dibutyl phthalate（DBP），CAS No.: 84-74-2	**＜1000ppm**	
Diisobutyl phthalate（DIBP），CAS No.: 84-69-5	**＜1000ppm**	

Note: For the exemptions listed in EU RoHS directive. Please refer to "Appendix A: Exemptions list of EU RoHS directive".

5.1.2 Further requirements on packaging material

This requirements are only valid for TCT's packaging material suppliers.

Substance	Requirements of limit value (ppm = mg/kg)	Reference standard and regulation
Lead (Pb)and its compounds Cadmium (Cd)and its compounds Mercury (Hg) and its compounds Hexavalent chromium (Cr6+) and its compounds	Limit value: The sum of concentration of lead, mercury, cadmium, and hexavalent chromium in the packaging material shall be less than 100ppm.	94/62/EC
Polrvinyl chloride（PVC）	No content permitted.	
Expanded polystyrene（EPS）	No content permitted.	
Requirements for pallet: Formaldehyde， CAS No.：50-00-0	≤0.124mg/m3 Test method：Closed chamber method (gas chamber method)	EN-717-1
	≤65mg/kg Test method：Perforation extraction (flask method) GB 17675	EN-717-3 EN 120 GB 18580
	≤1.5mg/L Test method：Desiccator method GB17657	GB 18580
Requirements for pallet: - Toluene, CAS No.: 108-88-3 - Xylene, CAS No. (group): 1330-20-7	Toluene < 0.20mg/m3 Xylene < 0.20mg/m3 Test method：GB/T11737 or GB/T14677-93	GB11737 GB14677
Other requirements	1）All packaging materials can be recycled. 2）Don't use recycle materials.	

5.1.3 Further requirements on batteries

This requirements are only valid for battery material.

Substance	Requirements of limit value (ppm = mg/kg)	Reference standard and regulation
Lead (Pb) and its compounds	Lead's limit value: ＜40ppm	2006/66/EC 2013/56/EU
Cadmium(Cd) and its compounds	Cadmium's limit value: ＜10ppm	
Mercury (Hg) and its compounds	Mercury's limit value: ＜1ppm （Button cells ＜5ppm）	

5.2 REACH regulation

Requirements of chapter 5.2 only apply to the TCT products which sold to EU market. Other market's products depend on TCT customer's requirements. Suppliers shall carry out following requirements when they are told that materials shall comply with REACH requirements.

5.2.1 SVHC candidate list

General requirements for all materials.

Substance	Requirements of limit value (ppm = mg/kg)	Reference standard and regulation
SVHC (Substances of Very High Concern) In the "SVHC candidate list". SVHC: 1) CMR substance 2) "PBT substances" and "vPvB substances" 3) Other substances that are determined by REACH regulation article 59	Limit value for each SVHC in article: ＜1000ppm Supplier should notify TCT in time, if SVHC content exceeds the limit value.	No 1907/2006

注：1）'SVHC candidate list' can be found at:

http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp

2）The definition of CMR substance, PBT substances and vPvB substances can be found in "Appendix D: References".

5.2.2 Annex XVII restriction list

General requirements for all materials.

Substance	Requirements of limit value (ppm = mg/kg)	Reference standard and regulation
Dimethylfumarate (DMF), CAS No.: 624-49-7	＜0.1 ppm High-risk materials：silica gel bags.	No 1907/2006
Arsenic(As) and it' s compounds	Not allowed to be used in wood preservation	No 1907/2006

Nickel (Ni) and its compounds	Nickel's release limit value: ＜0.5 μg/cm2/week This requirement only apply to exposed parts that come into direct and prolonged contact with skin. e.g. outer casing keypad, data line, earphone and charger.	No 1907/2006
Azodyes	Limit value for each arylamine (see appendix B): ＜30ppm Azodyes which, by reductive cleavage of one or more azo groups, may release one or more of the carcinogenic aromatic amines. This requirement only apply to textile and leather articles which may come into direct and prolonged contact with the human skin or oral cavity.	No 1907/2006
Polychlorinated biphenyls (PCB)	No content permitted.	No 1907/2006 No 850/2004
Polychlorinated terphenyls (PCT)	No content permitted.	No 1907/2006 No 850/2004
Polychlorinated naphthalenes (PCN)	No content permitted.	No 1907/2006 No 850/2004
Organotin compounds: **• Dibutyltin compounds (DBT)** **• Dioctyltin compounds (DOT)** **• Tributyltin compounds (TBT)** **• Triphenyltin compounds (TPT)** **• Trioctyltin chloride (TOT)** **• Tricyclohexyltin chloride (TCyT)** **• Other organotin compounds**	No content permitted.	No 1907/2006 Customer requirements

