

Green Procurement Guidelines

Annex

Ver.3.0

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Annex 1. Level 1(Prohibited substance group)

NO	Substance group (English)	Scope of regulation concerning use and handling	Control value of Hitachi group *	Reference laws and regulations	Remarks	
Cadmium and its compounds						
1	-	Common	No more than 100ppm	EU RoHS Directive EU ELV Directive		
		Packaging materials	No more than 100ppm in total with 4 substances of Cd, Cr(VI), Pb, Hg	EU Packaging Directive USA State law (e.g. FL, GA, IA, IL, NH, MO, PA, WI, etc.)		
Hexavalent chromium compounds						
2	-	Common	No more than 1000ppm	EU RoHS Directive EU ELV Directive		
		Packaging materials	No more than 100ppm in total with 4 substances of Cd, Cr(VI), Pb, Hg	EU Packaging Directive		
Lead and its compounds						
3	-	Common	No more than 1000 ppm	EU RoHS Directive EU ELV Directive GER Prohibition of Chemicals Ordinance - ChemVerbotsV		
		Packaging materials	No more than 100ppm in total with 4 substances of Cd, Cr(VI), Pb, Hg	EU Packaging Directive		
Mercury and its compounds						
4	-	Common	No more than 1000 ppm	EU RoHS Directive EU ELV Directive		
		Packaging materials	No more than 100ppm in total with 4 substances of Cd, Cr(VI), Pb, Hg	EU Packaging Directive		
Polybrominated biphenyls (PBBs)						
5	-	Common	No more than 1000 ppm	EU RoHS Directive		
Polybrominated diphenyl ethers (PBDEs)						
6	-	Common	No more than 1000 ppm	EU RoHS Directive		
		DecaBDE	Articles only for the U.S covered by TSCA PBT	Use prohibited TSCA PBT Regulation		
Tri-substituted organostannic compounds						
7	7-1	Bis(tributyltin)=Oxide (TBTO)	Common	Intentional use prohibited, and no more than 1000 ppm by weight of tin	JPN Chemical Examination Law/Type 1 specified chemical substances EU REACH Regulation/Restriction No.20 EU REACH Regulation/Restriction No.20 JPN Chemical Examination Law/Type 2 specified chemical substances EU REACH Regulation/Restriction No.20	
	7-2	Tributyltin (TBT) compounds	Articles			
	7-3	Triphenyltin (TPT) compounds				
	7-4	Other tri-substituted organostannic compounds				
Polychlorinated biphenyls (PCBs)						
8	-	Common	Intentional use prohibited	POPs JPN Chemical Examination Law/Type 1 Specified Chemical Substances GER Prohibition of Chemicals Ordinance - ChemVerbotsV		
Polychlorinated terphenyls (PCTs)						
9	-	Equipments	No more than 50 ppm	EU REACH Regulation/Restriction No.1		
		Other than equipments	Intentional use prohibited	EU REACH Regulation/Restriction No.1		
Polychlorinated naphthalenes (with 1 or more chlorines)						
10	-	Common	Intentional use prohibited	JPN Chemical Examination Law/Type 1 Specified Chemical Substances	Apply from Oct. 1st, 2016	
Alkanes, C10 -C13 , chloro (short-chain chlorinated paraffins) (SCCPs)						
11	-	Common	Intentional use prohibited	POPs		
Asbestos						
12	12-1	Asbestos CAS:1332-21-4	Common	Intentional use prohibited and no more than 1000 ppm	EU REACH Regulation/Restriction No.6 JPN Industrial Safety and Health Law (Prohibition of Manufacturing, etc.) JPN Industrial Safety and Health Law (Asbestos Ordinance) GER Prohibition of Chemicals Ordinance - ChemVerbotsV	
	12-2	Amosite CAS:12172-73-5				
	12-3	Crocidolite CAS:12001-28-4				
	12-4	Chrysotile CAS:12001-29-5				
	12-5	Anthophyllite CAS:17068-78-9, 77536-67-5				
	12-6	Tremolite CAS:14567-73-8, 77536-68-6				
	12-7	Actinolite CAS:12172-67-7, 77536-66-4				
Ozone layer depleting substances (See Appendix 4 for the applicable substances)						
13	Correspond to Montreal Protocol Class I (CFCs, HCFCs, HBFCs, carbon tetrachloride, etc.)	Common	Intentional use prohibited	Montreal Protocol on Substances that Deplete the Ozone Layer JPN Ozone Layer Protection Law		
PFOS <Perfluorooctanesulfonic acid> and its analogous compounds (See Appendix 5 for the applicable substances)						
14	-	Common <Exemption usage> Semiconductor, Photoresists, Photo imaging, Metal plating, Medical devices, Electric and electronic parts for colour printer, Fire-fighting foams	Intentional use prohibited	JPN Chemical Examination Law/Type 1 Specified Chemical Substances POPs EU Regulation No.757/2010 CAN Perfluorooctane Sulfonate and its Salts and Certain Other Compounds Regulations SOR /2008-178, Canadian Environmental Protection Act, 1999		
15	-	2-(2H-1,2,3-benzotriazole-2-yl)-4,6-di-tert-butylphenol	Common	Intentional use prohibited	JPN Chemical Examination Law/Type 1 Specified Chemical Substances EU REACH Authorisation/SVHC	
16	-	Hexachlorobenzene	Common	Intentional use prohibited	JPN Chemical Examination Law/Type 1 Specified Chemical Substances EU REACH/Rstriction EU CLP Annex I	
17	-	Dimethylfumarate (DMF)	Articles	No more than 0.1ppm	EU REACH Regulation/Restriction No.20	
Hexabromocyclododecane (HBCD or HBCDD, See Appendix 9 for the applicable substances)						
18	-	Common	Intentional use prohibited	JPN Chemical Examination Law/Type 1 Specified Chemical Substances POPs EU REACH Regulation/SVHC (See Appendix 7 for the applicable substances)	Apply from April 1st, 2016	
19	-	Bis (2-ethylhexyl) phthalate (DEHP)	Common	No more than 1000ppm	EU RoHS Directive (from July 2019) EU REACH Regulation/SVHC (See Appendix 7 for the applicable substances) EU REACH Regulation/Restriction No.51	Translation to Level 1 at following date:
20	-	Benzyl butyl phthalate (BBP)	Common	No more than 1000ppm	EU RoHS Directive (from July 2019) EU REACH Regulation/SVHC (See Appendix 7 for the applicable substances) EU REACH Regulation/Restriction No.51	Products or parts correspond to EU RoHS/Cat8 &9:
21	-	Dibutyl phthalate (DBP)	Common	No more than 1000ppm	EU RoHS Directive (from July 2019) EU REACH Regulation/SVHC (See Appendix 7 for the applicable substances) EU REACH Regulation/Restriction No.51	18/Jan/2021
22	-	Diisobutyl phthalate (DIBP)	Common	No more than 1000ppm	EU RoHS Directive (from July 2019) EU REACH Regulation/SVHC (See Appendix 7 for the applicable substances)	Products or parts other than above: 14/Jan/2019

