

## OSRAM Index List Environment

OSRAM Index List Environment is to be applied in the design and production of environmentally compatible products of all business units of OSRAM and affiliated companies (OSRAM) as well as for procurement of equipment, parts and materials used in products distributed by OSRAM. It is a high ambition of OSRAM to avoid and reduce certain hazardous substances in products above and beyond statutory regulations.

Placing on the market of certain hazardous substances in electrical and electronic equipment is subject to specific regional (EU) or national restrictions and bans. Within the European Union (EU) these restrictions and bans are defined in EU-Directives and subsequent member states' national regulations, and in directly legally enforceable regulations. In addition OSRAM has to fulfil specific customer requirements regarding substance content and documentation.

Compliance with such restrictions is a legal obligation of the party putting said equipment or products on the market. Therefore either OSRAM or customers of OSRAM bear responsibility.

Equipment, parts and materials supplied to OSRAM go into equipment and products which can be subject to

- the restrictions of substances defined in Directive 2011/65/EU ("RoHS-Directive", see [http://ec.europa.eu/environment/waste/rohs\\_eee/legis\\_en.htm](http://ec.europa.eu/environment/waste/rohs_eee/legis_en.htm)[http://ec.europa.eu/environment/waste/weee\\_index.htm](http://ec.europa.eu/environment/waste/weee_index.htm)),
- the restrictions of substances defined in Directive 2000/53/EC ("End-of-life vehicles – ELV")
- the restrictions of substances defined in Directive 2006/66/EC ("Directive on batteries"),
- the restrictions of substances defined in EU Directive 1907/2006/EC ("REACH"),
- the restrictions of substances defined in Directive 94/62/EC ("Packaging Directive").

The purpose of the **OSRAM Index List Environment** is to inform suppliers and partners about legal and internal requirements regarding substances in products and consists of the following documents:

- **Supplier's Verification** regarding restrictions, avoidance and declaration of materials in products
- Informative **list of exemptions** as listed in the annex of the Directive ("RoHS exemptions") including amendments (Status December 2012) (see also Annex III of RoHS Recast 2011/65/EU)
- **OSRAM Index List Environment:**
  - *List of prohibited hazardous substances* (sorted by possible applications)
  - *OSRAM List of Declarable Substances* (LoDS)

The **Suppliers Verification** has to be signed by suppliers of equipment, parts and materials, which are delivered to OSRAM and affiliated companies.

The **OSRAM Index List Environment: List of prohibited hazardous substances** (see appendix) provides an informative overview of substance regulations within the EU and other countries. The list is not exhaustive, but focuses on applications. For some substances, the legislator has permitted definite applications or special exceptions. If deliveries to OSRAM contain hazardous substances in applications exempted by such regulations (e.g. RoHS exemptions), then these substances have to be declared by suppliers in advance according to type and amount in the web based data base BOMcheck®.

The **OSRAM Index List Environment: List of declarable substances** (see appendix) contains hazardous substances whose distribution in products is not or only partially (e.g. for defined applications or defined area) prohibited. The use of these substances should be avoided where possible (e.g. DEHP in PVC cables), or at least minimized, since they are a potential hazard to man or the environment during the products manufacture, use or disposal. However, in many cases these substances cannot be avoided for technical or economical reasons. OSRAM clearly encourages its suppliers to focus towards reduction and avoidance of these substances during design and development of new products. This is particularly recommended for substances on the REACH candidate list, so called SVHC (see below). If products containing these substances are delivered to OSRAM, a corresponding declaration must be available in BOMcheck®.

REACH Article 33 (1) requires contract manufacturers and distributors who supply an article which contains more than 0.1% weight by weight (w/w) of any Candidate List Substance of Very High Concern (SVHC) to provide their commercial customers with: "sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance".

Comprehensive and precise contractually binding substance declarations are often requested by OSRAM customers, e.g. use of SVHC, halogenated flame retardants, arsenic compounds in lamp glass, antimony trioxide in plastic materials. Most of these substances are not added in OSRAM production processes, but are ingredients of delivered direct materials (equipment, parts and materials used in products distributed by OSRAM). Therefore also OSRAM needs sufficient information about all relevant substances in supplied materials, parts and products from SUPPLIER.

Due to the dynamic changes of above mentioned regulations or customer expectations, regular updates of these declarations will be essential in the future. In order to be able to manage all information requirements OSRAM decided to join the substance declaration web-hosted database BOMcheck® ([www.BOMcheck.net](http://www.BOMcheck.net)). BOMcheck® is an industry-wide initiative offering a regulatory compliance tool designed specifically to enable suppliers to provide declarations for REACH, RoHS and other restricted substances legislation.