Asbestos fibres: **• Crocidolite,** **CAS No.: 12001-28-4** **• Amosite,** **CAS No.: 12172-73-5** **• Anthophyllite,** **CAS No.: 77536-67-5** **• Actinolite, CAS No.: 77536-66-4** **• Tremolite, CAS No.: 77536-68-6** **• Chrysotile,** **CAS No.: 12001-29-5** **CAS No.: 132207-32-0**	No content permitted.	No 1907/2006
Monomethyl- tetrachlorodiphenyl methane **Trade name: Ugilec 141** **CAS No.: 76253-60-6**	No content permitted.	No 1907/2006
Monomethyl-dichloro-diphenyl methane **Trade name:** **Ugilec 121, Ugilec 21**	No content permitted.	No 1907/2006
Monomethyl-dibromo-diphenyl methane bromobenzylbromotoluene, mixture of isomers **Trade name: DBBT** **CAS No.: 99688-47-8**	No content permitted.	No 1907/2006
Tris (2,3 dibromopropyl) phosphate, **CAS No.: 126-72-7**	No content permitted. This requirement only apply to textile.	No 1907/2006
Tris(aziridinyl)phosphinoxide, **CAS No.: 545-55-1**	No content permitted. This requirement only apply to textile.	No 1907/2006
Hexachloroethan	No content permitted (used for the manufacturing or processing of non-ferrous metals)	No 1907/2006
Bisphenol A（BPA）， **CAS No.：80-05-7**	• Thermal paper: ＜200ppm • Cosmetic parts are made of polycarbonate materials: ＜50ppm • Other materials: ＜1000ppm	No 1907/2006 Customer requirements

<table>
<tr><th>Substance</th><th>Requirements of limit value
(ppm = mg/kg)</th><th>Reference standard and regulation</th></tr>
<tr><td>Polycyclic aromatic hydrocarbons (PAH)</td><td>This requirement only apply to to the rubber and plastic parts which come to direct and frequently contact with the human skin or oral cavity.
<table>
<tr><th>Substance</th><th>Skin contact materials</th><th>Non-skin contact materials</th></tr>
<tr><td>Benzo(a)pyrene</td><td>0.5 ppm</td><td>1 ppm</td></tr>
<tr><td>Benzo[e]pyrene</td><td>0.5 ppm</td><td>1 ppm</td></tr>
<tr><td>Benzo(a)anthracene</td><td>0.5 ppm</td><td>1 ppm</td></tr>
<tr><td>Benzo(b)fluoranthene</td><td>0.5 ppm</td><td>1 ppm</td></tr>
<tr><td>Benzo(j)fluoranthene</td><td>0.5 ppm</td><td>1 ppm</td></tr>
<tr><td>Benzo(k)fluoranthene</td><td>0.5 ppm</td><td>1 ppm</td></tr>
<tr><td>Chrysene</td><td>0.5 ppm</td><td>1 ppm</td></tr>
<tr><td>Dibenzo(a,h)anthracene</td><td>0.5 ppm</td><td>1 ppm</td></tr>
<tr><td>Benzo(g,h,i)perylene</td><td>0.5 ppm</td><td>1 ppm</td></tr>
<tr><td>Indeno(1,2,3-cd)pyrene</td><td>0.5 ppm</td><td>1 ppm</td></tr>
<tr><td>Naphthalene</td><td>2 ppm</td><td>10 ppm</td></tr>
<tr><td>Sum of 7 PAH(Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Pyrene, Anthracene, Fluoranthene)</td><td>10 ppm</td><td>50 ppm</td></tr>
<tr><td>Sum of 18 PAH</td><td>10 ppm</td><td>50 ppm</td></tr>
</table>
Note: The define of “non-skin contact materials” and “skin-contact materials” please see “Appendix D: References”</td><td>No 1907/2006 AfPS GS 2014:01 PAK</td></tr>
</table>

