

Appendix 1-1 . The exemptions of RoHS II Annex3

rev.2.0/2019.1.1

(Note)
About exemptions already expired, these exemptions may be used in spare parts for EEE placed on the market before expired day of each exemption continuously. (from 4(f) of Article4)

No	Substance	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: 5 mg	5 mg	Expired on 31 December 2011
			3.5 mg	Expires on 31 December 2012
			2.5 mg	Remain in force until the decision on extension application continuously
1(b)		For general lighting purposes ≥ 30 W and < 50 W: 5 mg	5 mg	Expired on 31 December 2011
			3.5 mg	Remain in force until the decision on extension application continuously
1(c)		For general lighting purposes ≥ 50 W and < 150 W: 5 mg	5 mg	Remain in force until the decision on extension application continuously
1(d)		For general lighting purposes ≥ 150 W: 15 mg	15 mg	Remain in force until the decision on extension application continuously
1(e)		For general lighting purposes with circular or square structural shape and tube diameter ≤ 17 mm	No limitation of use	until 31 december 2011
			7 mg	Remain in force until the decision on extension application continuously
1(f)		For special purposes: 5 mg	5 mg	Remain in force until the decision on extension application continuously
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): 5 mg	5 mg	Expired on 31December 2011
			4mg	Remain in force until the decision on extension application continuously
2(a)(2)		Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 5 mg	5 mg	Expired on 31December 2011
			4mg	Remain in force until the decision on extension application continuously
2(a)(3)		Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8): 5 mg	5.0mg	Expired on 31December 2011
			3.5mg	Remain in force until the decision on extension application continuously
2(a)(4)		Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 5 mg	5.0mg	Expired on 31December 2012
			3.5mg	Remain in force until the decision on extension application continuously
2(a)(5)		Tri-band phosphor with long lifetime (≥ 25000h): 8 mg	8.0mg	Expired on 31December 2011
			5.0mg	Remain in force until the decision on extension application continuously
2(b)		Mercury in other fluorescent lamps not exceeding (per lamp):		
2(b)(1)		Linear halophosphate lamps with tube >,28 mm (e.g. T10 and T12): 10 mg	10 mg	Expires on 13 April 2012
2(b)(2)		Non-linear halophosphate lamps (all diameters): 15 mg	15 mg	Expires on 13 April 2016
2(b)(3)		Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9)	No limitation of use	Expired on 31December 2011
			15 mg	Remain in force until the decision on extension application continuously
2(b)(4)		Lamps for other general lighting and special purposes (e.g. induction lamps)	No limitation of use	Expired on 31December 2011
			15 mg	Remain in force until the decision on extension application continuously

No	Substance	Exemption	Scope and dates of applicability	
3	Hg	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)	No limitation of use	Expired on 31December 2011
			3.5mg	Remain in force until the decision on extension application continuously
3(b)		Medium length (>500mm and ≤ 1500 mm)	No limitation of use	Expired on 31December 2011
			5mg	Remain in force until the decision on extension application continuously
3(c)		Long length (> 1500 mm)	No limitation of use	Expired on 31December 2011
			13mg	Remain in force until the decision on extension application continuously
4(a)		Mercury in other low pressure discharge lamps (per lamp)	No limitation of use	Expired on 31December 2011
			15mg	Remain in force until the decision on extension application continuously
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	No limitation of use	Expired on 31December 2011
			30mg	Remain in force until the decision on extension application continuously
4(b)- II		155W < P ≤ 405 W	No limitation of use	Expired on 31December 2011
			40mg	Remain in force until the decision on extension application continuously
4(b)- III		P > 405 W	No limitation of use	Expired on 31December 2011
			40mg	Remain in force until the decision on extension application continuously
4(c)		Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner):		
4(c)-I		P ≤ 155 W	No limitation of use	Expired on 31December 2011
			25mg	Remain in force until the decision on extension application continuously
4(c)- II		155W < P ≤ 405W	No limitation of use	Expired on 31December 2011
			30mg	Remain in force until the decision on extension application continuously
4(c)- III	P > 405 W	No limitation of use	Expired on 31December 2011	
		40mg	Remain in force until the decision on extension application continuously	
4(d)	Mercury in High Pressure Mercury (vapour) lamps (HPMV)		Expires on 13 April 2015 (the exclusion abolition)	
4(e)	Mercury in metal halide lamps(MH)		Remain in force until the decision on extension application continuously	
4(f)	Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex		Remain in force until the decision on extension application continuously	
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	

No	Substance	Exemption	Scope and dates of applicability
5(a)	Pb	Lead in glass of cathode ray tubes	Cat.1,7 and 10 : Expires on 21 July 2016 (the exclusion abolition) Cat. 8 and 9 except for the following: Expires on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 Industrial monitoring and control instruments: Expires on 21 July 2024
5(b)		Lead in the glass of fluorescent tubes not exceeding 0,2% by weight	up to 0.2 % by weight Remain in force until the decision on extension application continuously
6(a)		Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35% lead by weight	up to 0.35 % lead by weight Remain in force until the decision on extension application continuously
6(b)		Lead as an alloying element in aluminium containing up to 0,4% lead by weight	up to 0.4 % by weight Remain in force until the decision on extension application continuously
6(c)		Copper alloy containing up to 4% lead by weight	up to 4 % lead by weight Remain in force until the decision on extension application continuously
7(a)		Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)	Remain in force until the decision on extension application continuously
7(b)		Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications	Cat.1,7 and 10 : Expires on 21 July 2016 (the exclusion abolition) Cat. 8 and 9 except for the following: Expires on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 Industrial monitoring and control instruments: Expires on 21 July 2024
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	Remain in force until the decision on extension application continuously
7(c)-II		Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher	Remain in force until the decision on extension application continuously
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 (the exclusion abolition)
7(c)-(IV)	Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors'	Remain in force until the decision on extension application continuously	
8(a)	Cd	Cadmium and its compounds in one shot pellet type thermal cut-offs	Expires on 1 January 2012 (the exclusion abolition)
8(b)		Cadmium and its compounds in electrical contacts	Remain in force until the decision on extension application continuously
9	Cr(VI)	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	0.75 % by weight Remain in force until the decision on extension application continuously
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; -21 July 2024 for category 9 industrial monitoring and control instruments and for category 11; -21 July 2021 for other subcategories of categories 8 and 9.
9(b)(1)		Lead in bearing shells and bushes for refrigerant-containing hermetic scroll compressors with a stated electrical power input equal or below 9kW for heating, ventilation, air conditioning and refrigeration (HVACR) applications	Applies to category 1; expires on 21 July 2019.'
11(a)		Lead used in C-press compliant pin connector systems	Expires on 24 September 2010 (the exclusion abolition)
11(b)	Lead used in other than C-press compliant pin connector systems	Expires on 1 January 2013 (the exclusion abolition)	
12		Lead as a coating material for the thermal conduction module C-ring	Expires on 24 September 2010 (the exclusion abolition)

No	Substance	Exemption	Scope and dates of applicability
13(a)	Pb	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; -21 July 2024 for category 9 industrial monitoring and control instruments and for category 11; -21 July 2021 for all other categories and subcategories'
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; -21 July 2024 for category 9 industrial monitoring and control instruments and for category 11; -21 July 2021 for other subcategories of categories 8 and 9.
13(b)-(I)		Lead in ion coloured optical filter glass types	Applies to categories 1 to 7 and 10; expires on 21 July 2021 for categories 1 to 7 and 10'
13(b)-(II)		Cadmium in striking optical filter glass types; excluding applications falling under point 39 of this Annex	
13(b)(III)	Cadmium and lead in glazes 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	80 % and less than 85 % by weight Expires on 1 January 2011 (the exclusion abolition)
15		Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	Remain in force until the decision on extension application continuously
16		Lead in linear incandescent lamps with silicate coated tubes	Expired on 1 September 2013
17		Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications	Cat. 1,7 and 10 : Expires on 21 July 2016 (the exclusion abolition) Cat. 8 and 9 except for the following: Expires on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 Industrial monitoring and control instruments: Expires on 21 July 2024
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	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)	Remain in force until the decision on extension application continuously
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)	Expired 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)	Expired on 1 June 2011
21	Cd Pb	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	Remain in force until the decision on extension application continuously
23	Pb	Lead in finishes of fine pitch components other than connectors with a pitch of 0,65 mm and less	Expires on 24 September 2010 (the exclusion abolition)
24		Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	Remain in force until the decision on extension application continuously
25		Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring	Cat. 1,7 and 10 : Expires on 21 July 2016 (the exclusion abolition) Cat. 8 and 9 except for the following: Expires on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 Industrial monitoring and control instruments: Expires on 21 July 2024
26		Lead oxide in the glass envelope of black light blue lamps	Expired on 1 June 2011
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	Remain in force until the decision on extension application continuously

No	Substance	Exemption	Scope and dates of applicability
30	Cd	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	Cat.1,7 and 10 : Expires on 21 July 2016 (the exclusion abolition)
			Cat. 8 and 9 except for the following: Expires on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 Industrial monitoring and control instruments: Expires on 21 July 2024
31		Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting)	Cat.1,7 and 10 : Expires on 21 July 2016 (the exclusion abolition) Cat. 8 and 9 except for the following: Expires on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 Industrial monitoring and control instruments: Expires on 21 July 2024
32	Pb	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes	Remain in force until the decision on extension application continuously
33		Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers	Cat.1,7 and 10 : Expires on 21 July 2016 (the exclusion abolition) Cat. 8 and 9 except for the following: Expires on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 Industrial monitoring and control instruments: Expires on 21 July 2024
34		Lead in cermet-based trimmer potentiometer elements	Remain in force until the decision on extension application continuously
36	Hg	Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display	Expires on 1 July 2010
37	Pb	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body	Remain in force until the decision on extension application continuously
38	Cd	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide	Cat.1,7 and 10 : Expires on 21 July 2016 (the exclusion abolition) Cat. 8 and 9 except for the following: Expires on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 Industrial monitoring and control instruments: Expires on 21 July 2024
39		Cadmium in colour converting II-VI LEDs (< 10 µg Cd per mm ² 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	Pb	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

(Disclaimers)

Maxell group does not guarantee any contents in exemption of RoHS II described above.
Please refer to the original law text regarding the latest information.