NO		Substance group (English)	Scope of regulation concerning use and handling	Control value of Hitachi group *	Reference laws and regulations	Remarks
23	-	Perfluorooctanoic acid (PFOA) and its salts and PFOA-related compounds	Common	Intentional use prohibited and 0.025ppm (25ppb) or less of PFOA including its salts or 1ppm (1000ppb) of one or a combination of PFOA-related compounds	POPs JPN Chemical Examination Law/Type 1 Specified Chemical Substances Domestic law in Norway (See Appendix 6 & 10 for the applicable substances)	
24	-	Perfluorocarboxylic acids containing 9 to 14 carbon atoms in the chain (C9-C14 PFCAs), their salts and C9-C14 PFCArealted substances	Common	Intentional use prohibited and less than 0.025ppm of C9-C14 PFCAs including its salts or 0.26ppm of one or a combination of C9-C14 PFCA related substances	EU REACH Regulation/Restriction No.68	
25	-	Perfluorohexane sulfonic acid (PFHxS), its salts and PFHxSrelated compounds	Common	Intentional use prohibited	POPs EU REACH Regulation/SVHC Domestic law in Switzerland	
26		Dechlorane Plus (DP)	Common	Intentional use prohibited	•POPs •EU REACH/Authorization.SVHC	
27		2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	Common	Intentional use prohibited	•POPs •EU REACH/Authorization.SVHC	

* This is specified as control value for PROTERIAL group in reference to related laws and regulations (Reference laws and regulations column).

