

Exemptions of RoHS Directive Updated

The exemptions of RoHS 2.0 (2011/65/EU) are listed in Annex III and Annex IV. The exemptions in Annex III are suitable for all EEE. Meanwhile, the exemptions in Annex IV are only suitable for medical devices and monitoring and control instruments.

On 16 June 2017, the Official Journal of the European Union published (EU) 2017/1009, (EU) 2017/1010 and (EU) 2017/1011 to amend the Annex III of 2011/65/EU. The directives shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union, and will be implemented on 6 July 2018. On 31 October 2017, (EU) 2017/1975 was published, which shall also enter into force on the twentieth day following that of its publication and will be implemented on 21 November 2018. All effective exemptions in Annex III and Annex IV are listed as below.



Exemptions in Annex III of 2011/65/EU for all EEE

Notes:

☆: The exemption of which an application for renewal was submitted in due time is under evaluation. The existing exemption shall remain valid until a decision on the renewal application is taken by the Commission. In the event that the application for renewal of an exemption is rejected or that an exemption is revoked, the exemption shall expire at the earliest 12 months after the date of the decision. If the application is accepted, the period of validity shall be issued.

▼: The exemption of which no application for renewal was submitted in due time. Category 8 (medical devices) and category 9 (monitoring and control instruments) will expire on 21 July 2018. Other subcategories have expired.

1. Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):

☆1(a). For general lighting purposes < 30 W: 2.5 mg;

☆1(b). For general lighting purposes ≥ 30 W and < 50 W: 3.5 mg;

☆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: 7 mg;

☆1(f). For special purposes: 5 mg;

1(g). For general lighting purposes < 30 W with a lifetime equal or above 20 000 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;

☆2(a)(2). Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 3 mg;

☆2(a)(3). Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8): 3.5 mg;

☆2(a)(4). Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 3.5 mg may be used per lamp;

☆2(a)(5). Tri-band phosphor with long lifetime (≥ 25 000 h): 5 mg.

2(b). Mercury in other fluorescent lamps not exceeding (per lamp):

☆2(b)(3). Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9): 15 mg;

☆2(b)(4). Lamps for other general lighting and special purposes (e.g. induction lamps): 15 mg.

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;

☆3(b). Medium length (> 500 mm and ≤ 1500 mm): 5 mg;

☆3(c). Long length (> 1500 mm): 13 mg.

- ★4(a). Mercury in other low pressure discharge lamps (per lamp): 15 mg.
- 4(b). Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60:
- ★4(b)-I. P ≤ 155 W: 30 mg;
 - ★4(b)-II. 155 W < P ≤ 405 W: 40 mg;
 - ★4(b)-III. P > 405 W: 40 mg.
- 4(c). Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner):
- ★4(c)-I. P ≤ 155 W: 25 mg;
 - ★4(c)-II. 155 W < P ≤ 405 W: 30mg;
 - ★4(c)-III. P > 405 W: 40mg.
- ★4(e). Mercury in metal halide lamps (MH).
- ★4(f). Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex.
- 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, **Expires on 31 December 2018:**
- (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.
- ▼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 solder (i.e. lead-based alloys containing 85% by weight or more lead).
- ▼7(b). Lead in solder for servers, 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. 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)-IV. Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors.
- ★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. (Evaluation has been finished, will be replaced on **6 July, 2018**)
- 9(b). Lead in bearing shells and bushes for refrigerant- containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications. Applies to categories 8, 9 and 11; **Expires on 21 July 2023** for category 8 in vitro diagnostic medical devices, **Expires on 21 July 2024** for category 9 industrial monitoring and control instruments and for category 11, **Expires on 21 July 2021** for other subcategories of categories 8 and 9. (New)
- 9(b)-(I). Lead in bearing shells and bushes for refrigerant- containing hermetic scroll compressors with a stated electrical power input equal or below 9 kW for heating, ventilation, air conditioning and refrigeration (HVACR) applications. Applies to category 1; **Expires on 21 July 2019.** (New)
- ▼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.
- ▼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. (Evaluation has been finished, will be replaced on **6 July, 2018**)
- 13(a). Lead in white glasses used for optical applications. Applies to all categories; **Expires on 21 July 2023** for category 8 in vitro diagnostic medical devices; **Expires on 21 July 2024** for category 9 industrial monitoring and control instruments and for category 11; **Expires on 21 July 2021** for all other categories and subcategories.(New)
- ★13(b). Cadmium and lead in filter glasses and glasses used for reflectance standards. (Evaluation has been finished, will be replaced on **6 July, 2018**)
- 13(b). Cadmium and lead in filter glasses and glasses used for reflectance standards. Applies to categories 8, 9 and 11; **Expires on 21 July 2023** for category 8 in vitro diagnostic medical devices; **Expires on 21 July 2024** for category 9 industrial monitoring and control instruments and for category 11; **Expires on 21 July 2021** for other subcategories of categories 8 and 9. (New)
- 13(b)-(I). Lead in ion coloured optical filter glass types. Applies to categories 1 to 7 and 10; **Expires on 21 July 2021.**(New)
- 13(b)-(II). Cadmium in striking optical filter glass types; excluding applications falling under point 39 of this Annex. Applies to categories 1 to 7 and 10; **Expires on 21 July 2021.** (New)
- 13(b)-(III). Cadmium and lead in glazes used for reflectance standards. Applies to categories 1 to 7 and 10; **Expires on 21 July 2021.** (New)
- ★15. Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip package.
- ▼17. Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications.
- ★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 (BaSi₂O₅:Pb).
- ★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.
- ☆29. Lead bound in crystal glass as define in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC.
- ▼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 100µm diameter and less in power transformers.
- ☆34. Lead in cermet-based trimmer potentiometer elements.
- ☆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. (Evaluation has been finished, will be replaced on **21 November 2018**)
- 39(a). Cadmium selenide in downshifting cadmium-based semiconductor nanocrystal quantum dots for use in display lighting applications (< 0.2 µg Cd per mm² of display screen area). **Expires on 31 October 2019** for all categories. (New)
- 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**