Appendix 1-2 . The exemptions of RoHS II Annex4 (The exemptions of category 8&9)

rev.2.0/2019.1.1

No.	Exemption
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.

No.	Exemption
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°C under normal operating and storage conditions. Expires on 30 June 2021.
26	Lead in — solders on printed circuit boards, — termination coatings of electrical and electronic components and coatings of printed circuit boards, — solders for connecting wires and cables, — solders connecting transducers and sensors, that are used durably at a temperature below -20°C under normal operating and storage conditions. Lead in solders of electrical connections to temperature measurement sensors in devices which are designed to be used periodically at temperatures below -150°C . Expires 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.

No.	Exemption
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 (BaSi 2 O 5 :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 +/- 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 < pH 1; (ii) solutions with an alkalinity > 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.

No.	Exemption
38	<p>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.</p> <p>Expires on 31 December 2019.</p> <p>May be used after that date in spare parts for CT and X-ray systems placed on the market before 1 January 2020.</p>
39	<p>Lead in micro-channel plates (MCPs) used in equipment where at least one of the following properties is present:</p> <p>(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;</p> <p>(b) a two-dimensional spatial resolution for detecting electrons or ions, where at least one of the following applies:</p> <p>(i) a response time shorter than 25 ns;</p> <p>(ii) a sample detection area larger than 149 mm²;</p> <p>(iii) a multiplication factor larger than $1,3 \times 10^3$.</p> <p>(c) a response time shorter than 5 ns for detecting electrons or ions;</p> <p>(d) a sample detection area larger than 314 mm² for detecting electrons or ions;</p> <p>(e) a multiplication factor larger than $4,0 \times 10^7$.</p> <p>The exemption expires on the following dates:</p> <p>(a) 21 July 2021 for medical devices and monitoring and control instruments;</p> <p>(b) 21 July 2023 for in-vitro diagnostic medical devices;</p> <p>(c) 21 July 2024 for industrial monitoring and control instruments.</p>
40	<p>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.</p> <p>Expires on 31 December 2020.</p> <p>May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021.</p>

No.	Exemption
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 Dec 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.'

(Disclaimers)

Each exemptions of RoHS II placed in this list does not guarantee contents in Maxell group
About the latest information, please refer to the law original.

Montreal Protocol				Sample substances	Chemical formula	Sample CAS No	
Class	Annex	Group					
I	A	I	CFC [Chlorofluorocarbon]	CFC-11	Trichlorofluoromethane	CFCl ₃	75-69-4
				CFC-12	Dichlorodifluoromethane	CF ₂ Cl ₂	75-71-8
				CFC-113	Trichlorotrifluoroethane (CFC-113)	C ₂ F ₃ Cl ₃	26523-64-8
					1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)(CAS No 76-13-1)		354-58-5
				1,1,1-Trichloro-2,2,2-trifluoroethane (CFC-113a)(CAS No 354-58-5)	76-13-1		
CFC-114	Dichlorotetrafluoroethane (CFC-114)	C ₂ F ₄ Cl ₂	1320-37-2				
	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC-114)(CAS No 76-14-2)		374-07-2				
CFC-115	Chloropentafluoroethane (CFC-115)	C ₂ F ₅ Cl	76-15-3				
I	A	II	Halon	Halon-1211	Bromochlorodifluoromethane	CF ₂ BrCl	353-59-3
				Halon-1301	Bromotrifluoromethane	CF ₃ Br	75-63-8
				Halon-2402	Dibromotetrafluoroethane	C ₂ F ₄ Br ₂	124-73-2
					1,2-Dibromo-1,1,2,2-tetrafluoroethane (CAS No 124-73-2)		25497-30-7
2,2-Dibromo-1,1,1,2-tetrafluoroethane (CAS No 27336-23-8)	27336-23-8						
I	B	I	Other completely halogenated CFC	CFC-13	Chlorotrifluoromethane	CF ₃ Cl	75-72-9
				CFC-111	Pentachlorofluoroethane (CFC-111)	C ₂ FCl ₅	354-56-3
					1,1,1,2,2-Pentachloro-2-fluoroethane		954-56-3
				1,1,2,2,2-Pentachloro-1-fluoroethane	29756-45-4		
				CFC-112	Tetrachlorodifluoroethane (CFC-112)	C ₂ F ₂ Cl ₄	76-11-9
					1,1,2,2-Tetrachloro-1,2-difluoroethane (CFC-112)		76-12-0
					1,1,1,2-Tetrachloro-2,2-difluoroethane (CFC-112a)		
				1,2,2,2-Tetrachloro-1,1-difluoroethane (CFC-112a)			
				CFC-211	Heptachlorofluoropropane (CFC-211)	C ₃ FCl ₇	422-78-6
					1,1,1,2,2,3,3-Heptachloro-3-fluoropropane (CFC-211aa)		422-81-1
				1,1,1,2,3,3,3-Heptachloro-2-fluoropropane (CFC-211ba)	135401-87-5		
				CFC-212	Hexachlorodifluoropropane (CFC-212)	C ₃ F ₂ Cl ₆	134452-44-1
				1,1,1,3,3,3-Hexachloro-2,2-difluoropropane (HCFC-212)	3182-26-1		
				CFC-213	Pentachlorotrifluoropropane (CFC-213)	C ₃ F ₃ Cl ₅	134237-31-3
				1,1,1,3,3-Pentachloro-2,2,3-trifluoropropane (HCFC-213)	2354-06-5		
CFC-214	Tetrachlorotetrafluoropropane (CFC-214)	C ₃ F ₄ Cl ₄	2268-46-4				
	1,2,2,3-Tetrachloro-1,1,3,3-tetrafluoropropane (CFC-214aa)		29255-31-0				
1,1,1,3-Tetrachloro-2,2,3,3-tetrafluoropropane (CFC-214cb)	677-68-9						
CFC-215	Trichloropentafluoropropane (CFC-215)	C ₃ F ₅ Cl ₃	1599-41-3				
	1,2,2-Trichloro-1,1,3,3,3-pentafluoropropane (CFC-215aa)		1652-81-9				
	1,2,3-Trichloro-1,1,2,3,3-pentafluoropropane (CFC-215ba)		4259-43-2				
	1,1,2-Trichloro-1,2,3,3,3-pentafluoropropane (CFC-215bb)		76-17-5				
	1,1,3-Trichloro-1,2,2,3,3-pentafluoropropane (CFC-215ca)		812-30-6				
1,1,1-Trichloro-2,2,3,3,3-pentafluoropropane (CFC-215cb)							
CFC-216	Dichlorohexafluoropropane	C ₃ F ₆ Cl ₂	661-97-2				
662-01-1							
CFC-217	Chloroheptafluoropropane (CFC-217)	C ₃ F ₇ Cl	422-86-6				
2-Chloro-1,1,1,2,3,3,3-heptafluoropropane (CFC-217ba)	76-18-6						
1-Chloro-1,1,2,2,3,3,3-heptafluoropropane (CFC-217ca)							
I	B	II	—	CFC-10	Carbon tetrachloride	CCl ₄	56-23-5
I	B	III	—	—	1,1,1-Trichloroethane (1,1,2-Trichloroethane is excepted)	C ₂ H ₃ Cl ₃	71-55-6
I	C	III	—	Halon-1011	Bromochloromethane	CH ₂ BrCl	74-97-5
I	E	I	—	Halon-1001	Methyl bromide Bromomethane	CH ₃ Br	74-83-9
I	C	II	HBFC [Hydrobromofluorocarbon]	Halon-1102	Dibromofluoromethane (HBFC-21 B2)	CHFB ₂	1868-53-7
				Halon-1201	Bromodifluoromethane (HBFC-22 B1)	CHF ₂ Br	1511-62-2
				Halon-1101	Bromofluoromethane (HBFC-31 B1)	CH ₂ FBr	373-52-4
				Halon-2104	Tetrabromofluoroethane (HBFC-121 B4)	C ₂ HFBr ₄	306-80-9
					353-93-5		
				Halon-2203	Tribromodifluoroethane (HBFC-122 B3)	C ₂ HF ₂ Br ₃	353-97-9
					1,1,2-Tribromo-1,2-difluoroethane (CAS No 353-97-9)		677-34-9
					1,2,2-Tribromo-1,1-difluoroethane (CAS No 677-34-9)		7304-53-2
				Halon-2302	Dibromotrifluoroethane (HBFC-123 B2)	C ₂ HF ₃ Br ₂	354-04-1
				1,2-Dibromo-1,1,2-trifluoroethane			
				Halon-2401	Bromotetrafluoroethane (HBFC-124 B1)	C ₂ HF ₄ Br	124-72-1
					2-Bromo-1,1,1,2-tetrafluoroethane		
				1-Bromo-1,2,2,2-tetrafluoroethane			
Halon-2103	Tribromofluoroethane (HBFC-131 B3)	C ₂ H ₂ FBr ₃	172912-75-3				
	1,1,2-tribromo-1-fluoroethane (CAS No 420-88-2)		420-88-2				
	1,1,2-tribromo-2-fluoroethane (CAS No 598-67-4)		598-67-4				
Halon-2202	Dibromodifluoroethane (HBFC-132 B2)	C ₂ H ₂ F ₂ Br ₂	359-19-3				
	1,2-Dibromo-1,1-difluoroethane (CAS No 75-82-1)		430-85-3				
	1,1-Dibromo-2,2-difluoroethane (CAS No 359-19-3, 430-85-3)		75-82-1				

