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Anritsu Group Manual for Substances with Environmental Impact

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1. Purpose

Anritsu group (hereafter Anritsu) enacted "Anritsu group green procurement guidelines". Anritsu asks the suppliers to restrict the hazardous substances in material, parts, and units, etc. that compose the Anritsu products. This manual aims to state how suppliers investigate and answer Conditional Banned Substances.

This manual is based on the RoHS Directive, 94/62/EEC and 2006/66/EC, but it should be noted that this manual is subject to revision due to subsequent changes in the laws.

2. Definition of Conditional Banned Substances

Substances that must not be contained in any products, and have the material ban deadline or the exemption set by laws, refer to Table 1.

Under the European RoHS Directive, exemptions are granted concerning materials, components, and units to be included if there are no alternatives in the applications concerned. The exemptions are listed in Table 3. The addition and deletion of the exemptions after September 24, 2010 shall be given priority over the European RoHS Directive. Concerning the exemptions with the expiration dates, the prohibition periods for purchasing in Anritsu shall be separately specified.

Items shown in Table 3 7(b) will not be exempted because they could be incorporated into other types of Anritsu devices.

Individual components and materials shown in European RoHS Directive Annex IV are exempted specifically for categories 8 and 9; however, they will not be exempted because they depend on Anritsu product category judgments.

Cobalt chloride must not be included as a desiccant agent indicator.

Table 1. List of Conditional Banned Substances

No.	Substance
1	Cadmium and Cadmium Compounds
2	Hexavalent Chromium
3	Lead and Lead Compounds
4	Mercury and Mercury Compounds
5	Cobalt dichloride (CoCl ₂)
6	Fluorinated greenhouse gases (PFC, SF ₆ , HFC)
7	Dibutyltin (DBT) compounds
8	Dioctyltin (DOT) compounds

2.1 Fluorinated Greenhouse Gases

Fluorinated greenhouse gases must not be included in the equipment below. If they are used in other equipment, any legal indications required should be reported to Anritsu.

- Non-refillable containers
- Non-confined direct-evaporation systems containing refrigerants
- Fire protection systems and fire extinguishers
- Window (such as pair glass)
- Footwear
- Tire
- One component foams, except when required to meet national safety standards
- Novelty aerosols

2.2 Dibutyltin (DBT) and Dioctyltin (DOT) Compounds

Since January 2012, dibutyltin (DBT) and dioctyltin (DOT) compounds have been banned from being used in EU products. REACH Annex XVII specifies that the following exempted applications for dibutyltin (DBT) compounds should be admitted until January 1, 2015. However, for management purposes, Anritsu considers them as unexempted applications.

- one-component and two-component room temperature vulcanisation sealants (RTV-1 and RTV-2 sealants) and adhesives,
- paints and coatings containing DBT compounds as catalysts when applied on articles,
- soft polyvinyl chloride (PVC) profiles whether by themselves or coextruded with hard PVC,
- fabrics coated with PVC containing DBT compounds as stabilisers when intended for outdoor applications,
- outdoor rainwater pipes, gutters and fittings, as well as covering material for roofing and façades.

3. Packaging material

The packing materials for products delivered by Anritsu must not contain a total concentration of mercury, cadmium, lead and hexavalent chrome that exceeds 100 ppm. Cobalt chloride must not be included as a desiccant agent indicator.

4. Batteries

The following batteries must not be used:

- A non-button battery or non-button battery pack with a mercury concentration greater than or equal to 0.0005% (5 ppm) by weight.
- A button battery with a mercury concentration greater than or equal to 0.025% (250 ppm) by weight
- An alkaline zinc manganese battery with a mercury concentration greater than or equal to 0.0001% (1 ppm) by weight
- Any type of battery with a cadmium concentration greater than or equal to 0.002% (20 ppm) by weight

5. REACH SVHC

The REACH regulations which have been effective since 2007 apply to registration, evaluation, authorization and restriction of chemical substances in EU. SVHC stands for substance very high concern. The concentration of SVHC in shaped products must be reported.