The BOMcheck® system offers the following benefits:

- Efficient and low cost method to demonstrate chemical compliance to all customers
- Expert guidance to create substances declarations for manufacturer part lists
- Keep up-to-date as new substances are added to REACH and RoHS
- Matching table for customer part number vs. manufacturer part number
- Attach manufacturer's electronic signature to the substance declarations
- Inform all manufacturing customers
- Reducing the risk of regulatory non-compliance

OSRAM expects its suppliers to provide all necessary substance declarations for direct materials fast, efficient and reliable directly in BOMcheck® in order to be able to make compliance assessments of our products and declarations towards our customers.

OSRAM contact address regarding Environmental Protection

OSRAM GmbH

Environmental Protection, Health Management and Safety

Fax: +49 (0) 89 6213 3463

Email: [environment@info.OSRAM.com](mailto:environment@info.OSRAM.com)

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**Suppliers Verification regarding restrictions, avoidance and declaration of materials in products**

Supplier:	
Address:	
Responsible person / function:	
Phone & Fax:	
Email:	

The supplier verifies that

- products, parts and materials supplied to OSRAM today and in the future satisfy the restrictions and bans defined in regulations listed in OSRAMs Index List Environment in a way, so that the use of these deliveries in products manufactured and distributed by OSRAM or customers of OSRAM does not cause violations of the listed legal requirements;
- a system is installed in suppliers company which ensures compliance with legal requirements regarding use of substances in products as far as applicable. The system includes products, parts and materials procured from sub suppliers. Supplier is able to provide relevant documentation regarding installed processes and product compliance immediately on request;
- according to Directive 2011/65/EU (RoHS) delivered products, parts and materials do not contain the following substances exceeding defined maximum concentration values, unless in an application exempted by Annex of RoHS Directive (incl. amendments). Respective third party measurement results are provided to OSRAM without further request, if available;

Substances / application	Maximum concentration values in homogeneous materials (2011/65/EU- RoHS)
lead (Pb)	0,1 % (weight) / 1000 ppm (parts per million)
mercury (Hg),	0,1 % (wt) / 1000 ppm
cadmium (Cd)	0,01 % (wt) / 100 ppm
hexavalent chromium (Cr <sup>6+</sup> )	0,1 % (wt) / 1000 ppm
polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE)	0,1 % (wt) / 1000 ppm

- in case deliveries to OSRAM contain hazardous substances in applications exempted by Directive 2011/65/EU, these substances, amount and applications will be declared to OSRAM in advance per product/product family;
- in case deliveries to OSRAM contain any substance of very high concern that is listed in candidate list according Regulation (EC)1907/2006/EC (REACH), amount and applications will be declared to OSRAM in advance per product/material;

OSRAM reserves the right to verify suppliers' compliance with the OSRAM Index List Environment at any time, or to have such verifications carried out by a third party. In case a violation of applicable laws or duties laid down in this document is established after signature of the enclosed verification, OSRAM must be notified immediately. In case suppliers fail to comply with the OSRAM Index List requirements, unless expressly ordered, OSRAM reserves the right to take appropriate actions, including termination of business relationships.

Signature and Stamp

Date

**Annex (informative)**

**List of applications of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE) which are exempted from the requirements of Article 4(1) of EU Directive 2011/65/EU (RoHS), Annex III (Status: December 2012)**

1	Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):	
1(a)	For general lighting purposes < 30 W: <del>5 mg</del>	<del>Expires on 31 December 2011;</del> 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 ≥ 30 W and < 50 W: <del>5 mg</del>	<del>Expires on 31 December 2011;</del> 3,5 mg may be used per burner after 31 December 2011
1(c)	For general lighting purposes ≥ 50 W and < 150 W: 5 mg	
1(d)	For general lighting purposes ≥ 150 W: 15 mg	
1(e)	For general lighting purposes with circular or square structural shape and tube diameter ≤ 17 mm	<del>No limitation of use until 31 December 2011;</del> 7 mg may be used per burner after 31 December 2011
1(f)	For special purposes 5 mg	
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): <del>5 mg</del>	<del>Expires on 31 December 2011;</del> 4 mg may be used per lamp after 31 December 2011
2(a)(2)	Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): <del>5 mg</del>	<del>Expires on 31 December 2011;</del> 3 mg may be used per lamp after 31 December 2011
2(a)(3)	Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8): <del>5 mg</del>	<del>Expires on 31 December 2011;</del> 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): <del>5 mg</del>	<del>Expires on 31 December 2012;</del> 3,5 mg may be used per lamp after 31 December 2012
2(a)(5)	Tri-band phosphor with long lifetime (≥ 25 000 h): <del>8 mg</del>	<del>Expires on 31 December 2011;</del> 5 mg may be used per lamp after 31 December 2011
2(b)	Mercury in other fluorescent lamps not exceeding (per lamp):	
2(b)(1)	<del>Linear halophosphate lamps with tube &gt; 28 mm (e.g. T10 and T12): 10 mg</del>	<del>Expires on 13 April 2012</del>
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)	<del>No limitation of use until 31 December 2011;</del> 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)	<del>No limitation of use until 31 December 2011;</del> 15 mg may be used per lamp after 31 December 2011