Montreal Protocol			Sample substances	Chemical formula	Sample CAS No
Class	Annex	Group			
			Halon-2301 Bromotrifluoroethane (HBFC-133B1) 1-Bromo-2,2,2-trifluoroethane (HBFC-133a B1)(CAS No 421-06-7) 2-Bromo-1,1,1-trifluoroethane (HBFC-133a B1)(CAS No 421-06-7)	$C_2H_2F_3Br$	421-06-7
			Halon-2102 Dibromofluoroethane (HBFC-141 B2) 1,2-Dibromo-1-fluoroethane 1,2-Dibromo-2-fluoroethane	$C_2H_3FBr_2$	358-97-4
			Halon-2201 Bromodifluoroethane (HBFC-142 B1) 2-Bromo-1,1-difluoroethane	$C_2H_3F_2Br$	359-07-9
			Halon-2101 Bromofluoroethane (HBFC-151 B1) 1-Bromo-2-fluoroethane	C_2H_4FBr	762-49-2
			Halon-3106 Hexabromofluoropropane (HBFC-221 B6)	C_3HFBr_6	
			Halon-3205 Pentabromodifluoropropane (HBFC-222 B5)	$C_3HF_2Br_5$	
			Halon-3304 Tetrabromotrifluoropropane (HBFC-223 B4)	$C_3HF_3Br_4$	
			Halon-3403 Tribromotetrafluoropropane (HBFC-224 B3)	$C_3HF_4Br_3$	666-48-8
			Halon-3502 Dibromopentafluoropropane (HBFC-225 B2) 1,2-Dibromo-1,1,3,3,3-pentafluoropropane	$C_3HF_5Br_2$	431-78-7
			Halon-3601 Bromohexafluoropropane (HBFC-226 B1) 1-Bromo-1,1,2,3,3,3-hexafluoropropane (CAS No 2252-78-0) 2-Bromo-1,1,1,3,3,3-hexafluoropropane (CAS No 2252-79-1)	C_3HF_6Br	2252-78-0 2252-79-1
			Halon-3105 Pentabromofluoropropane (HBFC-231 B5)	$C_3H_2FBr_5$	
			Halon-3204 Tetrabromodifluoropropane (HBFC-232 B4) 1,1,1,3-Tetrabromo-3,3-difluoropropane	$C_3H_2F_2Br_4$	148875-98-3
			Halon-3303 Tribromotrifluoropropane (HBFC-233 B3) 2,2,3-Tribromo-1,1,1-trifluoropropane (CAS No 421-90-9)	$C_3H_2F_3Br_3$	421-90-9 431-48-1
			Halon-3402 Dibromotetrafluoropropane (HBFC-234 B2) 1,3-Dibromo-1,1,3,3-tetrafluoropropane	$C_3H_2F_4Br_2$	460-86-6
			Halon-3501 Bromopentafluoropropane (HBFC-235 B1) 3-bromo-1,1,1,2,2-pentafluoropropane (CAS No 422-01-5) 1-bromo-1,1,3,3,3-pentafluoropropane (CAS No 460-88-8) 1-bromo-1,1,2,2,3-pentafluoropropane (CAS No 677-53-2) 1-bromo-1,2,2,3,3-pentafluoropropane (CAS No 679-94-7)	$C_3H_2F_5Br$	22692-16-6 26391-11-7 422-01-5 460-88-8 53692-43-6 53692-44-7 677-52-1 677-53-2 679-94-7
			Halon-3104 Tetrabromofluoropropane (HBFC-241 B4) 1,1,1,3-tetrabromo-3-fluoropropane	$C_3H_3FBr_4$	148875-95-0
			Halon-3203 Tribromodifluoropropane (HBFC-242 B3) 1,1,1-Tribromo-2,2-difluoropropane (CAS No 70192-80-2)	$C_3H_3F_2Br_3$	666-25-1 70192-80-2
			Halon-3302 Dibromotrifluoropropane (HBFC-243 B2) 2,3-Dibromo-1,1,1-trifluoropropane (CAS No 431-21-0) 1,3-Dibromo-1,1,3-trifluoropropane (CAS No 460-60-6)	$C_3H_3F_3Br_2$	431-21-0 460-60-6
			Halon-3401 Bromotetrafluoropropane (HBFC-244 B1) 2-Bromo-1,1,1,3-tetrafluoropropane (CAS No 29151-25-5) 3-Bromo-1,1,1,3-tetrafluoropropane (CAS No 460-67-3) 3-Bromo-1,1,2,2-tetrafluoropropane (CAS No 679-84-5) 1-Bromo-1,1,2,2-tetrafluoropropane (CAS No 70192-84-6)	$C_3H_3F_4Br$	19041-01-1 29151-25-5 460-67-3 679-84-5 70192-71-1 70192-84-6
			Halon-3103 Tribromofluoropropane (HBFC-251 B1) 1,2,3-Tribromo-1-fluoropropane	$C_3H_4FBr_3$	75372-14-4
			Halon-3202 Dibromodifluoropropane (HBFC-252 B2) 1,3-Dibromo-1,1-difluoropropane (CAS No 460-25-3)	$C_3H_4F_2Br_2$	460-25-3 51584-25-9
			Halon-3301 Bromotrifluoropropane (HBFC-253 B1) 3-Bromo-1,1,1-trifluoropropane (CAS No 460-32-2) 2-Bromo-1,1,1-trifluoropropane (CAS No 421-46-5)	$C_3H_4F_3Br$	421-46-5 460-32-2
			Halon-3102 Dibromofluoropropane (HBFC-261 B2) 1,3-Dibromo-2-fluoropropane (CAS No 1786-38-5) 1,2-Dibromo-3-fluoropropane (CAS No 453-00-9) 1,3-Dibromo-1-fluoropropane (CAS No 51584-26-0) 1,2-Dibromo-1-fluoro-(R*,R*)-propane (CAS No 62135-11-9) 1,2-Dibromo-1-fluoro-(R*,S*)-propane (CAS No 62135-10-8)	$C_3H_5FBr_2$	1786-38-5 453-00-9 51584-26-0 62135-10-8 62135-11-9
			Halon-3201 Bromodifluoropropane (HBFC-262 B1) 1-Bromo-2,3-difluoropropane (CAS No 111483-20-6) 2-Bromo-1,3-difluoropropane (CAS No 2195-05-3) 1-Bromo-2,2-difluoropropane (CAS No 420-98-4) 3-Bromo-1,1-difluoropropane (CAS No 461-49-4)	$C_3H_5F_2Br$	111483-20-6 2195-05-3 420-89-3 420-98-4 430-87-5 461-49-4
			Halon-3101 Bromofluoropropane (HBFC-271 B1) 1-Bromo-2-fluoropropane (CAS No 1871-72-3) 1-Bromo-3-fluoropropane (CAS No 352-91-0)	C_3H_6FBr	1871-72-3 352-91-0
II	C	I	HCFC [Hydrochlorofluorocarbon]		
			HCFC-21 Dichlorofluoromethane (*)	CH_2Cl_2 (*)	75-43-4
			HCFC-22 Chlorodifluoromethane (*)	CHF_2Cl (*)	75-45-6
			HCFC-31 Chlorofluoromethane	CH_2FCl	593-70-4