Anritsu investigates 56 SVHC substances by using investigation tools (Table 2). Any components of the product present at levels exceeding 1000 ppm by weight must be reported. Note that some materials are banned substances and conditionally banned substances. If the concentrations of other SVHC substances or additional substances are determined, notify Anritsu of this fact immediately.

Table2. The “Reportable Application” of SVHC (1/4)

No	Name of SVHC	Note
1	Tributyl Tin Oxide (TBTO) (CAS No. 56-35-9)	except for intentional addition
2	Diarsenic Pentoxide	
3	Diarsenic Trioxide	
4	Hexabromocyclododecane(HBCDD)	Object CAS No. 25637-99-4 3194-55-6 134237-50-6 134237-51-7 134237-52-8
5	Shortchain Chlorinated Paraffins (C10 – C13)	
6	Tris (2-chloroethyl) phosphate(TCEP)	
7	Di(2-ethylhexyl) phthalate(DEHP)	
8	Dibutyl phthalate (DBP)	
9	Butylbenzyl phthalate (BBP)	
10	Cobalt dichloride (CoCl ₂)	

Table2. The “Reportable Application” of SVHC (2/4)

No	Name of SVHC	Note
11	Lead chromate	even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
12	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
13	Lead sulfochromate yellow (C.I. Pigment Yellow 34)	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
14	Diisobutyl phthalate (DIBP)	
15	Refractory Ceramic Fibres, Aluminosilicate	are fibres covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, and fulfil the three following conditions: a) oxides of aluminium and silicon are the main components present (in the fibres) within variable concentration ranges b) fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (µm) c) alkaline oxide and alkali earth oxide (Na ₂ O+K ₂ O+CaO+MgO+BaO) content less or equal to 18% by weight
16	Refractory Ceramic Fibres, Zirconia Aluminosilicate	are fibres covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, and fulfil the three following conditions: a) oxides of aluminium, silicon and zirconium are the main components present (in the fibres) within variable concentration ranges b) fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (µm). c) alkaline oxide and alkali earth oxide (Na ₂ O+K ₂ O+CaO+MgO+BaO) content less or equal to 18% by weight
17	Boric acid	Object CAS No. 10043-35-3 11113-50-1

Table2. The "Reportable Application" of SVHC (3/4)

No	Name of SVHC	Note
18	Disodium tetraborate, anhydrous	Object CAS No. 1303-96-4 1330-43-4 12179-04-3
19	Tetraboron disodium heptaoxide, hydrate	
20	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)	
21	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)	
22	4-[4,4'-bis(dimethylamino) benzhydrylidene] cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Violet 3)	
23	Strontium chromate	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
24	2,2'-dichloro-4,4'-methylenedi aniline (MOCA)	
25	Potassium hydroxyoctaoxodizincate dichromate	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
26	Pentazinc chromate octahydroxide	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
27	Bis(2-methoxyethyl) phthalate	
28	4-(1,1,3,3-tetramethylbutyl)p henol, (4-tert-Octylphenol)	
29	Bis(2-methoxyethyl) ether	
30	N,N-dimethylacetamide (DMAC)	
31	Decabromodiphenyl ether	
32	Sulfurous acid, lead salt,dibasic	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
33	1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme)	
34	Trilead dioxide phosphonate	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
35	1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	
36	4-Aminoazobenzene	

Table2. The “Reportable Application” of SVHC (4/4)

