

Consolidated Guide to EU RoHS Application Exemptions

Revised 18 October 2006

Newest revisions **in red**

Numberings correspond to those in the Directives, applicable amendments, and various European Commission publications. IPC Standard 1752 for Materials Declaration Management also uses this numbering system except where noted.

British English spellings used throughout

List 1: Currently Approved RoHS Application Exemptions

1A: The following are listed in the Annex of the original EU Directive (2002/95/EC of 27 January 2003).

As noted, some have been amended from the original.

1	Mercury in compact fluorescent lamps not exceeding 5 mg per lamp	The colour properties of fluorescent lighting products are dependent on the fluorescent properties of the phosphors that coat the insides of the tubes. Thus, they often contain additives like heavy metals.
2a	Mercury in straight fluorescent lamps for general purposes not exceeding: 10 mg in halophosphate lamps	ditto
2b	Mercury in straight fluorescent lamps for general purposes not exceeding: 5 mg in triphosphate lamps with a normal lifetime	ditto
2c	Mercury in straight fluorescent lamps for general purposes not exceeding: 8 mg in triphosphate lamps with a long lifetime	ditto
3	Mercury in straight fluorescent lamps for special purposes	ditto
4	Mercury in other lamps not specifically mentioned in this Annex	I.e., the RoHS annex
5	Lead in glass of cathode ray tubes, electronic components, and fluorescent tubes	

6a	Lead as an alloying element in steel containing up to 0.35% lead by weight	Lead is added to several common carbon steels because it adds lubricity - making it easier to machine.
6b	[Lead as an alloying element in] aluminium containing up to 0.4% lead by weight	
6c	[Lead] as a copper alloy containing up to 4% lead by weight	E.g., brasses
7a	Lead in high melting temperature type solders (i.e. lead based alloys containing 85% by weight or more lead)	Original exemption 7 as defined in the Annex of RoHS was replaced by this text in European Commission decision 2005/747/EC of 21 October 2005. The exemption for high melting point solders allows lead in solders for specific applications that have no current alternate. In particular, this applies to solders used internally in IC chips.
7b	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signaling, transmission as well as network management for telecommunication	Original exemption 7 as defined in the Annex of RoHS was replaced by this text in European Commission decision 2005/747/EC of 21 October 2005. This exemption is intended for assuring the reliability of network communications and high-reliability applications, i.e., those which are mission critical and high availability (unscheduled downtime is extremely low - minutes per year.)
7c	Lead in electronic ceramic parts (e.g. piezoelectronic devices)	Original exemption 7 as defined in the Annex of RoHS was replaced by this text in European Commission decision 2005/747/EC of 21 October 2005.
8	Cadmium and its compounds in electrical contacts and cadmium plating except for applications banned under Directive 91/338/EEC (OJ No. L 186, 12 July 1991, p. 59) amending Directive 76/769/EEC (OJ No. L262, 27 September 1976, p. 201) relating to restrictions on the marketing and use of certain dangerous substances and preparations	Original exemption 8 as defined in the Annex of RoHS was replaced by this text in European Commission decision 2005/747/EC of 21 October 2005. The 'Cadmium Directives' ban most uses of Cadmium plating, except: <ul style="list-style-type: none">◦ Cadmium plating of products used in the aviation industry, for which the supplier specifies cadmium plating, or safety

		<p>specifications require it</p> <ul style="list-style-type: none"> ◦ Cadmium plating required by safety specifications for equipment used by the offshore industry ◦ Cadmium plating used in radio equipment used in the shipping industry ◦ Cadmium plating used in radar equipment ◦ Cadmium plating used to ensure the reliability of electrical contacts ◦ Cadmium pigments or dyes used in artists' paints, glazes and glaze paints, glass and glass paints, enamels, and ceramics
9	Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators	Absorption refrigerators are often used in situations requiring noiseless or low-energy use, such as recreational vehicles, remote locations, and hotel mini-bars.
10	[The Directive directed the European Commission to evaluate applications for deca-BDE, Mercury in straight fluorescent lamps for special purposes, exemption 7, and light bulbs. See subsequent application exemptions listed below.]	