Montreal Protocol			Sample substances	Chemical formula	Sample CAS No
Class	Annex	Group			
			HCFC-121 Tetrachlorofluoroethan (HCFC-121) 1,1,2,2-Tetrachloro-1-fluoroethan (HCFC-121) 1,1,1,2-Tetrachloro-2-fluoroethan (HCFC 121a)	C ₂ HFC ₄	134237-32-4 354-11-0 354-14-3
			HCFC-122 Trichlorodifluoroethane (HCFC-122) 1,2,2-Trichloro-1,1-difluoroethane (HCFC-122) 1,1,2-Trichloro-1,2-difluoroethane (HCFC-122a) 1,1,1-Trichloro-2,2-difluoroethane (HCFC-122b)	C ₂ HF ₂ Cl ₃	354-12-1 354-15-4 354-21-2 41834-16-6 62549-18-2
			HCFC-123 Dichlorotrifluoroethane (HCFC-123) 2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123) (*) 1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a) 1,1-Dichloro-1,2,2-trifluoroethane (HCFC-123b)	C ₂ HF ₃ Cl ₂ CHCl ₂ CF ₃ (*)	306-83-2 34077-87-7 354-23-4 812-04-4 90454-18-5
			HCFC-124 Chlorotetrafluoroethane (HCFC-124) 2-Chloro-1,1,1,2-tetrafluoroethane (HCFC-124) (*) 1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)	C ₂ HF ₄ Cl CHFClCF ₃ (*)	2837-89-0 354-25-6 63938-10-3
			HCFC-131 Trichlorofluoroethane (HCFC-131) 1,1,2-Trichloro-2-fluoroethane (HCFC-131) 1,1,2-Trichloro-1-fluoroethane (HCFC-131a) 1,1,1-Trichloro-2-fluoroethane (HCFC-131b)	C ₂ H ₂ Cl ₃	134237-34-6 2366-36-1 27154-33-2 359-28-4 811-95-0
			HCFC-132 Dichlorodifluoroethane (HCFC-132) 1,2-Dichloro-1,2-difluoroethane (HCFC-132) 1,1-Dichloro-2,2-difluoroethane (HCFC-132a) 1,2-Dichloro-1,1-difluoroethane (HCFC-132b)	C ₂ H ₂ F ₂ Cl ₂	1649-08-7 1842-05-3 25915-78-0 431-06-1 471-43-2
			HCFC-133 Chlorotrifluoroethane (HCFC-133) 1-Chloro-1,2,2-trifluoroethane (HCFC-133) 2-Chloro-1,1,1-trifluoroethane (HCFC-133a) 1-Chloro-1,1,2-trifluoroethane (HCFC-133b)	C ₂ H ₂ F ₃ Cl	1330-45-6 421-04-5 431-07-2 75-88-7
			HCFC-141 Dichlorofluoroethane (HCFC-141) 1,2-Dichloro-1-fluoroethane (HCFC-141) 1,1-Dichloro-2-fluoroethane (HCFC-141a) 1,1-Dichloro-1-fluoroethane (HCFC-141b) (*)	C ₂ H ₃ FCl ₂ CH ₂ CFCl ₂ (*)	1717-00-6 25167-88-8 358-97-4 430-53-5 430-57-9
			HCFC-142 Chlorodifluoroethane (HCFC-142) 2-Chloro-1,1-difluoroethane (HCFC-142) 1-Chloro-1,2-difluoroethane (HCFC-142a) 1-Chloro-1,1-difluoroethane (HCFC-142b)	C ₂ H ₃ F ₂ Cl CH ₃ CF ₂ Cl (*)	25497-29-4 338-64-7 338-65-8 55949-44-5 75-68-3
			HCFC-151 Chlorofluoroethane (HCFC-151) 1-Chloro-2-fluoroethane (HCFC-151) 1-Chloro-1-fluoroethane (HCFC-151a)	C ₂ H ₄ FCl	762-50-5 1615-75-4 110587-14-9
			HCFC-221 Hexachlorofluoropropane (HCFC-221) 1,1,1,2,2,3-Hexachloro-3-fluoropropane (HCFC-221ab)	C ₃ HFC ₆	134237-35-7 29470-94-8 422-26-4
			HCFC-222 Pentachlorodifluoropropane (HCFC-222) 1,2,2,3,3-Pentachloro-1,1-difluoropropane (HCFC-222aa) 1,1,1,3,3-Pentachloro-2,2-difluoropropane (HCFC-222ca)	C ₃ HF ₂ Cl ₅	116867-32-4 134237-36-8 422-30-0 422-49-1
			HCFC-223 Tetrachlorotrifluoropropane (HCFC-223) 1,1,3,3-Tetrachloro-1,2,2-trifluoropropane (HCFC-223ca) 1,1,1,3-Tetrachloro-2,2,3-trifluoropropane (HCFC-223cb)	C ₃ HF ₃ Cl ₄	134237-37-9 422-50-4 422-52-6
			HCFC-224 Trichlorotetrafluoropropane (HCFC-224) 1,3,3-Trichloro-1,1,2,2-tetrafluoropropane (HCFC-224ca) 1,1,3-Trichloro-1,2,2,3-tetrafluoropropane (HCFC-224cb) 1,1,1-Trichloro-2,2,3,3-tetrafluoropropane (HCFC-224cc)	C ₃ HF ₄ Cl ₃	134237-38-0 422-51-5 422-53-7 422-54-8
			HCFC-225 Dichloropentafluoropropane (HCFC-225) 2,2-Dichloro-1,1,1,3,3-pentafluoropropane (HCFC-225aa) 2,3-Dichloro-1,1,1,2,3-pentafluoropropane (HCFC-225ba) 1,2-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225bb) 3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca) (*) 1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb) (*) 1,1-Dichloro-1,2,2,3,3-pentafluoropropane (HCFC-225cc) 1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC-225da) 1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225ea) 1,1-Dichloro-1,2,3,3,3-pentafluoropropane (HCFC-225eb)	C ₃ HF ₅ Cl ₂ CF ₂ CF ₂ CHCl ₂ (*) CF ₂ ClCF ₂ CHCl ₂ (*)	111512-56-2 127564-92-5 128903-21-9 13474-88-9 136013-79-1 422-44-6 422-48-0 422-56-0 431-86-7 507-55-1
			HCFC-226 Chlorohexafluoropropane (HCFC-226) 2-Chloro-1,1,1,2,3,3-hexafluoropropane (HCFC-226ba) 3-Chloro-1,1,1,2,2,3-hexafluoropropane (HCFC-226ca) 1-Chloro-1,1,2,2,3,3-hexafluoropropane (HCFC-226cb) 2-Chloro-1,1,1,3,3,3-hexafluoropropane (HCFC-226da) 1-Chloro-1,1,2,3,3,3-hexafluoropropane (HCFC-226ea)	C ₃ HF ₆ Cl	134308-72-8 28987-04-4 359-58-0 422-55-9 422-57-1 431-87-8 51346-64-6
			HCFC-231 Pentachlorofluoropropane (HCFC-231) 1,1,1,2,3-Pentachloro-2-fluoropropane (HCFC-231bb)	C ₃ H ₂ FCl ₅	134190-48-0 421-94-3
			HCFC-232 Tetrachlorodifluoropropane (HCFC-232) 1,1,3,3-Tetrachloro-2,2-difluoropropane (HCFC-232ca) 1,1,1,3-Tetrachloro-2,2-difluoropropane (HCFC-232cb) 1,1,1,3-Tetrachloro-3,3-difluoropropane (HCFC-232fc)	C ₃ H ₂ F ₂ Cl ₄	1112-14-7 134237-39-1 460-89-9 677-54-3
			HCFC-233 Trichlorotrifluoropropane (HCFC-233) 1,1,3-Trichloro-2,2,3-trifluoropropane (HCFC-233ca) 1,1,3-Trichloro-1,2,2-trifluoropropane (HCFC-233cb) 1,1,1-Trichloro-2,2,3-trifluoropropane (HCFC-233cc) 1,1,1-Trichloro-3,3,3-trifluoropropane (HCFC-233fb)	C ₃ H ₂ F ₃ Cl ₃	13211-71-7 131221-36-8 134237-40-4 421-99-8 7125-83-9