No	Name of SVHC	Note
37	Tetralead trioxide sulfate	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
38	Orange lead (lead tetroxide)	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
39	Pyrochlore, antimony lead yellow	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
40	Pentalead tetraoxide sulphate	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
41	1,2-Diethoxyethane	
42	Diboron trioxide	
43	Dibutyltin dichloride (DBTC)	
44	Lead cyanamidate	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
45	N,N-dimethylformamide	
46	Silicic acid (H ₂ Si ₂ O ₅), barium salt (1:1), lead-doped	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
47	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	
48	Diisopentylphthalate (DIPP)	
49	N-pentyl-isopentylphthalate	
50	Lead titanium trioxide	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
51	Lead titanium zirconium oxide	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
52	Lead oxide sulfate	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
53	[Phthalato(2-)]dioxotrilead	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
54	Dioxobis(stearato)trilead	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
55	Fatty acids, C16-18, lead salts	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application
56	Lead dinitrate	Even in the case of Purpose of the RoHS Directive exemptions, it is Reportable Application

6. Definition of Homogeneous material

'Homogeneous material' means a material that cannot be mechanically disjointed into different materials. The term 'mechanically disjointed' means that the materials can, in principle, be separated by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes. (Examples): plastics, ceramics, glass, metals, alloys, paper, board, resins and coatings.

Examples of homogeneous materials

Each material shown in the diagram is homogeneous material.

(i.e. Chromate film is homogeneous material, Zinc galvanizing is homogeneous material and so on.)