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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 ( $\leq 500$ mm)	<del>No limitation of use until 31 December 2014; 3,5 mg may be used per lamp after 31 December 2011</del>
3(b)	Medium length ( $> 500$ mm and $\leq 1\ 500$ mm)	<del>No limitation of use until 31 December 2014; 5 mg may be used per lamp after 31 December 2011</del>
3(c)	Long length ( $> 1\ 500$ mm)	<del>No limitation of use until 31 December 2014; 13 mg may be used per lamp after 31 December 2011</del>
4(a)	Mercury in other low pressure discharge lamps (per lamp)	<del>No limitation of use until 31 December 2014; 15 mg may be used per lamp after 31 December 2011</del>
4(b)	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index $R_a > 60$ :	
4(b)-I	$P \leq 155$ W	<del>No limitation of use until 31 December 2014; 30 mg may be used per burner after 31 December 2011</del>
4(b)-II	$155$ W $< P \leq 405$ W	<del>No limitation of use until 31 December 2014; 40 mg may be used per burner after 31 December 2011</del>
4(b)-III	$P > 405$ W	<del>No limitation of use until 31 December 2014; 40 mg may be used per burner after 31 December 2011</del>
4(c)	Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner):	
4(c)-I	$P \leq 155$ W	<del>No limitation of use until 31 December 2014; 25 mg may be used per burner after 31 December 2011</del>
4(c)-II	$155$ W $< P \leq 405$ W	<del>No limitation of use until 31 December 2014; 30 mg may be used per burner after 31 December 2011</del>
4(c)-III	$P > 405$ W	<del>No limitation of use until 31 December 2014; 40 mg may be used per burner after 31 December 2011</del>
4(d)	Mercury in High Pressure Mercury (vapour) 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 this Annex	
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 galvanised steel containing up to 0,35 % lead by weight	

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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 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	
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	
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	Expired 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	

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18(a)	<del>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)</del>	<del>Expired on 1 January 2011</del>
18(b)	<del>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)</del>	
19	<del>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)</del>	<del>Expires on 1 June 2011</del>
20	<del>Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs)</del>	<del>Expires on 1 June 2011</del>
21	<del>Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses</del>	
23	<del>Lead in finishes of fine pitch components other than connectors with a pitch of 0,65 mm and less</del>	<del>May be used in spare parts for EEE placed on the market before 24 September 2010</del>
24	<del>Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors</del>	
25	<del>Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring</del>	
26	<del>Lead oxide in the glass envelope of black light blue lamps</del>	<del>Expires on 1 June 2011</del>
27	<del>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</del>	<del>Expired on 24 September 2010</del>
29	<del>Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC ( 1)</del>	
30	<del>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</del>	
31	<del>Lead in soldering materials in mercury free flat fluorescent lamps (which, e.g. are used for liquid crystal displays, design or industrial lighting)</del>	
32	<del>Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes</del>	
33	<del>Lead in solders for the soldering of thin copper wires of 100 µg diameter and less in power transformers</del>	
34	<del>Lead in cermet-based trimmer potentiometer elements</del>	
36	<del>Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display</del>	<del>Expired on 1 July 2010</del>
37	<del>Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body</del>	
38	<del>Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide</del>	
39	<del>Cadmium in colour converting II-VI LEDs (&lt; 10 µg Cd per mm2 of light-emitting area) for use in solid state illumination or display systems</del>	<del>Expires on 1 July 2014</del>
40	<del>Cadmium in photoresistors for analogue optocouplers applied in professional audio equipment</del>	<del>Expires on 31 December 2013</del>