5.3 Substances restricted by other regulations and standards

5.3.1 General requirements for all materials.

Substance	Requirements of limit value (ppm = mg/kg)	Reference standard and regulation
Ozone Depleting Substances(ODS): • **CFCs (Chlorofluorocarbons)** • **HCFCs (Hydrogenated chlorofluorocarbons)** • **Halons** • **Methyl Bromide** • **HBFCs (Hydrobromofluorocarbons),** • **1,1,1-Trichloroethane** • **Carbon tetrachloride** • **Bromochloromethane**	No content permitted.	No 2037/2000 Montreal Protocol
PFOA and their derivatives	＜50ppm	No 850/2004
PFOS/PFOSA and their derivatives	＜1000ppm Except textile and coating materials. Textile and coating materials: ＜1μg/m² .	No 850/2004
Hexachlorobutadiene, CAS No.: 87-68-3	No content permitted.	No 850/2004
Short-chain chlorinated paraffins (Alkanes C10-C13, chloro) (SCCPs), CAS No.: 85535-84-8	No content permitted.	No 850/2004
Lead (Pb) and its compounds	Lead's limit value: ＜90ppm This requirement only apply to coating, ink, wire and cable sheath	California Proposition 65
Beryllium (Be) and its compounds	1）Be和BeO：No content permitted. Be：CAS No.：7440-41-7 BeO：CAS No.：1304-56-9 2）Other beryllium's compounds：＜50ppm	Customer requirements

Antimony (Sb) and its compounds	Antimony's limit value: ＜700ppm	Customer requirements
Polrvinyl chloride (PVC)	＜1000ppm	Customer requirements
Eight heavy metas: **Barium（Ba）** **Lead（Pb）** **Cadmium（Cd）** **Antimony（Sb）** **Selenium（Se）** **Chromium（Cr）** **Mercury（Hg）** **Arsenic（As）**	Coating, plastic and metal material(only apply to the small metal part, except packaging material) of 'the contact part of the children product surface': Barium（Ba）＜1000ppm Lead（Pb）＜90ppm Cadmium（Cd）＜75ppm Antimony（Sb）＜60ppm Selenium（Se）＜500ppm Chromium（Cr）＜60ppm Mercury（Hg）＜10ppm Arsenic（As）＜25ppm	ASTMF 963 Canada SOR-2011-17

5.3.2 Further requirements for TCT's auxiliary material suppliers

This requirements only apply to the auxiliary material directly used in product: solder paste, solder, glue, cleaning agent, printer ribbon, gummed paper, label, etc.

Substance	Requirements of limit value (ppm = mg/kg)	Reference standard and regulation
Cadmium(Cd) and its compounds	Cadmium's limit value: 20ppm	Customer requirements
Mercury(Hg) and its compounds	Mercury's limit value: No content permitted (except battery and modulator tube)	Customer requirements
Hexavalent chromium(Cr6+) and its compounds	Hexavalent chromium's limit value: 1）Metal part of various uses and mechanical parts: No content permitted 2）Leather products (for instance leather pouches, Leather strap) ＜3ppm 3）Other uses：＜500ppm	Customer requirements
Polybrominated biphenyl (PBB)	＜600ppm (Hexabromobiphenyl: No content permitted) This requirement is not relevant for the materials glass, ceramics and metal.	Customer requirements

Polybrominated Diphenyl Ethers (PBDE)	＜600ppm This requirement is not relevant for the materials glass, ceramics and metal.	Customer requirements
Tetrabromobisphemol A (TBBPA), CAS No.: 79-94-7	＜1000ppm In polymers, including plastics, silicone, and rubber/elastomers/latex.	Customer requirements
Medium- chain chlorinated paraffins（MCCPs） CAS No.: 85535-85-9	Limit value in article: ＜1000ppm	Customer requirements
Tetrachlorobenzene(TeCB)	No content permitted.	Customer requirements
Phthalate: DEHP/BBP/DBP/DIBP/DINP DIDP/DNOP/DEP/DMP/DHNUP DIHP/DMEP/DIPP/DnHP/DPP	Limit value for each phthalate: ＜100ppm	CPSIA California Proposition 65 Customer requirements
Formaldehyde， CAS No.：50-00-0	1）Textiles, leather products: ＜75ppm 2）Woodwork, agglutinant, pallet: ＜0.1ppm（0.124mg/m3）	Customer requirements
Pentachlorophenol（PCP） CAS No.: 87-86-5	Textiles, leather products: ＜5ppm	Customer requirements
N-methylphenol: CAS No.: 95-48-7 CAS No.: 106-44-5 CAS No.: 108-39-4 CAS No.: 1319-77-3	＜10ppm High-risk material: detergent, agglutinant, resin, coating.	Canadian environmental protection act Customer requirements
Hydrofluorocarbons (HFCs) Perfluorocarbon (PFCs) Sulfur hexafluoride (SF6)	No content permitted.	Customer requirements
Red phosphorus	No content permitted.	Customer requirements
Benzenamine, N-phenyl-, Reaction Products with Styrene and 2,4,4-Trimethylpentene (BNST) CAS No.: 68921-45-9	No content permitted.	CEPA 1999 Customer requirements