Exemptions in Annex IV of 2011/65/EU for medical devices (category 8) and monitoring and control instruments (category 9)

Equipment utilising or detecting ionising radiation

1. Lead, cadmium and mercury in detectors for ionising radiation.
2. Lead bearings in X-ray tubes.
3. Lead in electromagnetic radiation amplification devices: micro-channel plate and capillary plate.
4. Lead in glass frit of X-ray tubes and image intensifiers and lead in glass frit binder for assembly of gas lasers and for vacuum tubes that convert electromagnetic radiation into electrons.
5. Lead in shielding for ionising radiation.
6. Lead in X-ray test objects.
7. Lead stearate X-ray diffraction crystals.
8. Radioactive cadmium isotope source for portable X-ray fluorescence spectrometers.

Sensors, detectors and electrodes

- 1a. Lead and cadmium in ion selective electrodes including glass of pH electrodes.
- 1b. Lead anodes in electrochemical oxygen sensors.
- 1c. Lead, cadmium and mercury in infra-red light detectors.
- 1d. Mercury in reference electrodes: low chloride mercury chloride, mercury sulphate and mercury oxide.

Others

9. Cadmium in helium-cadmium lasers.
10. Lead and cadmium in atomic absorption spectroscopy lamps.
11. Lead in alloys as a superconductor and thermal conductor in MRI.
12. Lead and cadmium in metallic bonds creating superconducting magnetic circuits in MRI, SQUID, NMR (Nuclear Magnetic Resonance) or FTMS (Fourier Transform Mass Spectrometer) detectors. **Expires on 30 June 2021**.
13. Lead in counterweights.
14. Lead in single crystal piezoelectric materials for ultrasonic transducers.
15. Lead in solders for bonding to ultrasonic transducers.
16. Mercury in very high accuracy capacitance and loss measurement bridges and in high frequency RF switches and relays in monitoring and control instruments not exceeding 20 mg of mercury per switch or relay.