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<b>OSRAM Index List Environment: List of prohibited hazardous substances</b> <b>Products and product parts which can be affected by legal bans of hazardous substances</b> Summary of bans or restrictions on the distribution of hazardous substances, valid in the EU and other countries. <b>Status: December 2012</b>					
Substance/ substance group	CAS No.	Affected application	Limit value (wt. %) <sup>1)</sup>	Excem.	Legal regulations <sup>2)</sup>
<b>Electrical and electronic equipment and components; metal, glass and ceramic parts</b>					
Lead	7439-92-1	Electrical and electronic equipment	0.1	yes	EU RoHS CH ChemRRV App. 2.16(6)
Cadmium Cadmium compounds	7440-43-9	Electrical and electronic equipment	0.01	yes	EU RoHS CH ChemRRV App. 2.16(6)
		Metal surface coating	n.g.	yes	EU REACH App. XVII CH ChemRRV App. 2.9, DK 2.16(2) Statutory Order No.1199: limit value 0.0075 %
		Zinc layers	0.025		CH ChemRRV App. 2.16(3)
Mercury Mercury compounds	7439-97-6	Electrical and electronic equipment	0.1	yes	EU RoHS
		All applications	n.g.	yes	CH ChemRRV App. 1.7 NL Decree 9 September 1998 SE SFS 1998:944
Hexavalent chromium (Cr <sup>VI</sup> )		Electrical and electronic equipment	0.1	yes	EU RoHS CH ChemRRV App. 2.16(6)
Polybrominated biphenyls (PBBs) Polybrominated diphenyl-ethers (PBDEs)		Electrical and electronic equipment	0.1	yes	EU RoHS CH ChemRRV App. 1.9
Octabromodiphenylether (OBDE)	32536-52-0	All applications	0.1		EU REACH
Pentabromodiphenyl- ether (PeBDE)	32534-81-9				
<b>Batteries and accumulators</b>					
Lead	7439-92-1	Fixed batteries <sup>6)</sup>	0.1	yes	CH ChemRRV App. 2.15
Cadmium	7440-43-9	Portable batteries and accumulators	0.002	yes	EU 2006/66/EC
		Zinc-carbon batteries Fixed batteries <sup>6)</sup>	0.015 0.015	yes	CH ChemRRV App. 2.15
Mercury	7439-97-6	Batteries and accumulators	0.000 5	yes	EU 2006/66/EC
		Fixed batteries <sup>6)</sup>	0.000 5		CH ChemRRV App. 2.15
		Button cells and batteries composed of button cells	2		EU 2006/66/EC CH ChemRRV App. 2.15
		Alkali-manganese batteries	0.000 5	yes	CH ChemRRV App. 2.15
		Zinc-carbon batteries	0.000 5		CH ChemRRV App. 2.15
<b>Plastics and rubber parts, wire insulation, coats of lacquer</b>					
Polybrominated biphenyls (PBBs) Polybrominated diphenyl-ethers (PBDEs)		Electrical and electronic equipment	0.1	yes	EU RoHS CH ChemRRV App. 1.9
Octabromodiphenylether (OBDE)	32536-52-0	All applications	0.1		EU REACH App. XVII
Pentabromodiphenyl- ether (PeBDE)	32534-81-9				

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Substance/ substance group	CAS No.	Affected application	Limit value (wt. %) <sup>1)</sup>	Excem.	Legal regulations <sup>2)</sup>
Short-chain chlorinated paraffins (C10-C13)		Sealing compounds Plastics and rubber	1.0		CH ChemRRV App. 1.2
Lead and lead compounds		Paints and varnishing	0.01	yes	CH ChemRRV App. 2.8
Cadmium and cadmium compounds		Pigments in plastics Stabilized vinyl chloride polymers and copolymers (e.g. PVC)	0.01 0.01	yes yes	EU REACH App. XVII CH ChemRRV App. 2.9, DK 2.16(2) Statutory Order No.1199: limit value 0.0075%
		Paints and varnishing	0.01	yes	CH ChemRRV App. 2.8
<b>Insulating materials</b>					
Asbestos	1332-21-4 see below <sup>4)</sup>	All applications	0.1 (total)	yes	EU REACH App. XVII
			n.g.	yes	CH ChemRRV App. 1.6
Man-made vitreous (silicate) fibres with random orientation with oxide of sodium, potassium, calcium, magnesium and barium content >18 % by mass		Articles for heat and noise reduction in building construction including technical insulation and for ventilation systems	0.1 (total)	yes	DE ChemVerbotsV
<b>Other materials (e.g. wood)</b>					
Arsenic compounds		Wood	n.g.	yes	EU REACH App. XVII
Formaldehyd	50-00-0	Wood	0.1 ml/m <sup>3</sup> (spezielle s Prüfverf.)	yes	DE ChemVerbotsV AT BGBl. Nr. 194/1990 SE KIFS 1998:8(9, 20-27§)
Creosote	8001-58-9	Wood and wooden materials	n.g.	yes	EU REACH App. XVII
Pentachlorophenol (PCP) Pentachlorophenol, sodium salt; Other PCP salts and compounds	87-86-5 131-52-2	All applications	0.000 5 (total)	yes	EU REACH App. XVII
<b>Coolants, insulating gases and liquids, fire extinguishing agents</b>					
CFCs and halons	see below <sup>5)</sup>	Aerosols	1.0	yes	EU 2037/2000
		Coolants	1.0	yes	US CAA (42 USC 7671 et seq.)
		Foam plastics	n.g.	yes	CH
		Cleaning agents and solvents	1.0	yes	ChemRRV App. 1.4, 2.3, 2.9-12
		Extinguishing agents	1.0	yes	
HCFCs		Use in cooling and air-conditioning devices	n.g.	yes	EU 2037/2000
FCs		Fire protection systems and fire extinguishers	n.g.		EU Regulation No. 842/2006
FCs HFCs		Non-confined direct-evaporation systems containing refrigerants	n.g.		EU Regulation No. 842/2006
		Cooling and air conditioning equipment	n.g.	yes	AT BGBl. Nr. 447/2002
FCs HFCs Sulfur hexafluoride (SF <sub>6</sub> )	2551-62-4	One component foams	n.g.	yes	EU Regulation No. 842/2006
HCFCs (C <sub>1</sub> to C <sub>3</sub> ) HBrFCs (C <sub>1</sub> to C <sub>3</sub> ) Methyl bromide	74-83-9	All applications	n.g.	yes	CH ChemRRV App. 1.4, 2.3, 2.9-12
Perfluorooctane sulfonic acid and its metal salts, halides, amides, and other derivatives including polymers (PFOS)		All applications	0.1	yes	EU REACH App. XVII