1B: RoHS Application Exemptions added by European Commission Decision (RoHS Amendment) of 13 October 2005 (2005/717/EC)

<p>9a (10a in IPC Standard 1752)</p>	<p>Deca-BDE in polymeric applications</p>	<p>Deca-BDE, a type of PBDE plastic, was exempted from the original Directive that previously excluded <i>all</i> types of PBDE's, by European Commission Decision 2005/717/EC of 13 October 2005.</p> <p>However, this exemption was challenged by members of the European Parliament, and an early-July ruling by the Commission's legal services division indicates that Deca-BDE falls within the PBDE ban.</p> <p>The legal status of Deca-BDE thus continues to be in limbo, and will likely remain so for some time.</p>
<p>9b (10b in IPC Standard 1752)</p>	<p>Lead in lead-bronze bearing shells and bushes</p>	<p>Lead in this application adds lubricity to these metal parts that are in contact with moving shafts. It thus extends their life.</p>

1C: RoHS Application Exemptions added by European Commission Decision (RoHS Amendment) of 21 October 2005 (2005/747/EC)

<p>11</p>	<p>Lead used in compliant pin connector systems</p>	<p>This is a type of high-performance connection technology</p>
<p>12</p>	<p>Lead as a coating material for the thermal conduction module c-ring</p>	<p>This is a type of IC sealing device that helps conduct heat away from the chip</p>
<p>13</p>	<p>Lead and cadmium in optical and filter glass</p>	<p>Colour properties of glass are frequently due to addition of heavy metals.</p>
<p>14</p>	<p>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</p>	<p>This exemption refers to a specific solder formulation typically used inside microprocessors and other IC's.</p>
<p>15</p>	<p>Lead in solders to complete a viable electrical connection between semiconductor die and carrier within</p>	<p>I.e., the internal solder of a flip-chip IC package</p>

	integrated circuit Flip Chip packages	
1D: RoHS Application Exemptions added by European Commission Decision (RoHS Amendment) of 21 April 2006 (2006/310/EC)		
16	Lead in linear incandescent lamps with silicate coated tubes.	Such as lamps for currency checking, leak detection, and discos.
17	Lead halide as radiant agent in High Intensity Discharge (HID) lamps used for professional reprography applications.	
18	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 (BaSi2O5:Pb) as well as when used as speciality lamps for diazo-printing reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ((Sr, Ba)2MgSi2O7: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).	
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCD).	
1E: RoHS Application Exemptions added by European Commission Decisions of 2006/690/EC, 2006/691/EC, and 2006/692/EC (RoHS Amendments) of 12 October 2006		
21	Lead and cadmium in printing inks for the application enamels on borosilicate glass	
22	Lead as impurity in RIG (rare earth iron garnet) Faraday rotators used for fibre optic communications systems.	Though adopted, this exemption was challenged after the official comment period. We expect it to be considered for retraction in the next round of exemptions.
23	Lead in finishes of fine pitch components other than connectors with a pitch of 0.65mm or less with NiFe lead frames and lead in finishes of fine pitch components	Fine pitch components are more prone to reliability problems due to the growth of tin whiskers.

	other than connectors with a pitch of 0.65mm or less with copper lead-frames	
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	
25	Lead oxide in plasma display panels (PDP) and surface conduction electron emitter displays (SED) used in structural elements; notably in the front and rear glass dielectric layer, the bus electrode, the black stripe, the address electrode, the barrier ribs, the seal frit and frit ring as well as in print pastes.	
26	Lead oxide in the glass envelope of Black Light Blue (BLB) lamps	
27	Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125dB SPL and above) loudspeakers	Specifically for wires that connect the loudspeaker terminals to the voice coil, which are thus subject to the loudspeaker's vibration. Concern is that Pb-free solders would be less reliable because they are stiffer. Note that only very high-power loudspeakers are exempted.
28	Hexavalent chromium in corrosive preventive coatings of unpainted metal sheetings and fasteners used for corrosion protection and Electromagnetic Interference Shielding in equipment falling under category three of Directive 2002/96/EC (IT and telecommunications equipment). Exemption granted until 1 July 2007	Hexavalent Chromium for passivation coatings is allowed under the Extended Life Vehicle (ELV) directive until 1 July 2007. This exemption thus will bring RoHS into harmony with the earlier ELV Directive, but only for Category 3 – IT and telecommunications equipment, and only until 1 July 2007.
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3, and 4) of Council Directive 69/493/EEC OJ L 326, 29.12.1969, p. 36. Directive as last amended by 2003 Act of Accession	This permits such products as crystal chandeliers. Directive 69/493/EEC contains detailed definitions of various types of crystal glass – such as those used in wine glasses - according to their chemical makeup. 69/493/EEC has been amended several times – the last time in 2003 - as new Member States with significant glass industries have acceded to the EU.