Montreal Protocol			Sample substances	Chemical formula	Sample CAS No
Class	Annex	Group			
			HCFC-234 Dichlorotetrafluoropropane (HCFC-234) 2,2-Dichloro-1,1,3,3-tetrafluoropropane (HCFC-234aa) 2,2-Dichloro-1,1,1,3-tetrafluoropropane (HCFC-234ab) 1,2-Dichloro-1,2,3,3-tetrafluoropropane (HCFC-234ba) 2,3-Dichloro-1,1,1,2-tetrafluoropropane (HCFC-234bb) 1,2-Dichloro-1,1,2,3-tetrafluoropropane (HCFC-234bc) 1,3-Dichloro-1,2,2,3-tetrafluoropropane (HCFC-234ca) 1,1-Dichloro-2,2,3,3-tetrafluoropropane (HCFC-234cb) 1,3-Dichloro-1,1,2,2-tetrafluoropropane (HCFC-234cc) 1,1-Dichloro-1,2,2,3-tetrafluoropropane (HCFC-234cd) 2,3-Dichloro-1,1,1,3-tetrafluoropropane (HCFC-234da) 1,2-ジクロロ-1,2,3,3-tetrafluoropropane (HCFC-234db) 1,3-ジクロロ-1,1,3,3-tetrafluoropropane (HCFC-234fa) 1,1-ジクロロ-1,3,3,3-tetrafluoropropane (HCFC-234fb)	$C_2H_2F_4Cl_2$	127564-83-4 146916-90-7 149329-24-8 149329-25-9 17705-30-5 4071-01-6 425-94-5 64712-27-2 70192-63-1 70341-81-0 76140-39-1
			HCFC-235 Chloropentafluoropropane (HCFC-235) 1-Chloro-1,2,2,3,3-pentafluoropropane (HCFC-235ca) 3-Chloro-1,1,1,2,3-pentafluoropropane (HCFC-235cb) 1-Chloro-1,1,2,2,3-pentafluoropropane (HCFC-235cc) 2-Chloro-1,1,1,3,3-pentafluoropropane (HCFC-235da) 1-Chloro-1,1,3,3,3-pentafluoropropane (HCFC-235fa)	$C_3H_2F_5Cl$	108662-83-5 134237-41-5 134251-06-2 28103-66-4 422-02-6 460-92-4 677-55-4 679-99-2
			HCFC-241 Tetrachlorofluoropropane (HCFC-241) 1,1,2,3-Tetrachloro-1-fluoropropane (HCFC-241db)	$C_3H_3FCl_4$	134190-49-1 666-27-3
			HCFC-242 Trichlorodifluoropropane (HCFC-242) 1,3,3-Trichloro-1,1-difluoropropane (HCFC-242fa)	$C_3H_3F_2Cl_3$	127564-90-3 134237-42-6 460-63-9
			HCFC-243 Dichlorotrifluoropropane (HCFC-243) 1,3-Dichloro-1,2,2-trifluoropropane (HCF-243ca) 1,1-Dichloro-2,2,3-trifluoropropane (HCF-243cb) 1,1-Dichloro-1,2,2-trifluoropropane (HCF-243cc) 2,3-Dichloro-1,1,1-trifluoropropane (HCF-243da) 2,3-Dichloro-1,1,1-trifluoropropane (HCF-243db) 1,3-Dichloro-1,2,3-trifluoropropane (HCF-243ea) 1,3-Dichloro-1,1,2-trifluoropropane (HCF-243ec) 3,3-Dichloro-1,1,1-trifluoropropane (HCF-243fa)	$C_3H_3F_3Cl_2$	116890-51-8 134237-43-7 149329-27-1 151771-08-3 338-75-0 460-69-5 67406-68-2 70192-70-0 7125-99-7
			HCFC-244 Chlorotetrafluoropropane (HCFC-244) 2-Chloro-1,2,3,3-tetrafluoropropane (HCFC-244ba) 2-Chloro-1,1,1,2-tetrafluoropropane (HCFC-244bb) 3-Chloro-1,1,2,2-tetrafluoropropane (HCFC-244ca) 1-Chloro-1,2,2,3-tetrafluoropropane (HCFC-244cb) 1-Chloro-1,1,2,2-tetrafluoropropane (HCFC-244cc) 2-Chloro-1,1,3,3-tetrafluoropropane (HCFC-244da) 2-Chloro-1,1,1,3-tetrafluoropropane (HCFC-244db) 3-Chloro-1,1,2,3-tetrafluoropropane (HCFC-244ea) 3-Chloro-1,1,1,2-tetrafluoropropane (HCFC-244eb) 1-Chloro-1,1,2,3-tetrafluoropropane (HCFC-244ec) 3-Chloro-1,1,1,3-tetrafluoropropane (HCFC-244fa) 1-Chloro-1,1,3,3-tetrafluoropropane (HCFC-244fb)	$C_3H_3F_4Cl$	117970-90-8 134190-50-4 19041-02-2 2730-64-5 421-73-8 421-75-0 67406-66-0 679-85-6
			HCFC-251 Trichlorofluoropropane (HCFC-251) 1,1,2-Trichloro-1-fluoropropane (HCFC-251dc) 1,1,3-Trichloro-1-fluoropropane (HCFC-251fb)	$C_3H_4FCl_3$	134190-51-5 421-41-0 818-99-5
			HCFC-252 Dichlorodifluoropropane (HCFC-252) 1,3-Dichloro-2,2-difluoropropane (HCFC-252ca) 1,1-Dichloro-2,2-difluoropropane (HCFC-252cb) 1,2-Dichloro-1,1-difluoropropane (HCFC-252dc) 1,1-Dichloro-1,2-difluoropropane (HCFC-252ec) 1,3-Dichloro-1,1-difluoropropane (HCFC-252fb)	$C_3H_4F_2Cl_2$	1112-01-2 1112-36-3 134190-52-6 819-00-1
			HCFC-253 Chlorotrifluoropropane (HCFC-253) 2-Chloro-1,2,3-trifluoropropane (HCFC-253ba) 2-Chloro-1,1,2-trifluoropropane (HCFC-253bb) 1-Chloro-2,2,3-trifluoropropane (HCFC-253ca) 1-Chloro-1,2,2-trifluoropropane (HCFC-253cb) 3-Chloro-1,1,2-trifluoropropane (HCFC-253ea) 1-Chloro-1,2,3-trifluoropropane (HCFC-253eb) 1-Chloro-1,1,2-trifluoropropane (HCFC-253ec) 3-Chloro-1,3,3-trifluoropropane (HCFC-253fa) 3-Chloro-1,1,1-trifluoropropane (HCFC-253fb) 1-Chloro-1,1,3-trifluoropropane (HCFC-253fc)	$C_3H_4F_3Cl$	134237-44-8 26588-23-8 460-35-5 56758-54-4 70192-76-6
			HCFC-261 Dichlorofluoropropane (HCFC-261) 1,2-Dichloro-2-fluoropropane (HCFC-261ba) 1,1-Dichloro-1-fluoropropane (HCFC-261fc)	$C_3H_5FCl_2$	127404-11-9 134237-45-9 420-97-3 7799-56-6
			HCFC-262 Chlorodifluoropropane (HCFC-262) 1-Chloro-2,2-difluoropropane (HCFC-262ca) 2-Chloro-1,3-difluoropropane (HCFC-262da) 3-Chloro-1,1-difluoropropane (HCFC-262fa) 1-Chloro-1,3-difluoropropane (HCFC-262fb) 1-Chloro-1,1-difluoropropane (HCFC-262fc)	$C_3H_5F_2Cl$	102738-79-4 134190-53-7 420-99-5 421-02-3
			HCFC-271 Chlorofluoropropane (HCFC-271) 2-Chloro-2-fluoropropane (HCFC-271ba) 2-Chloro-1-fluoropropane (HCFC-271d) 1-Chloro-1-fluoropropane (HCFC-271fb)	C_3H_6FCl	134190-54-8 420-44-0 430-55-7

(*) The substance which has the strongest possibility of being used in commerce.
 (*) The substance name and the other information like CAS No etc. listed in this table are examples from the contents which our company has investigated. These do not always cover all information. Some of the substances may be customarily called by a name of the article on behalf. For details, we hope that your company will confirm it by the information obtained from the upper stream of the supply chain.

Appendix 3. PFOS/PFOS relative compounds
 (Perfluorooctane sulfonates)

Rev.2
 2019.1.1

No	Substance name	例示 CAS No
1	2-Propenoic acid, 2-methyl-, polymers with Bu methacrylate, lauryl methacrylate and 2-[methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl methacrylate(PFOS)	127133-66-8
2	Sulphonamides, C4-8-alkane, perfluoro, N-methyl-N-(oxiranylmethyl)(PFOS)	129813-71-
3	1-Octanesulphonamide, N-[3-(dimethylamino)propyl]-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-(PFOS)	13417-01-1
4	2-Propenoic acid, 2-methyl-, 2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl	14650-24-9
5	Fatty acids, C18-unsatd., trimers, 2-[[heptadecafluorooctyl)sulphonyl]methylamino]ethyl esters(PFOS)	148240-78-2
6	Sulphonamides, C4-8-alkane, perfluoro, N-(hydroxyethyl)-N-methyl, reaction products with 1,6-diisocyanatohexane homopolymer and ethylene glycol(PFOS)	148684-79-1
7	Sulphonamides, C4-8-alkane, perfluoro, N-ethyl-N-(hydroxyethyl), reaction products with 2-ethyl-1-hexanol and polymethylenepolyphenylene isocyanate(PFOS)	160901-25-7
8	1-Propanaminium, 3-[[[(heptadecafluorooctyl)sulphonyl]amino]-N,N,N-trimethyl-, iodide(PFOS)	1652-63-7
9	1-Octanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-(PFOS)	1691-99-2
10	1-Octanesulphonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-(PFOS); Perfluorooctane sulfonate acid	1763-23-1
11	1-Octanesulphonamide, N-[3-(dimethyloxidoamino)propyl]-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-,potassium salt(PFOS)	178094-69-4
12	Sulphonamides, C4-8-alkane, perfluoro, N-ethyl-N-(hydroxyethyl)-, polymers with 1,1'-methylenebis[4-isocyanatobenzene] and polymethylenepolyphenylene isocyanate, 2-ethylhexyl esters, Me Et ketone oxime-blocked(PFOS)	178535-22-3
13	1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-methyl-, reaction products with benzene-chlorine-sulphur chloride (S2Cl2) reaction(PFOS)	182700-90-9
14	Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulphonyl]-, ethyl ester(PFOS)	1869-77-8
15	Sulphonamides, C4-8-alkane, perfluoro, N-[3-(dimethylamino)propyl], reaction products with acrylic acid(PFOS)	192662-29-6
16	1-Octanesulphonamide, N,N',N''- [phosphinylidynetris(oxy-2,1-ethanediyl)]tris[N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-(PFOS)	2250-98-8
17	1-Octanesulphonamide, N-butyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-(PFOS)	2263-09-4
18	1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-N-methyl-(PFOS)	24448-09-7
19	1-Octanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-2-propenyl-(PFOS)	24924-36-5
20	1-Decanaminium, N-decyl-N,N-dimethyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulphonic acid (1:1)(PFOS)	251099-16-8
21	2-Propenoic acid, 2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl ester(PFOS)	25268-77-3
22	1-Octanesulphonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, potassium salt(PFOS); Perfluorooctane sulfonate potassium salt	2795-39-3
23	1-Octanesulphonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, ammonium salt(PFOS); Perfluorooctane sulfonate ammonium salt	29081-56-9
24	Poly(oxy-1,2-ethanediyl), alpha-[2-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl]-omega-hydroxy-(PFOS)	29117-08-6
25	1-Octanesulphonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, lithium salt(PFOS); Perfluorooctane sulfonate lithium salt	29457-72-5
26	Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulphonyl]- (PFOS)	2991-50-6
27	Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulphonyl]-, potassium salt(PFOS)	2991-51-7
28	1-Octanesulphonamide, N-[3-(dimethyloxidoamino)propyl]-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-(PFOS)	30295-51-3
29	1-Octanesulphonamide, N,N'-[phosphinicobis(oxy-2,1-ethanediyl)]bis[N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, ammonium salt(PFOS)	30381-98-7
30	Fatty acids, linseed-oil, dimers, 2- [[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl esters(PFOS)	306973-46-6
31	Sulphonamides, C4-8-alkane, perfluoro, N-(hydroxyethyl)-N-methyl, reaction products with 12-hydroxystearic acid and 2,4-TDI, ammonium salts(PFOS)	306973-47-7