Benzidine and benzidine dihydrochloride	No content permitted.	Customer requirements
Tris(1,3-Dichloro-2-Propyl)Phosphate (TDCPP) **CAS No.: 13674-87-8**	＜1000ppm	Customer requirements
Carcinogenic and allergenic dyes	Not allowed to be added intentionally.	Customer requirements
Radioactive substance	Not allowed to be added intentionally.	IEC 62474 Customer requirements
Pesticide	No content permitted.	No 528/2012 Customer requirements
4,4'-Diaminodiphenyl methane **CAS No.：101-77-9**	＜1000ppm	Customer requirements
Halogenated aromatic substances	For capacitors and transformers: Halogenated's limit value：＜500ppm Aryl halide's limit value：＜50ppm	Customer requirements
Hexachlorobenzene **CAS No.：118-74-1**	No content permitted (except impurity)	Customer requirements
Normal hexane **CAS No.：101-77-9**	No content permitted.	Customer requirements
Nitrogen trifluoride **CAS No.：7783-54-2**	No content permitted.	Customer requirements
Sulfur hexafluoride **CAS No.：2551-62-4**	No content permitted.	Customer requirements
Phosphate and 'phosphorus triacridine oxide' **CAS No.：126-72-7** **CAS No.：545-55-1**	No content permitted.	Customer requirements

5.4 Halogen free

Requirements of chapter 5.4 only apply to some TCT products, it depends on TCT customer's requirements. Suppliers shall carry out following requirements when they are told that materials shall comply with these requirements(described in drawing/technical specification/perchasing order).

General requirements for all materials.

Substance	Requirements of limit value (ppm = mg/kg)	Reference standard and regulation
Bromine (Br) **Chlorine (Cl)**	Bromine's limit value: ＜900ppm. Chlorine's limit value: ＜900ppm. Bromine and Chlorine's total content limit value: ＜1500ppm.	IEC61249-2-21

6 Requirements for conflict minerals

Products produced by TCT and its supplier shall not contain minerals that directly or indirectly finance or benefit armed groups in the Democratic Republic of the Congo (DRC) or adjoining countries (Republic of the Congo, South Sudan, Uganda, Rwanda, Burundi, Tanzania, Zambia, Angola, Central African Republic). These minerals including but not limited to:

Substance	Reference standard and regulation
Tantalum（Ta）	H.R.4173
Tin（Sn）	
Gold（Au）	
Tungsten（W）	

7 Related document

< Environmental Declaration of Conformity (General) >

< Environmental Declaration of Conformity (HF) >

< Environmental Declaration of Conformity (Auxiliary material) >

< Declaration：Not use conflict minerals >

< Declaration of conformity D05-008 >

Appendix A: Exemptions list of EU RoHS directive

This list (delete 'the exemption requirements of lamp') is for reference only, 2011/65/EU and it's amending documents shall prevail.

Exemption		Scope and dates of applicability
5(a)	Lead in glass of cathode ray tubes	
6(a)	Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35 % lead by weight	
6(b)	Lead as an alloying element in aluminium containing up to 0.4 % lead by weight	
6(c)	Copper alloy containing up to 4% lead by weight	
7(a)	Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)	
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications	
7(c)- Ⅰ	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound	
7(c)- Ⅱ	Lead in dielectric ceramic in capacitors for a rated voltage of 125V AC or 250V DC or higher	
7(c)- Ⅲ	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125V AC or 250V DC	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
7(c)-IV	Lead in PZT based dielectric ceramic materials for capacitors which are part of integrated circuits or discrete semiconductors	Expires on 21 July 2016
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs	Expires on 1 January 2012 and after that date may be used in spare parts for EEE placed on the market before 1 January 2012
8(b)	Cadmium and its compounds in electrical contacts	
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0.75 % by weight in the cooling solution	
9(b)	Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications	