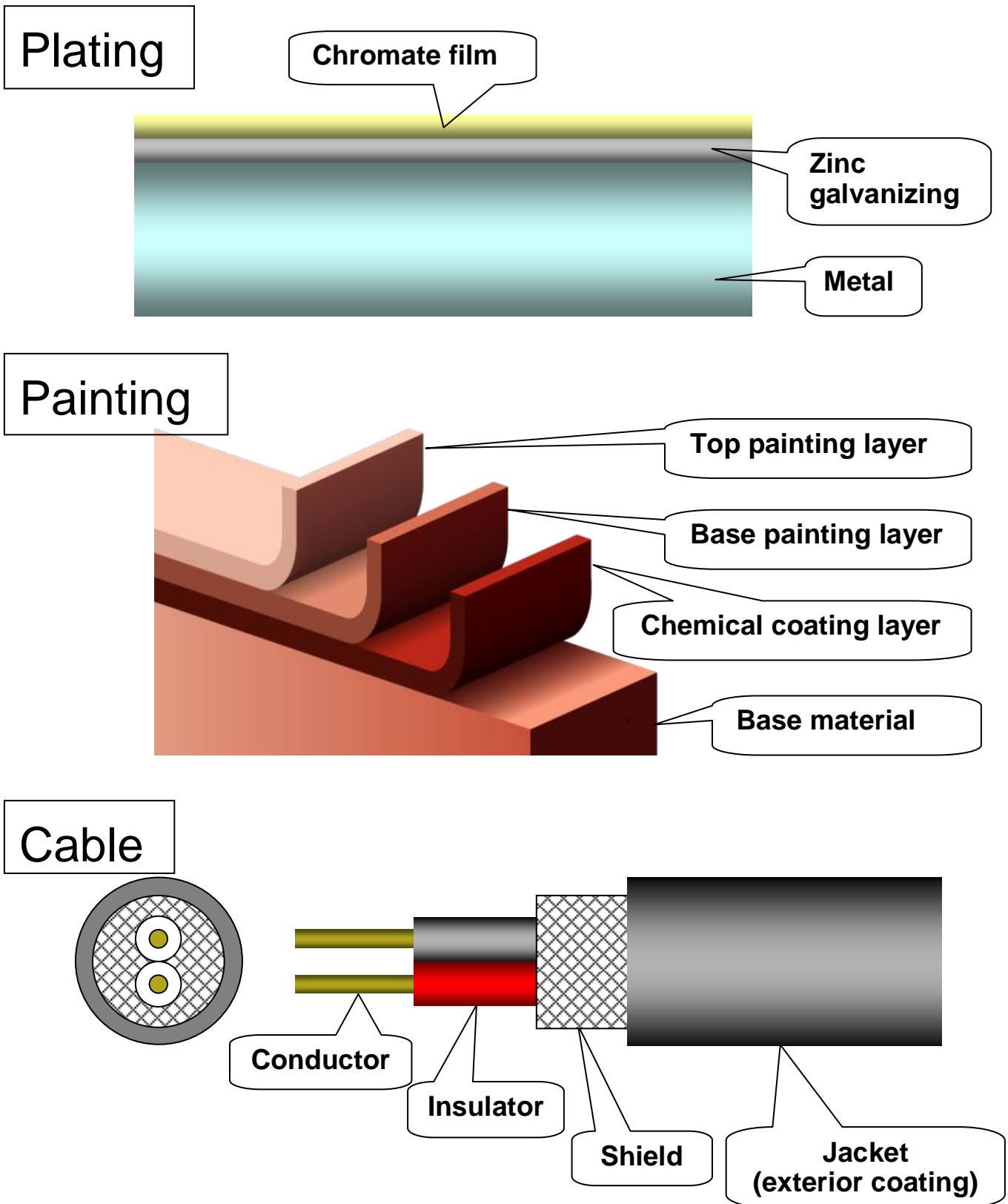


Table 3. Purpose of the RoHS Directive exemptions (1/6)

(Because it may be incorporated in other types of apparatuses in the Annex, No.7(b) does not assume it an exclusion object.)

NO	Exemption	Scope and dates of applicability
1	Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):	
1(a)	For general lighting purposes < 30 W: 2.5 mg	Expires on 31 December 2011; 3,5 mg may be used per burner after 31 December 2011 until 31 December 2012; 2,5 mg shall be used per burner after 31 December 2012
1(b)	For general lighting purposes \geq 30 W and < 50 W: 3.5mg	Expires on 31 December 2011; 3,5 mg may be used per burner after 31 December 2011
1(c)	For general lighting purposes \geq 50 W and \leq 150 W: 5 mg	
1(d)	For general lighting purposes \geq 150 W: 15 mg	
1(e)	For general lighting purposes with circular or square structural shape and tube diameter < 17 mm: 7 mg	No limitation of use until 31 December 2011; 7 mg may be used per burner after 31 December 2011
1(f)	For special purposes: 5 mg	
1(g)	For general lighting purposes < 30 W with a lifetime equal or above 20000 h: 3.5 mg	Expires on 31 December 2017
2(a)	Mercury in double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp):	
2(a)(1)	Tri-band phosphor with normal lifetime and a tube diameter > 9 mm (e.g. T2): 4 mg	Expires on 31 December 2011; 4 mg may be used per lamp after 31 December 2011
2(a)(2)	Tri-band phosphor with normal lifetime and a tube diameter \geq 9 mm and \geq 17 mm (e.g. T5): 3 mg	Expires on 31 December 2011; 3 mg may be used per lamp after 31 December 2011
2(a)(3)	Tri-band phosphor with normal lifetime and a tube diameter \geq 17 mm and \leq 28 mm (e.g. T8): 3.5 mg	Expires on 31 December 2011; 3,5 mg may be used per lamp after 31 December 2011
2(a)(4)	Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 3.5 mg	Expires on 31 December 2012; 3,5 mg may be used per lamp after 31 December 2012
2(a)(5)	Tri-band phosphor with long lifetime (\geq 25 000 h): 5 mg	Expires on 31 December 2011; 5 mg may be used per lamp after 31 December 2011

Table 3. Purpose of the RoHS Directive exemptions (2/6)