No	Substance name	例示 CAS No
32	Sulphonamides, C4-8-alkane, perfluoro, N-methyl-N-[(3-octadecyl-2-oxo-5-oxazolidinyl)methyl](PFOS)	306974-19-6
33	Siloxanes and Silicones, di-Me, mono[3-[(2-methyl-1-oxo-2-propenyl)oxy]propyl]group] - terminated, polymers with 2-[methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl acrylate and stearyl methacrylate(PFOS)	306974-28-7
34	Sulphonic acids, C6-8-alkane, perfluoro, compounds with polyethylene-polypropylene glycol bis(2-aminopropyl) ether(PFOS)	306974-45-8
35	Fatty acids, C18-unsatd., dimers, 2-[methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino] ethyl esters(PFOS)	306974-63-0
36	Propanoic acid, 3-hydroxy-2-(hydroxymethyl)-2-methyl-, polymer with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol and N,N',2-tris(6-isocyanatohexyl)imidodicarbonic diamide, reaction products with N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-1-octanesulphonamides(PFOS)	306975-56-4
37	Propanoic acid, 3-hydroxy-2-(hydroxymethyl)-2-methyl-, polymer with 1,1'-methylenebis[4-isocyanatobenzene] and 1,2,3-propanetriol, reaction products with N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-1-octanesulphonamides(PFOS)	306975-57-5
38	2-Propenoic acid, 2-methyl-, dodecyl ester, polymers with 2-[methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl acrylate and vinylidene chloride(PFOS)	306975-62-2
39	Poly(oxy-1,2-ethanediyl), alpha-hydro-omega-hydroxy-, polymer with 1,6-diisocyanatohexane, N-(hydroxyethyl)-N-methyl perfluoro C4-8-alkane	306975-84-8
40	2-Propenoic acid, 2-methyl-, dodecyl ester, polymers with N-(hydroxymethyl)-2-propenamides, 2-[methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl methacrylate, stearyl methacrylate and vinylidene chloride(PFOS)	306975-85-9
41	1-Hexadecanaminium, N,N-dimethyl-N-[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]-, bromide, polymers with Bu acrylate, Bu methacrylate and 2-methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl acrylate(PFOS)	306976-25-0
42	2-Propenoic acid, 2-methyl-, 2-methylpropyl ester, polymer with 2,4-diisocyanato-1-methylbenzene, 2-ethyl-2-(hydroxymethyl)-1,3-propanediol and 2-propenoic acid, N-ethyl-N-(hydroxyethyl)perfluoro-C4-8-alkanesulphonamides(PFOS)	306976-55-6
43	2-Propenoic acid, 2-methyl-, 3-(trimethoxysilyl)propyl ester, polymers with acrylic acid, 2-[methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl acrylate and propylene glycol monoacrylate, hydrolysed, compounds with 2,2'-(methylimino)bis(PFOS)	306977-58-2
44	2-Propenoic acid, butyl ester, polymers with acrylamide, 2-[methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl acrylate and vinylidene chloride(PFOS)	306978-04-1
45	Hexane, 1,6-diisocyanato-, homopolymer, N-(hydroxyethyl)-N-methyl perfluoro-C4-8-alkane sulphonamides- and stearyl alc.-blocked(PFOS)	306978-65-4
46	Poly(oxy-1,2-ethanediyl), alpha-[2-(methylamino)ethyl]-omega-[(1,1,3,3-tetramethylbutyl)phenoxy]-, N-[(perfluoro-C4-8-alkyl)sulphonyl](PFOS)	306979-40-8
47	Sulphonamides, C4-8-alkane, perfluoro, N,N'-[1,6-hexanediy]bis[(2-oxo-3,5-oxazolidinediyl)methylene]]bis[N-methyl-(PFOS)	306980-27-8
48	1-Octanesulphonyl fluoride, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-(PFOS); Perfluoro-1-octanesulphonyl fluoride	307-35-7
49	1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-methyl-	31506-32-8
50	2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl ester(PFOS)	376-14-7
51	1-Propanaminium, 3-[[heptadecafluorooctyl)sulphonyl]amino]-N,N',N''-trimethyl-, chloride(PFOS)	38006-74-5
52	1-Octanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[2-(phosphonoxy)ethyl]- (PFOS)	3820-83-5
53	2-Propenoic acid, 2-[butyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl ester(PFOS)	383-07-3

No	Substance name	例示 CAS No
54	Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulphonyl]-, sodium salt(PFOS)	3871-50-9
55	Sodium perfluorooctanesulfonate	4021-47-0
56	1-Octanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-	4151-50-2
57	2-Propenoic acid, 2-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl ester(PFOS)	423-82-5
58	1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-2-propenyl-(PFOS)	423-86-9
59	Perfluorooctane sulfonate anion(PFOS)	45298-90-6
60	1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(phenylmethyl)-(PFOS)	50598-29-3
61	Poly(oxy-1,2-ethanediyl), alpha-[2-[[[(heptadecafluorooctyl)sulphonyl]propylamino]ethyl]-omega-hydroxy-(PFOS)	52550-45-5
62	Ethanaminium, N,N',N''-triethyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulphonic acid (1:1)(PFOS);	56773-42-3
63	Benzoic acid, 2,3,4,5-tetrachloro-6-[[[3-[[[(heptadecafluorooctyl)sulphonyl]oxy]phenyl]amino]carbonyl]-, monopotassium	57589-85-2
64	2-Propenoic acid, 4-[[[(heptadecafluorooctyl)sulphonyl]methylamino]butyl ester(PFOS)	58920-31-3
65	2-Propenoic acid, 2-methyl-, 4-[[[(heptadecafluorooctyl)sulphonyl]methylamino]butyl	61577-14-8
66	1-Octanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[3-(trimethoxysilyl)propyl]- (PFOS)	61660-12-6
67	1-Octanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[3-(trichlorosilyl)propyl]- (PFOS)	67939-42-8
68	1-Octanesulphonamide, N-[3-(dimethylamino)propyl]- 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, monohydrochloride(PFOS)	67939-88-2
69	1-Octanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[2-(phosphonoxy)ethyl]-, diammonium salt(PFOS)	67969-69-1
70	Carbamic acid, (4-methyl-1,3-phenylene)bis-, bis[2-[ethyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl] ester(PFOS)	68081-83-4
71	1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(4-hydroxybutyl)-N-methyl-(PFOS)	68239-73-6
72	1-Propanaminium, 3-[[[(heptadecafluorooctyl)sulphonyl](3-sulphopropyl)amino]-N-(2-hydroxyethyl)-N,N-dimethyl-, hydroxide, inner salt(PFOS)	68298-11-3
73	1-Propanaminium, 3-[[[(heptadecafluorooctyl)sulphonyl]amino]-N,N',N''-trimethyl-, iodide, ammonium salt(PFOS)	68310-75-8
74	2-Propenoic acid, eicosyl ester, polymer with 2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl 2-propenoate, hexadecyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulphonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulphonyl](PFOS)	68329-56-6
75	2-Propenoic acid, polymer with 2-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl 2-methyl-2-propenoate and octadecyl 2-propenoate(PFOS)	68541-80-0
76	2-Propenoic acid, butyl ester,polymer with 2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl 2-propenoate, 2-methyl[(nonafluorobutyl)sulphonyl]amino]ethyl 2-propenoate, 2-	68555-90-8
77	2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl ester, polymer with 2-[ethyl[(nonafluorobutyl)sulphonyl]amino] ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulphonyl]amino]ethyl 2-methyl-2-propeno(PFOS)	68555-91-9
78	2-Propenoic acid, 2-methyl-, 2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl ester, polymer with 2- [methyl[(nonafluorobutyl)sulphonyl]amino]ethyl 2-methyl-2-propenoate, 2- [methyl[(pentadecafluoroheptyl)sulphonyl]amino]ethyl 2-methyl-2-(PFOS)	68555-92-0
79	Sulphonamides, C4-8-alkane, perfluoro, N-ethyl-N-(hydroxyethyl), reaction products with 1,1'-methylenebis[4-isocyanatobenzene](PFOS)	68608-14-0

No	Substance name	例示 CAS No
80	N-(2-hydroxyethyl)-1-butan Sulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-N-(2-hydroxyethyl)-1-heptanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-N-(2-hydroxyethyl)-1-hexanesulphonamide, N-ethyl-1,1,2,(PFOS)	68649-26-3
81	2-Propenoic acid, 2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl ester, polymer with 2-[methyl[(nonafluorobutyl)sulphonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulphonyl]amino]ethyl 2-propenoate, 2-[methyl[(trideca(PFOS)	68867-60-7
82	2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl ester, polymer with 2-[ethyl[(nonafluorobutyl)sulphonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulphonyl]amino]ethyl 2-methyl-2-prope(PFOS)	68877-32-7
83	Chromium, diaquatetrachloro[μ-[N-ethyl-N-[(heptadecafluorooctyl)sulphonyl]glycinato-kappaO:kappaO']-μ-hydroxybis(2-methylpropanol)di-(PFOS)	68891-96-3
84	2-Propenoic acid, eicosyl ester, polymers with branched octylacrylate, 2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl acrylate, 2-[methyl[(nonafluorobutyl)sulphonyl]amino]ethyl acrylate, 2-[methyl[(pentadecafluoroheptyl)sulphonyl]amino](PFOS)	68909-15-9
85	Poly(oxy-1,2-ethanediyl), alpha-[2-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl]-omega-methoxy-(PFOS)	68958-61-2
86	Bis(2-hydroxyethyl)ammonium perfluorooctanesulfonate	70225-14-8
87	2-Propenoic acid, 2-methyl-, octadecyl ester, polymer with 1,1-dichloroethene, 2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl 2-propenoate, N-(hydroxymethyl)-2-propenamamide, 2-[methyl[(nonafluorobutyl)sulphonyl]amino]ethyl 2-propenoate, 2-(PFOS)	70776-36-2
88	1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, compd. with piperidine (1:1)	71463-74-6
89	Phosphonic acid, [3-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]propyl]-(PFOS)	71463-78-0
90	Phosphonic acid, [3-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]propyl]-, diethyl	71463-80-4
91	2-Propenoic acid, 2-methyl-, methyl ester, polymer with ethenylbenzene, 2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulphonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulphonyl]amino](PFOS)	71487-20-2
92	1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-(PFOS)	754-91-6
93	Magnesium bis[heptadecafluorooctanesulphonate]	91036-71-4
94	Sulphonamides, C4-8-alkane, perfluoro, N-(hydroxyethyl)-N-methyl, reaction products with epichlorohydrin, adipates (esters)(PFOS)	91081-99-1
95	Ethanaminium, N,N,N-trimethyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]-, chloride, polymer with 2-ethoxyethyl 2-propenoate, 2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl 2-propenoate and oxiranylmethyl 2-methyl-2-(PFOS)	92265-81-1
96	1-Propanesulphonic acid, 3-[[3-(dimethylamino)propyl][(heptadecafluorooctyl)sulphonyl]amino]-2-hydroxy-, monosodium salt(PFOS)	94133-90-1
97	Carbamic acid, [5-[[[2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethoxy]carbonyl]amino]-2-methylphenyl]-	94313-84-5
98	Sulphonamides, C7-8-alkane, perfluoro, N-methyl-N-[2-[(1-oxo-2-propenyl)oxy]ethyl], polymers with 2-ethoxyethyl acrylate, glycidyl methacrylate and N,N,trimethyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]ethanaminium chloride(PFOS)	98999-57-6
99	Perfluorooctane sulfonates(PFOS) C ₈ F ₁₇ SO ₂ X (X = OH, Metal salt (O-M+), halide, amide, and other derivatives including polymers) [group]	JAMP-SN0035