Exemption		Scope and dates of applicability
11(a)	Lead used in C-press compliant pin connector systems	May be used in spare parts for EEE placed on the market before 24 September 2010
11(b)	Lead used in other than C-press compliant pin connector systems	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
12	Lead as a coating material for the thermal conduction module C-ring	May be used in spare parts for EEE placed on the market before 24 September 2010
13(a)	Lead in white glasses used for optical applications	
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards	
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	Expires on 1 January 2011 and after that date may be used in spare parts for EEE placed on the market before 1 January 2011
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs)	Expires on 1 June 2011
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	
23	Lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm and less	May be used in spare parts for EEE placed on the market before 24 September 2010
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	
25	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring	
27	Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125dB SPL and above) loudspeakers	Expired on 24 September 2010
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC	

Exemption		Scope and dates of applicability
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 100dB (A) and more	
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes	
33	Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers	
34	Lead in cermet-based trimmer potentiometer elements	
36	Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30mg per display	Expired on 1 July 2010
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body	
38	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide	
39	Cadmium in colour converting II-VI LEDs (< 10µg Cd per mm² of light-emitting area) for use in solid state illumination or display systems	Expires on 1 July 2014
40	Cadmium in photoresistors for analogue optocouplers applied in professional audio equipment	Expires on 31 December 2013
41	Lead in solders and termination finishes of electrical and electronic components and finishes of printed circuit boards used in ignition modules and other electrical and electronic engine control systems, which for technical reasons must be mounted directly on or in the crankcase or cylinder of hand-held combustion engines (classes SH:1, SH:2, SH:3 of Directive 97/68/EC of the European Parliament and of the Council)	Expires on 31 December 2018

Appendix B: Arylamines

Substance		CAS No.
1	4,4'-Methylene bis-(2-chloroaniline)	101-14-4
2	4,4'-Diaminodiphenylmethane	101-77-9
3	4,4'-Oxydianiline	101-80-4
4	4-Chloroaniline	106-47-8
5	p-Toluidine	106-49-0
6	p-Phenylenediamine	106-50-03
7	m-Toluidine	108-44-1
8	o-Dianisidine	119-90-4
9	3,3'-Dimethylbiphenyl-4,4'-diamine	119-93-7
10	4-Methyl-2-aminoanisole	120-71-8
11	2,4,5-Trimethylaniline	137-17-7
12	4,4'-Thiobisbenzenamine	139-65-1
13	4-Methoxy-m-phenylenediamine	615-05-4
14	Aniline	62-53-3
15	4,4'-Methylene-bis(2-methylaniline)	838-88-0
16	2,6-Dimethylaniline	87-62-7
17	o-Anisidine	90-04-0
18	B-naphthylamine isopac	91-59-8
19	3,3-Dichlorobenzidine	91-94-1
20	4-Aminodiphenyl	92-67-1
21	Benzidine	92-87-5
22	o-Toluidine	95-53-4
23	2,4-Dimethylaniline	95-68-1
24	4-Chloro-2-methylaniline	95-69-2
25	2,4-Diaminotoluene	95-80-7
26	Fast Garnet GBC base	97-56-3
27	2-Methyl-5-nitroaniline	99-55-8

Appendix C: List of polycyclic aromatic hydrocarbons (PAH)

Sbstance		CAS No.
1	Acenaphthene	83-32-9
2	Acenaphthylene	208-96-8
3	Anthracene	120-12-7
4	Benzo(a)anthracene	56-55-3
5	Benzo(a)pyrene	50-32-8
6	Benzo(b)fluoranthene	205-99-2
7	Benzo(g,h,i)perylene	191-24-2
8	Benzo(k)fluoranthene	207-08-9
9	Chrysene	218-01-9
10	Dibenzo(a,h)anthracene	53-70-3
11	Fluoranthene	206-44-0
12	Fluorene	86-73-7
13	Indeno(1,2,3-cd)pyrene	193-39-5
14	Naphthalene	91-20-3
15	Phenanthrene	85-01-8
16	Pyrene	129-00-0
17	Benzo(j)fluoranthene	205-82-3
18	Benzo[e]pyrene	192-97-2