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Substance/ substance group	CAS No.	Affected application	Limit value (wt. %) <sup>1)</sup>	Excem.	Legal regulations <sup>2)</sup>
Sulfur hexafluoride (SF6)	2551-62-4	Insulating and quenching gas in electrotechnical systems and appliances up to 1 kV (over 1kV obligation to report)	n.g.		AT BGBl. Nr. 447/2002
		Low voltage plants (≤ 1 kV)	n.g.		DK Statutory Order no. 552 of 2 July 2002
		All applications (over 1 kg obligation to report in cases of exceptions)	n.g.	yes	CH ChemRRV App. 1.5
Polychlorinated biphenyls (PCBs)	1336-36-3	All applications	0.005 (total)	yes	EU REACH App. XVII
Polychlorinated terphenyls (PCTs)	61788-33-8		n.g.		CH ChemRRV App. 1.1, 2.14
Monomethyltetrachlorodiphenylmethane (Ugilec 141)	76253-60-6				
Monomethyldichlorodiphenylmethane (Ugilec 121 or 21)	99688-47-8				
Monomethyldibromodiphenylmethane (DBBT)					
Polychlorinated biphenyls (PCBs)	1336-36-3	Not totally enclosed	0.05	yes	US TSCA (15 USC 2605) + 40 CFR 761
Halogenated biphenyls, terphenyls, naphthalenes		All applications	n.g.		CH ChemRRV App. 1.1
Halogenated aromatic compounds		Capacitors and transformers	0,05/0,005 (mono-/polyhalogenated)		CH ChemRRV App. 2.14
<b>Packaging</b>					
Heavy metals (lead, cadmium, hexavalent chromium, mercury)		Packaging and packaging components	0.01 (total)		EU 94/62/EC CH ChemRRV App. 2.16(4)
<b>Cleaning agents</b>					
Aliphatic CHCs	s. u. <sup>3)</sup>	All applications	0.1 (total)	yes	EU REACH App. XVII CH ChemRRV App. 1.3
1,1,1-Trichloroethane	71-55-6	All applications	n.g.		CH ChemRRV App. 1.4
Tetrachloromethane	56-23-5				

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**Notes**

1) "n.g." means that no limit value is given in the legislation. In these cases the legally given concentration limits for taking substances into account are to be observed.

2) Country codes according to ISO 3166

ChemVerbotsV German chemicals prohibition ordinance (Chemikalienverbotsverordnung)

CAA Clean Air Act

KIFS Swedish National Chemicals Inspectorate's Regulations (Kemikalieinspektionens föreskrifter)

REACH Regulation 1907/2006 of the European Parliament and the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

RoHS Directive of the European Parliament and the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment (Directive 2002/95/EC)

SFS Swedish Code of Statutes (Svensk författningssamling)

ChemRRV Swiss ordinance on reduction of chemical risks (Chemikalien-Risikoreduktions-Verordnung)