Appendix 4:

REACH Annex XVII Restriction of placing on the market and use

*Refer the original text about the each restriction of use.

http://ec.europa.eu/enterprise/sectors/chemicals/reach/restrictions/index_en.htm

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No.	Chemical Name	Sample CAS No.	Main use of restriction	Maximum acceptable value
1	Poly chlorinated terphenyls (PCTs)	61788-33-8*	Substances, mixtures, including waste oils, or equipment	50ppm
2	Chloro-1-ethylene (monomer vinyl chloride)	75-01-4	Aerosols dispensers	Banning the use
3	Liquid substances or preparations, which are regarded as dangerous according to the definitions in Regulation 1272/2008/EC and Directive 1999/45/EC.	—	Ornamental oil lamps, etc.	Banning the use
4	Tris(2,3-dibromopropyl)phosphate	126-72-7	Textile articles coming into contact with the skin.	Banning the use
5	Benzene	71-43-2	Substances or mixtures	1000ppm
			Toys	5ppm
6	Asbestos		Articles	Banning the use
	(a) Crocidolite	12001-28-4		
	(b) Amosite	12172-73-5		
	(c) Anthophyllite asbestos	77536-67-5		
	(d) Actinolite asbestos	77536-66-4		
	(e) Tremolite asbestos	77536-68-6		
	(f) Chrysotile	12001-29-5 132207-32-		
7	Tris-aziridinyl-phosphin oxide	545-55-1	Textile articles, come into contact with the skin.	Banning the use
8	Polybromobiphenyls (PBB)	59536-65-1	Textile articles, come into contact with the skin.	Banning the use
9	(a) Soap bark powder (Quillaja saponaria) and its derivatives containing saponines	68990-67-0	Mixtures or articles in amenity goods like sneezing powder and stink bombs	Banning the use (stink bombs : under 1.5ml)
	(b) Powder of the roots of Helleborus viridis and Helleborus niger	—		
	(c) Powder of the roots of Veratrum album and Veratrum nigrum	—		
	(d) benzidine and/or its derivatives	92-87-5		
	(e) o-nitrobenzaldehyde	552-89-6		
	(f) Wood powder	—		
10	(a) Ammonium sulphide	12135-76-1		
	(b) Ammonium hydrogen sulphide	12124-99-1		
	(c) Ammonium polysulphide	9080-17-5		
11	Volatile esters of bromoacetic acids			
	(a) Methyl bromoacetate	96-32-2		
	(b) Ethyl bromoacetate	105-36-2		
	(c) Propyl bromoacetate	35223-80-4		
	(d) Butyl bromoacetate	18991-98-5		
12	2-naphthylamine and its salts	91-59-8	Substances or mixtures	1000ppm
13	Benzidine and its salts	92-87-5		
14	4-nitrobiphenyl	92-93-3		
15	4-aminobiphenyl and its salts	92-67-1		
16	Lead carbons		Substances or mixtures, where the substance or mixture is intended for use as paint	Banning the use
	(a) Neutral anhydrous carbonate (PbCO ₃)	598-63-0		
	(b) Trilead-bis(carbonate)-dihydroxide 2PbCO ₃ -Pb(OH) ₂	1319-46-6		
17	Lead sulphates			
	(a) Lead sulphates(PbSO ₄)	7446-14-2		
	(b) Lead sulphates(Pb ₃ SO ₄)	15739-80-7		
18a		7439-97-6	Fever thermometers, measuring devices including mercury	Banning the use (*) from 2014/4/10
18	Mercury compounds	—	boats and ships, equipment used for fish or shellfish farming, preservation of wood,	Banning the use
19	Arsenic compounds	—		
20	Organostannic compounds	—	Biocide ,the treatment of industrial waters	Banning the use
	Trisubstituted organostannic compounds Tributyltin (TBT) compounds, Triphenyltin (TPT) compounds etc.	—	Articles	1000ppm of Sn
	Dibutyltin (DBT) compounds	—	Mixtures or articles	
	Diocetyl tin (DOT) compounds	—	Articles intended to come into contact with the skin	
21	Di-μ-oxo-di-n-butylstanniohydroxyborane (DBB)	75113-37-0	Substances or mixtures	1000ppm
22	Pentachlorophenol and its esters	87-86-5	Substances or mixtures	100ppm
23	Cadmium and its compounds	7440-43-9 etc.	Plastic, brazing fillers, jewelry goods, cadmium plating except special use	100ppm
			Paint	1000ppm
24	Monomethyl-tetrachlorodiphenyl methane	76253-60-6	Substances, mixtures or articles containing the substance	Banning the use
25	Monomethyl-dichlorodiphenyl methane	—		
26	Monomethyl-dibromo-diphenyl methane	99688-47-8		

No.	Chemical Name	Sample CAS No.	Main use of restriction	Maximum acceptable value
27	Nickel and its compounds	7440-02-0 etc.	The use intended to come into direct and prolonged contact with the skin (Discharge > 0.2 µg/cm ² /week)	Banning the use (0.2 µg/cm ² /week)
28	Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as carcinogen category 1A or 1B (Table 3.1) or carcinogen category 1 or 2 (Table 3.2) and listed as follows:	—	Supplies to the general public (As substances or in mixtures)	The concentration limit specified in Regulation (EC) No 1272/2008(CLP)
29	Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as germ cell mutagen category 1A or 1B (Table 3.1) or mutagen category 1 or 2 (Table 3.2) and listed as follows:	—		
30	Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as toxic to reproduction category 1A or 1B (Table 3.1) or toxic to reproduction category 1 or 2 (Table 3.2) and listed as follows:	—		
31	(a) Creosote (b) Creosote oil (c) Distillates (coal tar), naphthalene oils (d) Creosote oil, acenaphthene fraction (e) Distillates (coal tar), upper (f) Anthracene oil (g) Tar acids, coal, crude (h) Creosote, wood (i) Low temperature tar oil, alkaline	8001-58-9 61789-28-4 84650-04-4 90640-84-9 65996-91-0 90640-80-5 65996-85-2 8021-39-4 122384-78-5	Substances or mixtures where the substance or mixture is intended for the treatment of wood	Banning the use
32	Chloroform	67-66-3	Surface treatment , cleaner	1000ppm
33	(Missing number)	—		
34	1,1,2-trichloroethane	79-00-5		
35	1,1,2,2-tetrachloroethane	79-34-5		
36	1,1,1,2-tetrachloroethane	630-20-6		
37	Pentachloroethane	76-01-7		
38	1,1-dichloroethylene	75-35-4		
39	(Missing number)	—		
40	Substances meeting the criteria of flammability in Directive 67/548/EEC and classified as flammable, highly flammable or extremely flammable regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.	—	Substances or mixtures in aerosol dispensers for the general public for entertainment and decorative purposes	Banning the use
41	Hexachloroethane	67-72-1	substance or mixtures where the substance or mixture is intended for the manufacturing or processing of non-ferrous metals	Banning the use
42	(Missing number)	—		
43	Azo colourants and azo dyes (may release the aromatic amines listed in Appendix	—	Articles intended to come into direct and prolonged contact with the skin (textile and leather articles)	30ppm
	4-aminoazobenzene	60-09-3		
	o-anisidine; 2-methoxyaniline	90-04-0		
	2-naphthylamine	91-59-8		
	3,3'-dichlorobenzidine; 3,3'-dichlorobiphenyl-4,4'-ylenediamine	91-94-1		
	4-aminobiphenyl	92-67-1		
	benzidine	92-87-5		
	o-toluidine; 2-aminotoluene	95-53-4		
	4-chloro-o-toluidine	95-69-2		
	4-methyl-m-phenylenediamine	95-80-7		
	o-aminoazotoluene; 4-amino-2',3'-dimethylazobenzene; 4-o-tolylazo-o-toluidine	97-56-3		
	5-nitro-o-toluidine	99-55-8		
	2,2'-dichloro-4,4'-methylenedianiline; 4,4'-methylene bis(2-chloroaniline)	101-14-4		
	4,4'-diaminodiphenylmethane; 4,4'-methylenedianiline	101-77-9		
	4,4'-oxydianiline	101-80-4		
	4-chloroaniline	106-47-8		
	o-dianisidine; 3,3'-dimethoxybenzidine	119-90-4		
	4,4'-bi-o-toluidine; 3,3'-dimethylbenzidine	119-93-7		
	p-cresidine; 6-methoxy-m-toluidine	120-71-8		
	2,4,5-trimethylaniline	137-17-7		
	4,4'-thiodianiline	139-65-1		
	4-methoxy-m-phenylenediamine 4,4'-methylenedi-o-toluidine	615-05-4 838-88-0		
44	(Missing number)	—		
45	Diphenyl ether, octabromo derivative	—	Substances, mixtures or articles	1000ppm