NO	Exemption	Scope and dates of applicability
2(b)	Mercury in other fluorescent lamps not exceeding (per lamp):	Expires on 13 April 2012
2(b)(1)	Linear halophosphate lamps with tube > 28 mm (e.g. T10 and T12): 10 mg	Expires on 13 April 2016
2(b)(2)	Non-linear halophosphate lamps (all diameters): 15 mg	Expires on 13 April 2016
2(b)(3)	Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9) : 15 mg	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011
2(b)(4)	Lamps for other general lighting and special purposes (e.g. induction lamps) : 15 mg	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011
3	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp):	
3(a)	Short length (≥ 500 mm) : 3,5 mg	No limitation of use until 31 December 2011; 3,5 mg may be used per lamp after 31 December 2011
3(b)	Medium length (> 500 mm and $< 1\ 500$ mm) : 5 mg	No limitation of use until 31 December 2011; 5 mg may be used per lamp after 31 December 2011
3(c)	Long length ($> 1\ 500$ mm) : 13 mg	No limitation of use until 31 December 2011; 13 mg may be used per lamp after 31 December 2011
4(a)	Mercury in other low pressure discharge lamps (per lamp) : 15 mg	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011
4(b)	Mercury in High Pressure Sodium (vapor) lamps for general lighting purposes not exceeding (per burner) in lamps with improved color rendering index $R_a > 60$:	
4(b)-I	$P < 155$ W: 30 mg	No limitation of use until 31 December 2011; 30 mg may be used per burner after 31 December 2011
4(b)-II	155 W $< P < 405$ W: 40 mg	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011

Table 3. Purpose of the RoHS Directive exemptions (3/6)

NO	Exemption	Scope and dates of applicability
4(b)-III	P > 405 W: 40 mg	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011
4(c)	Mercury in other High Pressure Sodium (vapor) lamps for general lighting purposes not exceeding (per burner):	
4(c)-I	P < 155 W: 25 mg	No limitation of use until 31 December 2011; 25 mg may be used per burner after 31 December 2011
4(c)-II	155 W < P < 405 W: 30 mg	No limitation of use until 31 December 2011; 30 mg may be used per burner after 31 December 2011
4(c)-III	P > 405 W: 40 mg	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011
4(d)	Mercury in High Pressure Mercury (vapor) lamps (HPMV)	Expires on 13 April 2015
4(e)	Mercury in metal halide lamps (MH)	
4(f)	Mercury in other discharge lamps for special purposes not specifically mentioned in the Annex of Directive 2011/65/EU	
4(g)	Mercury in hand crafted luminous discharge tubes used for signs, decorative or architectural and specialist lighting and light-artwork, where the mercury content shall be limited as follows: (a) 20 mg per electrode pair + 0,3 mg per tube length in cm, but not more than 80 mg, for outdoor applications and indoor applications exposed to temperatures below 20 °C; (b) 15 mg per electrode pair + 0,24 mg per tube length in cm, but not more than 80 mg, for all other indoor applications.	Expires on 31 December 2018
5(a)	Lead in glass of cathode ray tubes	
5(b)	Lead in glass of fluorescent tubes not exceeding 0,2 % by weight	
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 aluminum 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)	

Table 3. Purpose of the RoHS Directive exemptions (4/6)

NO	Exemption	Scope and dates of applicability
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signaling, 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. piezoelectric devices, or in a glass or ceramic matrix compound	
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher	
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V 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 being 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 2013
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	
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	

Table 3. Purpose of the RoHS Directive exemptions (5/6)

NO	Exemption	Scope and dates of applicability
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	
16	Lead in linear incandescent lamps with silicate-coated tubes	Expires on 1 September 2013
17	Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications	
18(a)	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as speciality lamps for diazoprinting, reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ((Sr,Ba)₂MgSi₂O₇:Pb)	Expires on 1 January 2011
18(b)	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP (BaSi ₂ O ₅ :Pb)	
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)	Expires on 1 June 2011
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	
26	Lead oxide in the glass envelope of black light blue lamps	Expires on 1 June 2011

Table 3. Purpose of the RoHS Directive exemptions (6/6)

NO	Exemption	Scope and dates of applicability
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	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 (1)	
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	
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 30 mg 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 (< 10 µg 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

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