Appendix D: References

Related standards and terminology	Description
EU RoHS directive （2011/65/EU）	2011/65/EU is a directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2011/65/EU is a recast directive for 2002/95/EC, it can be found at : http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011L0065:en:NOT
EU REACH regulation （No 1907/2006）	No 1907/2006 is a regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals, it can be found at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32006R1907:EN:NOT
EU Battery directive （2006/66/EC）	2006/66/EC set the heavy metal's concentration limit and mark requirements (Pb, Cd or Hg) on batteries and accumulators, it can be found at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32006L0066:EN:NOT
EU directive of packaging and packaging waste （94/62/EC）	94/62/EC set the maximum concentration limits for the four heavy metals((lead, mercury, cadmium, hexavalent chromium) on packaging, it can be found at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31994L0062:en:NOT 'Packaging' shall mean all products made of any materials of any nature to be used for the containment, protection, handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer. 'Non-returnable' items used for the same purposes shall also be considered to constitute packaging. 'Packaging' consists only of: 1) Sales packaging or primary packaging, i.e. packaging conceived so as to constitute a sales unit to the final user or consumer at the point of purchase; 2) Grouped packaging or secondary packaging, i.e. packaging conceived so as to constitute at the point of purchase a grouping of a certain number of sales units whether the latter is sold as such to the final user or consumer or whether it serves only as a means to replenish the shelves at the point of sale; it can be removed from the product without affecting its characteristics; 3) Transport packaging or tertiary packaging, i.e. packaging conceived so as to facilitate handling and transport of a number of sales units or grouped packagings in order to prevent physical handling and transport damage. Transport packaging does not include road, rail, ship and air containers. Packaging including: carton, wooden case, tray, blister box, plastic bag, bubble bag, foam, cord, adhesive tape, label, etc.

POPs directive (No 890/2004)	No 890/2004 is a directive on persistent organic pollutants, it can be found at : http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32004R0850:EN:NOT
IEC 62321	International Electrotechnical Commission: Electrotechnical products - Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers)
Montreal Protocol	Montreal Protocol, the full name is " Montreal Protocol on Substances that Depletethe Ozone Layer". This environmental protection protocol signed to protect the earth's Ozone Layer, come into valid on January 1,1989. It can be found at : http://ozone.unep.org/Publications/MP_Handbook/Section_1.1_Thw_Montreal_Protocol/
SVHC candidate list	'Candidate List of Substances of Very High Concern for authorisation' published by ECHA in accordance with REACH article 59 (10), it can be found at : http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp
SVHC proposal list	List of proposals for consultation concerning inclusion in the "SVHC candidate list", published under the heading of: 'Proposals to identify Substances of Very High Concern: Annex XV reports for commenting by Interested Parties' or equivalent. At time of publication of this proposal list, can be found at : http://echa.europa.eu/consultations/authorisation/svhc/svhc_cons_en.asp
CMR substances	Substances that according to CLP regulation (No 1272/2008) classification are : • C: Carcinogenic substances classified as category 1A or 1B (risk phrases R45 or R49); • M: Mutagenic substances classified as category 1A or 1B (R46); • R: Substances toxic to reproduction ('repro-toxic') classified as category 1A or 1B (R60 or R61). The list of these substance see the of CLP regulation (No 1272/2008) annex VI, it can be found at : http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32008R1272:EN:NOT

PBT substances	Substances that are Persistent (do not easily degrade in the environment) and Bioaccumulating (easily increase in concentration in living organisms, especially in fatty tissues) and Toxic, as defined in the EU REACH regulation (No1907/2006) Annex XIII.
vPvB substances	very Persistent and very Bioaccumulating substances, as defined in the EU REACH regulation (No1907/2006) Annex XIII.
Button cells	Small batteries shape like buttons, coins, beans, etc.
Skin-contact material Non-skin-contact material	For the determination of if the skin-contact requirement for PAH is applicable: 1) If the material with foreseeable skin contact for longer than 30 seconds (long-term skin contact) or repeated short-term skin contact, it is deemed a skin-contact material. 2) If the material with foreseeable skin contact less than 30 second (short term skin contact), it is deemed a non skin-contact material.
Persistent organic pollutants (POPs)	Persistent organic pollutants mean long residual, bioaccumulation, half volatile and highly toxic, can migrate long distances through a variety of environmental media (air, water, biological, etc.) , are serious harm to human health and the environment, are natural or synthetic organic pollutants.