List 2: Exemptions proposed in the Stakeholder Consultation that closed 11 February 2005. These proposed exemptions are currently (May 2006) being reviewed by independent consultants, and may not be accepted.

i	Lead in tin whisker resistant coatings for fine pitch applications	Adopted in more specific form on 22 June 2006. See List 1E, above.
ii	Lead bound in glass, crystal glass, lead crystal or full lead crystal in general	E.g., electric crystal chandeliers Adopted in more specific form on 26 June 2006. See List 1E, above.
iii	Chromium (also in oxidation state (VI)) and Cadmium as colouring batch addition each form up to a content of 2 % in glass, crystal glass, lead crystal or full lead crystal used as decorative and / or functional part of electric or electronic equipment	
iv	Solders containing lead and/or cadmium for specific applications	
v	Hexavalent chromium (CRVI) passivation coatings	Hexavalent Chromium for passivation coatings is allowed under the Extended Life Vehicle (ELV) directive until 1 July 2007. This exemption has thus been proposed to bring RoHS into harmony with the earlier ELV Directive. Adopted in more specific form for <u>Category 3 – IT and telecommunications equipment only</u> on 26 June 2006. See List 1E, above.
vi	Lead in lead oxide glass plasma display panels	Adopted in more specific form on 22 June 2006. See List 1E, above.
vii	Lead in connectors, flexible printed circuits, flexible flat cables	
viii	Lead oxide in lead glass, bonding materials of magnetic heads and magnetic heads	
ix	Cadmium as doping material in avalanche photodiodes (APDs) for the optical fiber communication systems	
x	Lead in optical isolators	Almost adopted, but tabled in light of information provided by a US company who can make these devices with less than 1000 ppm of lead

xi	Lead in sheath heater of Microwaves	
xii	Cadmium pigments except for applications banned under Directive 91/338/EEC amending Directive 76/769/EEC relating to the restriction on the marketing and use of certain substances	<p>The 'Cadmium Directives' ban most uses of Cadmium, except:</p> <ul style="list-style-type: none"> ◦ Cadmium plating of products used in the aviation industry, for which the supplier specifies cadmium plating, or safety specifications require it ◦ Cadmium plating required by safety specifications for equipment used by the offshore industry ◦ Cadmium plating used in radio equipment used in the shipping industry ◦ Cadmium plating used in radar equipment ◦ Cadmium plating used to ensure the reliability of electrical contacts ◦ Cadmium pigments or dyes used in artists' paints, glazes and glaze paints, glass and glass paints, enamels, and ceramics
xiii	High Intensity Discharge (HID) lamps for professional U.V. applications, containing lead halide as radiant agent	Lead halide in HID lamps <i>for professional reprography</i> was exempted on 21 April 2006. See List 1D, above.
xiv	Discharge lamps for special purposes containing lead as activator in the fluorescent powder (1% lead by weight or less)	A more specific version of this proposed exemption was approved on 21 April 2006. See List 1D, above.
xv	Discharge lamps containing lead in the form of an amalgam	Lead-containing amalgams <i>in very compact Energy Saving Lamps</i> were exempted on 21 April 2006. See List 1D, above.
xvi	Mercury free flat panel lamp	
xvii	Special purposes Black Light Blue (BLB) lamps, containing lead in the glass envelope	Adopted in more limited form on 22 June 2006 – permitting Lead Oxide only. See List 1E, above.
xviii	Low melting point alloys containing lead,	
xix	Galvanised steel containing up to 0.35% lead by weight and aluminium with an unintended lead content up to 0.4% lead by weight in electrical and electronic equipment	

xx	Lead in solder and hexavalent chromium in surface treatment, in parts recovered from production printers and copying equipment, sold, rented or leased or otherwise returned from professional users other than private households, originally put on the market before 1 July 2006, and reused for the same purpose within the original manufacturer's closed loop system until 1 July 2011. In this context a closed loop system means a system whereby the equipment remains the property of the manufacturer or is subject to other contractual arrangements and is returned to the manufacturer either when the contract expires or at end of life	Requested by Xerox and other copier makers who routinely recover and refurbish their equipment, which is usually leased to end users.
xxi	Cadmium sulphide photocells	
xxii	Applications of lead, mercury, cadmium, hexavalent chromium, PBBs and PBDEs in electrical and electronic equipment in the aeronautic and aerospace sectors that requires high safety standards	