No.	Chemical Name	Sample CAS No.	Main use of restriction	Maximum acceptable value
46	(a) Nonylphenol (b) Nonylphenol ethoxylates	25154-52-3 —	Cleaner, etc.	1000ppm
47	Chromium VI compounds		Cement – Leather articles coming into contact with the skin – Articles containing leather parts coming into contact with the skin	2ppm of the total dry weight 3ppm of the total dry weight of the leather
48	Toluene	108-88-3	Adhesives or spray paints (for supply to the general public)	1000ppm
49	Trichlorobenzene	120-82-1	As substances, in mixtures	1000ppm
50	Polycyclic-aromatic hydrocarbons (PAH)	—	The production of tyres	1ppm(BaP) 10ppm(the total of PAH)
	(a) Benzo(a)pyrene (BaP)	50-32-8		
	(b) Benzo(e)pyrene (BeP)	192-97-2	Articles for supply to the general public, if any of their rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity (Apply after 27 December 2015)	1ppm
	(c) Benzo(a)anthracene (BaA)	56-55-3		
	(d) Chrysene (CHR)	218-01-9		
	(e) Benzo(b)fluoranthene (BbFA)	205-99-2		
	(f) Benzo(j)fluoranthene (BjFA)	205-82-3	Toys, including activity toys, and childcare article if any of their rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity (Apply after 27 December 2015)	0.5ppm
	(g) Benzo(k)fluoranthene (BkFA)	207-08-9		
	(h) Dibenzo(a, h)anthracene (DBAhA)	53-70-3		
51	The following phthalates (a) Bis(2-ethylhexyl) phthalate (DEHP) (b) Dibutyl phthalate (DBP) (c) Benzyl butyl phthalate (BBP)	117-81-7 84-74-2 85-68-7	Toys and childcare articles	1000ppm
52	The following phthalates (a) Di-isononyl phthalate (DINP) (b) Di-isodecyl phthalate (DIDP) (c) Di-n-octyl phthalate (DNOP)	28553-12-0 68515-48-0 26761-40-0 68515-49-1 117-84-0	Toys and childcare articles	1000ppm
53	(Missing number)	—		
54	2-(2-methoxyethoxy)ethanol (DEGME)	111-77-3	Paints, paint strippers, cleaning agents, self-shining emulsions or floor sealants	1000ppm
55	2-(2-butoxyethoxy)ethanol (DEGBE)	112-34-5	Spray paints for supply to the general public, etc	30000ppm
56	Methylenediphenyl diisocyanate (MDI) including the following specific isomers (a) 4,4'-Methylenediphenyl diisocyanate (b) 2,4'-Methylenediphenyl diisocyanate (c) 2,2'-Methylenediphenyl diisocyanate	26447-40-5 101-68-8 5873-54-1 2536-05-2	Mixtures for supply to the general public	1000ppm
57	Cyclohexane	110-82-7	Adhesives	1000ppm
58	Ammonium nitrate (AN)	6484-52-2	Substances or in mixtures that contain more than 28 % by weight of nitrogen in relation to AN for use as a solid fertiliser Substances or in mixtures that contain more than 16 % by weight of nitrogen in relation to AN	Banning the use Banning the use except agriculture or licensed user
59	Dichloromethane	75-09-2	Paint strippers	1000ppm
60	Acrylamide	79-06-1	Grouting applications	1000ppm
61	Dimethylfumarate (DMF)	624-49-7	Articles	0.1ppm
62	Phenylmercury compounds* (a) Phenylmercury acetate (b) Phenylmercury propionate (c) Phenylmercury 2-ethylhexanoate (d) Phenylmercury octanoate (e) Phenylmercury neodecanoate	62-38-4 103-27-5 13302-00-6 13864-38-5 26545-49-3	Articles Mixtures Substances *After 10 October 2017	mercury 100ppm or Banning the use
63	Lead and its compounds	—	Jewelry articles	500ppm
64	1,4-dichlorobenzene	106-46-7	– Substance or – Constituent of mixtures in a concentration equal to or greater than 1% by weight where the substance or the mixture is placed on the market for use or used as an air freshener or deodoriser in toilets, homes, offices or other indoor public areas.	Banning the use or placing on the market

*Add a postscript to be plain though it was non-mention in the original

Appendix 5. List of aromatic amines

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No.	Substance Name	CAS No
1	4-Aminoazobenzene 4-Phenylazoaniline	60-09-3
2	2-Methoxyaniline o-Anisidine	90-04-0
3	2-Naphthylamine	91-59-8
4	3,3'-Dichlorobenzidine 3,3'-Dichlorobiphenyl-4,4'-diamine	91-94-1
5	4-Aminobiphenyl Xenylamine Biphenyl-4-ylamine	92-67-1
6	Benzidine 4,4'-Biphenyldiamine 4,4'-Diaminobiphenyl	92-87-5
7	o-Toluidine 2-Aminotoluene	95-53-4
8	4-Chloro-o-toluidine	95-69-2 [1] 3165-93-3 [2]
9	4-Methyl-m-phenylenediamine 2,4-Toluenediamine	95-80-7
10	o-Aminoazotoluene 4-Amino-2',3-dimethylazobenzene 4-o-Tolylazo-o-toluidine	97-56-3
11	5-Nitro-o-toluidone 2-Amino-4-nitrotoluene	99-55-8 [1] 51085-52-0 [2]
12	2,2'-Dichloro-4,4'-methylene-dianiline 4,4'-Methylene-bis-(2-chloro-aniline)	101-14-4
13	4,4'-Diaminodiphenylmethane 4,4'-Methylenedianiline	101-77-9
14	4,4'-Oxydianiline 4,4'-Diaminodiphenylether	101-80-4
15	4-Chloroaniline p-Chloroaniline	106-47-8
16	3,3'-Dimethoxybenzidine o-Dianisidine	119-90-4
17	4,4'-Bi-o-toluidine 3,3'-Dimethylbenzidine	119-93-7
18	6-Methoxy-m-toluidine 2-Methoxy-5-methylaniline p-Cresidine	120-71-8
19	2,4,5-Trimethylaniline	137-17-7 [1] 21436-97-5 [2]
20	4,4'-Thiodianiline 4,4'-Diaminodiphenyl sulfide	139-65-1
21	2,4-Diaminoanisole 4-Methoxy-m-phenylenediamine	615-05-4 [1] 39156-41-7 [2]
22	4,4'-Methylenedi-o-toluidine 3,3'-Dimethyl-4,4'-	838-88-0
23	2,6-Xylidine 2,6-Dimethylaniline	87-62-7
24	2,4-Xylidine 2,4-Dimethylaniline	95-68-1

*: Although these substances are not subject to the Restriction of REACH regulation in EU, they are applicable in China and South Korea.

Appendix 6. List of Hexabromocyclododecane (HBCD or HBCDD)

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2019.1.1

No.	Substance Name	CAS No
1	Alpha-hexabromocyclododecane; rel-(1R,2R,5S,6R,9R,10S)-1,2,5,6,9,10-Hexabromocyclododecane	134237-50-6
2	Beta-hexabromocyclododecane; rel-(1R,2S,5R,6R,9R,10S)-1,2,5,6,9,10-Hexabromocyclododecane	134237-51-7
3	Gamma-hexabromocyclododecane; rel-(1R,2R,5R,6S,9S,10R)-1,2,5,6,9,10-Hexabromocyclododecane	134237-52-8
4	(1R,2R,5R,6S,9S,10S)-1,2,5,6,9,10-Hexabromocyclododecane	138257-17-7
5	(1R,2R,5R,6S,9R,10S)-1,2,5,6,9,10-Hexabromocyclododecane	138257-18-8
6	(1R,2S,5S,6R,9S,10S)-1,2,5,6,9,10-Hexabromocyclododecane	138257-19-9
7	(1R,2S,5S,6S,9S,10R)-1,2,5,6,9,10-Hexabromocyclododecane	169102-57-2
8	Hexabromocyclododecane	25637-99-4
9	1,2,5,6,9,10-hexabromocyclododecane	3194-55-6
10	rel-(1R,2S,5R,6S,9R,10S)-1,2,5,6,9,10-Hexabromocyclododecane	4736-49-6
11	rel-(1R,2S,5R,6S,9S,10R)-1,2,5,6,9,10-Hexabromocyclododecane	65701-47-5
12	(1R,2R,5S,6R,9R,10S)-1,2,5,6,9,10-Hexabromocyclododecane	678970-15-5
13	(1R,2S,5R,6S,9S,10S)-1,2,5,6,9,10-Hexabromocyclododecane	678970-16-6
14	(1R,2R,5R,6S,9S,10R)-1,2,5,6,9,10-Hexabromocyclododecane	678970-17-7

Appendix 7. List of Perfluorooctanoic acid (PFOA) and its salts and its esters

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No.	Substance Name	CAS No
1	Perfluorooctanoic acid (PFOA)	335-67-1
2	Perfluorooctanoic acid ammonium salt	3825-26-1
3	Perfluorooctanoic acid sodium salt	335-95-5
4	Perfluorooctanoic acid potassium salt	2395-00-8
5	Perfluorooctanoic acid silver salt	335-93-3
6	Perfluorooctanoic acid fluoride	335-66-0
7	Perfluorooctanoic acid methyl ester	376-27-2
8	Perfluorooctanoic acid ethyl ester	3108-24-5