TSCA Toxic Substances Control Act

	<b>CAS No.</b>		<b>CAS No.</b>
3) <b>Aliphatic CHCs</b>		5) <b>CFCs/Halons</b>	
Tetrachloromethane	56-23-5	Trichlorofluoromethane (R11)	75-69-4
1,1,2,2-Tetrachloroethane	79-34-5	Dichlorodifluoromethane (R12)	75-71-8
1,1,1,2-Tetrachloroethane	630-20-6	Chlorotrifluoromethane (R13)	75-72-9
Pentachloroethane	76-01-7	Tetrachlorodifluoroethane (R112)	76-11-9
Trichloromethane (Chloroform)	67-66-3	Trichlorotrifluoroethane (R113)	76-13-1
1,1,1-Trichloroethane	71-55-6	Dichlorotetrafluoroethane (R114)	76-14-2
1,1,2-Trichloroethane	79-00-5	Chloropentafluoroethane (R115)	76-15-3
1,1-Dichloroethylene	75-35-4	Bromochlorodifluoromethane (Halon 1211)	353-59-3
		Bromotrifluoromethane (Halon 1301)	75-63-8
4) <b>Asbestos</b>		Dibromotetrafluoroethane (Halon 2402)	124-73-2
Aktinolite	77536-66-4	Tetrachloromethane	56-23-5
Amosite	12172-73-5	1,1,1-Trichloroethane	71-55-6
Anthophyllite	77536-67-5	Chlorodifluoromethane (R22)	75-45-6
Chrysotile	12001-29-5		
Crocidolite	12001-28-4		
Tremolite	77536-68-6		

6) Fixed batteries are those which cannot be removed without effort from the appliances. They are either soldered, welded or in some other manner permanently connected to the contacts.

<b>OSRAM Index List Environment: List of declarable substances</b> <b>This list contains a regularly reviewed selection of relevant hazardous substances.</b> <b>Stand: December 2012</b>				
Substance/substance group	reason	Typical applications / reference of the limit value	Limit value (% w/w)	Declaration via BOMcheck®
Lead Lead compounds		Solders, hybrid circuits, ceramics, glasses	0.1 hm <sup>1)</sup>	BOMcheck® (RoHS)
Cadmium Cadmium compounds		Contacts, hard and soft solders, glasses	0.01hm	BOMcheck® (RoHS, Battery Directive)
Chromium (VI) compounds		Anti-corrosion coatings	0.1 hm	BOMcheck® (RoHS)
Mercury Mercury compounds		Discharge lamps, relays, switches	0.1 hm	BOMcheck® (RoHS)
Polybrominated biphenyls (PBBs)		Flame-protected plastics in components and printed circuit boards	0.1 hm	BOMcheck® (RoHS)
Polybrominated diphenylethers (PBDEs)	Toxic, environment persistent	Flame-protected plastics in components and printed circuit boards	0.1 hm	BOMcheck® (RoHS)
Aluminosilicate Refractory Ceramic Fibres	Carcinogenic	High temperature insulation in equipment	0.1	BOMcheck® (REACH Art 33)
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl (DHNUP)	Toxic for reproduction	Plasticiser in PVC and other plastic polymers	0.1	BOMcheck® (REACH Art 33)
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)	Toxic for reproduction	Plasticiser in PVC and other plastic polymers	0.1	BOMcheck® (REACH Art 33)
2,2'-dichloro-4,4'-methyleneedianiline	Carcinogenic	may be present in polyurethane up to 4% w/w	0.1	BOMcheck® (REACH Art 33)
Arsenic and Arsenic compounds	Toxic, arsenic trioxide and arsenic acid and its salts are also carcinogenic	Lead and copper alloys, metal adhesives, soft solders, glasses, semiconductors	0.1	BOMcheck® (REACH Art 33)
Benzyl butyl phthalate (BBP)	Toxic for reproduction	Plasticized plastics, particularly PVC	0.1	BOMcheck® (REACH Art 33)
Bis(2-ethylhexyl)phthalate (diethylhexylphthalate, DEHP)	Toxic for reproduction	Plasticized plastics, particularly PVC	0.1	BOMcheck® (REACH Art 33)
Bis(2-methoxyethyl) ether	Toxic for reproduction	solvent in battery electrolytes for sealed lithium ion batteries	0.1	BOMcheck® (REACH Art 33)
Bis(2-methoxyethyl) phthalate (DMEP)	Toxic for reproduction	Plasticizer in nitrocellulose, acetyl cellulose, polyvinyl acetate, polyvinyl chloride (PVC) and polyvinylidene chloride	0.1	BOMcheck® (REACH Art 33)
Bis(tributyltin)oxide (TBTO)	PBT	Foam materials in electronics and as a biocide		BOMcheck® (REACH Art 33)
Boric acid	Toxic for reproduction	Glass, glass fibers, ceramics, wood, paper, paints, coatings, paints	0.1	BOMcheck® (REACH Art 33)
Cobalt dichloride	Carcinogenic and Toxic for reproduction	Blue gel in dried flowers (packaging supplement)	0.1	BOMcheck® (REACH Art 33)
Dibutyl phthalate (DBP) <sup>1)</sup>	Toxic for reproduction	Plasticized plastics, particularly PVC	0.1	BOMcheck® (REACH Art 33)
Diisobutyl phthalate (DIBP)	Toxic for reproduction	Plasticized plastics, particularly PVC	0.1	BOMcheck® (REACH Art 33)
Disodium tetraborate, anhydrous	Toxic for reproduction	Glass, glass fibers, ceramics, Flame-protected wood, paper and Cotton	0.1	BOMcheck® (REACH Art 33)
Hexabromocyclododekane (HBCCD) 1) 2), including all major diastereoisomers: - Alpha-HBCCD	PBT	Flame-protected plastics	0.1	BOMcheck® (REACH Art 33)