List 3: Exemptions proposed in the Stakeholder Consultation that closed 28 October 2005. These proposed exemptions are still pending a formal review, and may not be accepted.

i	Linear incandescent lamps	<i>Lead</i> in linear incandescent lamps was exempted on 21 April 2006. See List 1D, above.
ii	Mercury in switches	
iii	Special ICs having tin-lead solder plating on leads used in professional equipment	
iv	Specific modular units including tin-lead solder being used in special professional equipment	
v	Solders containing lead and / or cadmium for specific applications where local temperature is higher than 150 deg C and which need to work properly more than 500 hours	This exemption would bring RoHS into alignment with the 'Cadmium Directives', which allow for cadmium plating in situations requiring high reliability, and for which there is no current substitute. (See the notes on the Cadmium Directives elsewhere in this Guide.)
vi	Lead in solder for printed circuit boards for emergency lighting products	
vii	Hexavalent chromium (Cr-VI) in chromate conversion coatings as surface treatment	
viii	Lead in gas sensors	
ix	Concerning of PbO (Lead in Seal Frit) used for making BLU (Back Light Unit) Lamp	
x	Cadmium in opto-electronic components	
xi	Non-consumer mechanical power transmission systems including speed reducers and mechanical couplings which rely on electrical / electronic components for safe control and operation	
xii	Electrical and electronic components contained in heating ventilation and air conditioning building systems, commercial refrigeration systems and transport refrigeration systems	
xiii	Cadmium-bearing copper alloys	
xiv	Electrical / electronic components contained in mobile and stationary air compressors and vacuum systems, compressed air contaminant removal systems and pneumatic contractor's air tools	

xv	Electrical / electronic equipment that are: used in transport-aviation, aerospace, road, maritime, rail; installed into the fabric of buildings – elevators, escalators, moving walks, dumb waiter, and heating, cooling and ventilation systems, and fire and security systems; used in the energy generation and transmission; used in mining and mineral processing; used for non-consumer mechanical power transmission systems; industrial process pumps and compressors; used in industrial refrigeration; and used in military applications	
xvii	Cadmium oxide	
xviii	Solder tin of the thermo fuse with a defined low melting point	
xix	Lead in lead oxide glass used in plasma display panel (PDP)	
xx	Lead in solder on small PCB and tinned legs of primary components	
xxi	Use of the not lead free component NEC V25 in the Memor 2000	An out-of-production microcontroller
xxii	Lead used in shielding of radiation for Non Medical X-ray equipment	
xxiii	Lead based solders sealed or captured within heat-shrinkable components and devices	I.e., solder termination sleeves that incorporate a solder pre-form in conjunction with heat-shrinkable tubing used in cable assemblies

List 4: Exemptions that have been proposed in the Stakeholder Consultation that closed on 10 February 2006. They will be formally reviewed, and may not be accepted.

i	On-Semi MCR265-10 SCR	A silicon controlled rectifier used in lighting products
ii	Components NEC V55	An out-of-production microcontroller
iii	The use of lead in solder applications for electronic components of musical instruments having an average lifespan in excess of 10 years	There has been a controversy, especially in the UK, over the fact that electro-mechanical pipe organs are within the scope of RoHS, and organ pipes are composed of a lead-silver alloy (similar to pewter). The TAC voted unanimously on June 26, 2006, to grant this exemption for pipe organs, however its adoption is unclear, as it had not been formally proposed.
iv	Lead solder alloy in Surge protective devices (SPDs)	
v	Inventory of Special ICs having tin-lead solder on/in leads/balls, used in specialist/professional equipment	
vi	Lead alloys as electrical/mechanical solder for transducers used in high-powered professional and commercial loudspeakers	
vii	Solder containing lead for applications where the local temperature exceeds 150 C and reliable operation for a minimum of 30,000 hours is required	
viii	T in-lead solder in the manufacture of professional audio equipment	
ix	Specific modular units including tin-lead solder being used in special professional equipment	
x	Lead in electronic vacuum tubes	
xi	Lead in aluminium used in gas valves for domestic cooking appliances	
xii	Lead in solder of parts recovered from gaming/amusement machines put on the market before 1/07/06 and reused for the same purpose within a manufacturer's closed loop until July 2014	

xiii	Lead in solders in components and assemblies used in non-consumer products, provided that: - such components and assemblies were purchased or are subject to a proven last-time buy contract placed before 1 July, 2006; and - such components and assemblies are used in models of EEE that were already available on the market before 1 July 2006	
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List 5: Exemptions that have been proposed in the Stakeholder Consultation that closed on 15 May 2006. They will be formally reviewed, and may not be accepted.