17. Lead in solders in portable emergency defibrillators.
18. Lead in solders of high performance infrared imaging modules to detect in the range 8-14 μm .
19. Lead in Liquid crystal on silicon (LCoS) displays.
20. Cadmium in X-ray measurement filters.
21. Cadmium in phosphor coatings in image intensifiers for X-ray images until **31 December 2019** and in spare parts for X-ray systems placed on the EU market before 1 January 2020.
22. Lead acetate marker for use in stereotactic head frames for use with CT and MRI and in positioning systems for gamma beam and particle therapy equipment. **Expires on 30 June 2021.**
23. Lead as an alloying element for bearings and wear surfaces in medical equipment exposed to ionising radiation. **Expires on 30 June 2021.**
24. Lead enabling vacuum tight connections between aluminium and steel in X-ray image intensifiers. **Expires on 31 December 2019.**
25. Lead in the surface coatings of pin connector systems requiring nonmagnetic connectors which are used durably at a temperature below $-20\text{ }^{\circ}\text{C}$ under normal operating and storage conditions. **Expires on 30 June 2021.**
26. Lead in the following applications that are used durably at a temperature below $-20\text{ }^{\circ}\text{C}$ under normal operating and storage conditions:
- (a) solders on printed circuit boards;
 - (b) termination coatings of electrical and electronic components and coatings of printed circuit boards;
 - (c) solders for connecting wires and cables;
 - (d) solders connecting transducers and sensors.
- Lead in solders of electrical connections to temperature measurement sensors in devices which are designed to be used periodically at temperatures below $-150\text{ }^{\circ}\text{C}$.
These exemptions expire on 30 June 2021.
27. Lead in
- solders,
 - termination coatings of electrical and electronic components and printed circuit boards,
 - connections of electrical wires, shields and enclosed connectors,
- which are used in
- (a) magnetic fields within the sphere of 1 m radius around the isocentre of the magnet in medical magnetic resonance imaging equipment, including patient monitors designed to be used within this sphere, or
 - (b) magnetic fields within 1 m distance from the external surfaces of cyclotron magnets, magnets for beam transport and beam direction control applied for particle therapy.
- Expires on 30 June 2020.**
28. Lead in solders for mounting cadmium telluride and cadmium zinc telluride digital array detectors to printed circuit boards. **Expires on 31 December 2017.**
29. Lead in alloys, as a superconductor or thermal conductor, used in cryo-cooler cold heads and/or in cryo-cooled cold probes and/or in cryo-cooled equipotential bonding systems, in medical devices (category 8) and/or in industrial monitoring and control instruments. **Expires on 30 June 2021.**
30. Hexavalent chromium in alkali dispensers used to create photocathodes in X-ray image intensifiers until **31 December 2019** and in spare parts for X-ray systems placed on the EU market before 1 January 2020.
- 31a. Lead, cadmium, hexavalent chromium, and polybrominated diphenyl ethers (PBDE) in spare parts recovered from and used for the repair or refurbishment of medical devices, including *in vitro* diagnostic medical devices, or electron microscopes and their accessories, provided that the reuse takes place in auditable closed-loop business-to-business return systems and that each reuse of parts is notified to the customer. **Expires on:** (a) **21 July 2021** for the use in medical devices other than *in vitro* diagnostic medical devices; (b) **21 July 2023** for the use in *in vitro* diagnostic medical devices; (c) **21 July 2024** for the use in electron microscopes and their accessories.
32. Lead in solders on printed circuit boards of detectors and data acquisition units for Positron Emission Tomographs which are integrated into Magnetic Resonance Imaging equipment. **Expires on 31 December 2019.**
33. Lead in solders on populated printed circuit boards used in Directive 93/42/EEC class IIa and IIb mobile medical devices other than portable emergency defibrillators. **Expires on 30 June 2016** for class IIa and on **31 December 2020** for class IIb.
34. Lead as an activator in the fluorescent powder of discharge lamps when used for extracorporeal photopheresis lamps containing BSP ($\text{BaSi}_2\text{O}_5\text{:Pb}$) phosphors. **Expires on 22 July 2021.**
35. Mercury in cold cathode fluorescent lamps for back-lighting liquid crystal displays, not exceeding 5 mg per lamp, used in industrial monitoring and control instruments placed on the market before 22 July 2017. **Expires on 21 July 2024.**
36. Lead used in other than C-press compliant pin connector systems for industrial monitoring and control instruments. **Expires on 31 December 2020.** May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before **1 January 2021.**
37. Lead in platinized platinum electrodes used for conductivity measurements where at least one of the following conditions applies:
- (a) wide-range measurements with a conductivity range covering more than 1 order of magnitude (e.g. range between 0,1 mS/m and 5 mS/m) in laboratory applications for unknown concentrations;
 - (b) measurements of solutions where an accuracy of $\pm 1\%$ of the sample range and where high corrosion resistance of the electrode are required for any of the following:
 - (i) solutions with an acidity $< \text{pH } 1$;
 - (ii) solutions with an alkalinity $> \text{pH } 13$;
 - (iii) corrosive solutions containing halogen gas;
 - (c) measurements of conductivities above 100 mS/m that must be performed with portable instruments.
- Expires on 31 December 2018**
38. Lead in solder in one interface of large area stacked die elements with more than 500 interconnects per interface which are used in X-ray detectors of computed tomography and X-ray systems. **Expires on 31 December 2019.** May be used after that date in spare parts for CT and X-ray systems placed on the market before 1 January 2020.

39. Lead in micro-channel plates (MCPs) used in equipment where at least one of the following properties is present:
- (a) a compact size of the detector for electrons or ions, where the space for the detector is limited to a maximum of 3 mm/MCP (detector thickness + space for installation of the MCP), a maximum of 6 mm in total, and an alternative design yielding more space for the detector is scientifically and technically impracticable;
 - (b) a two-dimensional spatial resolution for detecting electrons or ions, where at least one of the following applies:
 - (i) a response time shorter than 25 ns;
 - (ii) a sample detection area larger than 149 mm²;
 - (iii) a multiplication factor larger than $1,3 \times 10^3$.
 - (c) a response time shorter than 5 ns for detecting electrons or ions;
 - (d) a sample detection area larger than 314 mm² for detecting electrons or ions;
 - (e) a multiplication factor larger than $4,0 \times 10^7$.
- The exemption expires on the following dates:
- (a) **21 July 2021** for medical devices and monitoring and control instruments;
 - (b) **21 July 2023** for in-vitro diagnostic medical devices;
 - (c) **21 July 2024** for industrial monitoring and control instruments.
40. Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC for industrial monitoring and control instruments. **Expires on 31 December 2020.** May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021.
41. Lead as a thermal stabiliser in polyvinyl chloride (PVC) used as base material in amperometric, potentiometric and conductometric electrochemical sensors which are used in in-vitro diagnostic medical devices for the analysis of blood and other body fluids and body gases. **Expires on 31 December 2018.**
42. Mercury in electric rotating connectors used in intravascular ultrasound imaging systems capable of high operating frequency (> 50 MHz) modes of operation. **Expires on 30 June 2019.**
43. Cadmium anodes in Hersch cells for oxygen sensors used in industrial monitoring and control instruments, where sensitivity below 10 ppm is required. **Expires on 15 July 2023.**

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