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- Beta-HBCCD - Gamma-HBCCD				
Lead chromate	Toxic, environment hazard	Colored paints and coatings, corrosion control coatings	0.1	BOMcheck® (REACH Art 33)
Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	Carcinogenic and toxic for reproduction	Pigment for colored plastic: PVC, polyolefins and nylon	0.1	BOMcheck® (REACH Art 33)
Lead sulfochromate yellow (C.I. Pigment Yellow 34)	Carcinogenic and toxic for reproduction	Pigment for colored plastic: PVC, polyolefins and nylon	0.1	BOMcheck® (REACH Art 33)
Man-made mineral fibers, which are classified as carcinogenic	Carcinogenic inhalation	Thermal insulation materials	0.1	BOMcheck® (REACH Art 33)
Short-chain chlorinated paraffins (C10-C13) Other chlorinated paraffins	PBT/vPvB	Plasticized and flame retarded plastics, rubber and sealing compounds	0.1	BOMcheck® (REACH Art 33)
Tetraboron disodium heptaoxide, hydrate	Toxic for reproduction	Glass, glass fibers, ceramics, Flame-protected wood, paper and Cotton	0.1	BOMcheck® (REACH Art 33)
Tris(2-chloroethyl)phosphate (TCEP)	Toxic for reproduction	Plasticized and flame retarded plastics, painting and rubber compounds	0.1	BOMcheck® (REACH Art 33)
Zirconia Aluminosilicate Refractory Ceramic Fibres	Cacinogenic	High temperature insulation in equipment	0,1	BOMcheck® (REACH Art 33)
Azo compounds	Release carcinogenic substances	Colored plastics	0.1 hm	-
Dimethylformamide (DMF)	Toxic for reproduction	Electrolytes in electrolyte capacitors	0.1 hm	-
Antmony and Antimony compounds	Toxic	Opacifying agent for soda lime glass. Antimony trioxide is primarily used as a flame retardant in combination with halogenated flame retardants in plastics and laser-writable plastics	0,1 hm	BOMcheck® (required by customers)
Beryllium Beryllium compounds		Contact and spring materials, copper alloys, high-temperature materials, ceramics, glasses	0.1 hm	BOMcheck® (required by customers)
Nickel, nickel compounds and nickel-based alloys in contact with skin	Different nickel compounds are carcinogenic	Metal part, Base parts, only relevant if in contact with skin during use phase, e.g. torch surface	0.1 hm	BOMcheck® (required by customers)
Other brominated flame retardants than PBBs, PBDEs und HBCCD		Flame-protected plastics in components and printed circuit boards	0.1 hm	BOMcheck® (required by customers)
PAH (Polycyclic aromatic hydrocarbons)	Persistent, toxic, various compounds can be carcinogenic	Plastic, Elastomers, rubber	0.1 hm	BOMcheck® (required by customers)
Radioactive substances, intentionally added	Radioactive	Lamp filling gas, lamp electrodes	No limit	BOMcheck® (required by customers)
1,2-Dimethoxyethane (ethylene glycol dimethyl ether, EGDME)	Toxic for reproduction	solvent in battery electrolytes for sealed lithium ion batteries	0.1	BOMcheck® (REACH Art 33)
1,2-Bis(2-methoxyethoxy)ethane (TEGDME, triglyme) Toxic for reproduction	Toxic for reproduction	solvent in battery electrolytes for sealed lithium ion batteries	0.1	BOMcheck® (REACH Art 33)
Diboron trioxide	Toxic for reproduction	Glass products, fibre glass products and ceramic products	0.1	BOMcheck® (REACH Art 33)
1,2-Benzenedicarboxylic acid, dipentylester, branched and	Toxic for reproduction	plasticiser in PVC and other plastic polymers	0.1	BOMcheck® (REACH Art 33)