i	Cadmium and cadmium oxide in thick film pastes used on beryllium oxide substrates until January 1, 2008	Beryllium oxide substrates are used when high thermal conductivity is required, such as for microwave hybrid devices. Thick film pastes containing Cd are the only ones, according to one Stakeholder, that will bond to beryllium oxide.
ii	Gaskets of butyl rubber material vulcanised with chinondioxim and lead tetraoxide, for use in Aluminium Electrolytic Capacitors	Used as a gasket material in electrolytic capacitors.
iii	Sharp LQ104X2LX11 (formerly Fujitsu FLC26XGC6R-01)	A soon-to-be discontinued TFT screen.
iv	Quartz Crystal Resonator and in Fine Pitch Electronics Systems used in the Swiss Watch Industry	Requested by Swiss watch company Swatch. The concern is reduced reliability of watches due to Tin Whisker growth. With reduced reliability, quartz watches would enter the waste stream more frequently.
v	Cadmium in opto- electronic components	Specifically, Cadmium-Sulphide (CdS) photo-resistors, whose resistance varies with light intensity.
vi	Transducers used in professional loudspeaker systems, using tin-lead solder	Granted in more specific form on 22 June 2006. See List 1E, above.

vii	Tin-lead solder in the manufacture of professional audio equipment	A Last Time Buy (LTB) related request.
viii	Components used in the manufacture of the Hog1000, Hog500, Event416, Event408, ESP2-24 and ESP2-48 lighting control consoles	A Last Time Buy (LTB) related request.
ix	Specific modular units, including tin-lead solder, being used in special professional equipment	A Last Time Buy (LTB) related request.
x	Inventory of special ICS having tin-lead solder on/in leads/balls, used in specialist/professional equipment	A Last Time Buy (LTB) related request.
xi	Cadmium Mercury Telluride	A semiconductor crystal used in infrared detectors.
xii	Lead contained in Babbit lined bearings	Similar to the exemption for Lead-bronze bearing shells (Exemption 9b) in electric motors.
xiii	Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers	Similar to request vi in this list.
xiv	Thermal cutoff with a fusible element that contains lead (and possibly cadmium, mercury and hexavalent chromium) for applications where normal operating temperature exceeds 140 C and reliable, predictable, operation for a minimum of 30,000 hours is required	These specifications are to meet UL safety requirements.
xv	Mercury free flat panel lamp	Specifically, Pb used in panel glass for Hg-free panel lamps.

xvi	Electronic equipment where the reliability, durability and longevity of the equipment is paramount	
xvii	Semi Red Brass C84400, 81-3-7-9 or a similar Brass material. Used on radio frequency line sections	Relates to metal finishes required for proper grounding and electrical contact at Rf.
xviii	Lead is used as an alloy to the copper in 6 to 8 % by weight. Needed for casting and machinability characteristics	Ditto.
xix	Lead in solders for electronic equipments used for the monitoring, the protection and the safety of people in healthcare, telecare and emergency calls domains in professional and private sectors	
xx	FPGA devices manufactured by Xilinx (XC5202-6VQ100C, XC4003E-3VQ100C and XC4013E-3PQ240C) containing lead solder (Pb) used in the plating of the device terminations	A Last Time Buy (LTB) related request.
xxi	Lead oxide in seal frit used for making window assemblies for argon and krypton laser tubes	
xxii	Smart card readers (product: GemSelf700-MS2, GCR700-3ZS, Vodafone D2 , GCR760 and GemSelf750 SV)	A Last Time Buy (LTB) related request.
xxiii	Use of mercury in Babcock's DC plasma displays and use of Lead Oxide (PbO) in Babcock's DC plasma displays frit seal	Lead oxide in plasma displays was exempted on 22 June 2006, but mercury was not. See List 1E, above.