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linear				
Diisopentylphthalate	Toxic for reproduction	plasticiser in PVC and other plastic polymers	0.1	BOMcheck® (REACH Art 33)
N-pentyl-isopentylphthalate	Toxic for reproduction	plasticiser in PVC and other plastic polymers	0.1	BOMcheck® (REACH Art 33)
Dibutyltin dichloride (DBTC)	Toxic for reproduction	added to PVC plastic to make it more stable to heating and to protect against degradation from sunlight. DBTC is also used as catalyst for the production of plastics including polyurethanes and certain silicones, and for room temperature vulcanisation (RTV) silicone rubber systems.	0.1	BOMcheck® (REACH Art 33)
Lead oxide sulfate	Toxic for reproduction	heat stabilizer in plastics, in particular for opaque or semi opaque PVC products	0.1	BOMcheck® (REACH Art 33)
[Phthalato(2-)]dioxotrilead	Toxic for reproduction	heat stabilizer in plastics, in particular PVC for high temperature insulating materials	0.1	BOMcheck® (REACH Art 33)
Dioxobis(stearato)trilead	Toxic for reproduction	heat stabilizer in plastics, in particular for PVC products	0.1	BOMcheck® (REACH Art 33)
Fatty acids, C16-18, lead salts	Toxic for reproduction	heat stabilizer in plastics, in particular for PVC products	0.1	BOMcheck® (REACH Art 33)
Lead dinitrate	Toxic for reproduction	heat stabilizer in nylon and polyesters	0.1	BOMcheck® (REACH Art 33)
Pentalead tetraoxide sulphate	Toxic for reproduction	heat stabilizer in plastics, in particular for PVC products	0.1	BOMcheck® (REACH Art 33)
Sulfurous acid, lead salt, dibasic	Toxic for reproduction	heat stabilizer in plastics, in particular for PVC products	0.1	BOMcheck® (REACH Art 33)
Tetrolead trioxide sulphate	Toxic for reproduction	one of the most widely heat stabilizers for plastics, in particular for PVC products	0.1	BOMcheck® (REACH Art 33)
Trilead dioxide phosphonate	Toxic for reproduction	heat stabilizer in plastics, in particular for PVC products	0.1	BOMcheck® (REACH Art 33)
Lead tetroxide (orange lead)	Toxic for reproduction	also known as red lead, is found in anti-corrosion paints which are used to prevent iron and steel from rusting. The paints can contain between 85% and 98% lead tetroxide	0.1	BOMcheck® (REACH Art 33)
Lead cyanamidate	Toxic for reproduction	is found in anticorrosion paints which are used to prevent steel from rusting. These red paints can typically contain around 15% lead cyanamidate.	0.1	BOMcheck® (REACH Art 33)
Pyrochlore, antimony lead yellow	Toxic for reproduction	yellow pigment for colouring plastics and paints. When used as a colourant in plastic articles, the lead antimonate can be present in concentrations > 0.1% w/w of the plastic	0.1	BOMcheck® (REACH Art 33)
4-Aminoazobenzene	Carcinogenic	(also known as Aniline Yellow) is found in yellow inks including inks for inkjet printers.	0.1	BOMcheck® (REACH Art 33)
1,2-Diethoxyethane	Toxic for reproduction	may be used as a solvent in	0.1	BOMcheck®

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		battery electrolytes for sealed lithium ion batteries		(REACH Art 33)
Silicic acid (H <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> ), barium salt (1:1), lead-doped [with lead (Pb) content above the applicable generic concentration limit for 'toxicity for reproduction' Repr. 1A (CLP) or category 1 (DSD); the substance is a member of the group entry of lead compounds, with index number 082-001-00-6 in Regulation (EC) No 1272/2008]	Toxic for reproduction	luminescent material which emits ultraviolet light and is used as the phosphor coating for ultraviolet lamps	0.1	BOMcheck® (REACH Art 33)
N,N-dimethylformamide	Toxic for reproduction	solvent in the electrolyte solution for electrolytic capacitors, particularly low temperature capacitors rated to -55 °C.	0.1	BOMcheck® (REACH Art 33)
Lead titanium trioxide	Toxic for reproduction	a wide variety of piezoelectric devices including high-dielectric-constant capacitors, piezoelectric sonar and ultrasonic transducers, radio and communication filters, pyroelectric security devices, medical diagnostic transducers, stereo tweeters, gas igniters, positive temperature coefficient (PTC) sensors and switches and ultrasonic motors	0.1	BOMcheck® (REACH Art 33)
Lead titanium zirconium oxide	Toxic for reproduction		0.1	BOMcheck® (REACH Art 33)

<sup>1)</sup> Threshold concentration value for declaration: 0.1 % by weight in articles (SVHC acc. REACH Art 33), otherwise for homogeneous materials (hm)

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