Annex 2. Level 2 (Controlled substance group)

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No	Substance group (English)	Reference laws and regulations or Industrial standards	Remarks
1	Antimony and its compounds (which include alloys) -	EU Safety of toys Directive	
2	Arsenic and its compounds (which include alloys) 2-1	EU REACH Regulation/Restriction (See Appendix 6 for the applicable substances) EU Safety of toys Directive JPN Industrial Safety and Health Law (Labelling duty of notifiable substances and Specified Group-2 Substances of Ordinance on Prevention of Hazards Due to Specified Chemical Substances)	
	2-2	Diarsenic pentoxide and Diarsenic trioxide	EU REACH Regulation/SVHC (See Appendix 7 for the applicable substances)
3	Beryllium and its compounds (which include alloys) -	JPN Industrial Safety and Health Law (Manufacturing licence)	
4	Nickel and its compounds (which include alloys) -	EU REACH Regulation/Restriction (See Appendix 6 for the applicable substances) EU Safety of toys Directive JPN Industrial Safety and Health Law (Labelling duty of notifiable substances and Specified Group-2 Substances of Ordinance on Prevention of Hazards Due to Specified Chemical Substances)	
5	Selenium and its compounds (which include alloys) -	EU Safety of toys Directive	
6	Un-specific brominated flame retardants Unspecific brominated flame retardants which excepted PBBs and PBDEs	JEDEC JS709 IPC-4101 and IEC61249-2-21	
7	Polyvinyl chloride (PVC) and its mixture, its copolymer -	JS709	
8	Phthalate esters other than No.1 - No.4 of this List		
	8-1	Bis(2-methoxyethyl) phthalate	EU REACH Regulation/SVHC (See Appendix 7 for the applicable substances)
	8-2	Diisopentylphthalate	
	8-3	Dipentyl phthalate (DPP)	
	8-4	Dihexyl phthalate	
	8-5	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	
	8-6	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich Diisoheptyl phthalate (DIHP)	
	8-7	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	
	8-8	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	
	8-9	Di-"isononyl" phthalate (DINP)	EU REACH Regulation/Restriction (See Appendix 6 for the applicable substances)
	8-10	Di-"isodecyl" phthalate (DIDP)	
	8-11	Di-n-octyl phthalate (DNOP)	
	8-12	Other pthalate esters	
9	Ozone layer depleting substances HCFCs (Fall into Montreal Protocol Class II)	Montreal Protocol on Substances that Deplete the Ozone Layer JPN Ozone Layer Protection Law (Content controlled substances)	
10	Radioactive substances -	JPN Nuclear Reactor Regulation Law JPN Radiation Hazard Prevention Act	
11	Di-substituted organostannic compounds		
	11-1	Dibutyltin compounds (DBT)	EU REACH Regulation/Restriction (See Appendix 6 for the applicable substances)
	11-2	Diocetyl tin compounds (DOT)	

No	Substance group (English)	Reference laws and regulations or Industrial standards	Remarks
11-3	Other di-substituted organostannic compounds	-	
Cobalt and its compounds (which include alloys)			
12	12-1	-	EU Safety of toys Directive JPN Industrial Safety and Health Law (Labelling duty of notifiable substances and Specified Group-2 Substances of Ordinance on Prevention of Hazards Due to Specified Chemical
	12-2	Cobalt(II) chloride	EU REACH Regulation/SVHC (See Appendix 7 for the applicable substances)
	12-3	Cobalt(II) sulfate	
	12-4	Cobalt(II) nitrate	
	12-5	Carbonic acid cobalt(II)	
	12-6	Cobalt(II) acetate	
13	Azodyes and azocolourants which form specified amines (Specified amines : See Appendix 8 for the applicable substances)		
	-	EU REACH Regulation/Restriction (See Appendix 6 for the applicable substances)	
14	-	Formaldehyde	JPN Law for the Control of Household Products containing Harmful Substances GER Prohibition of Chemicals Ordinance - ChemVerbotsV
15	-	Benzene	JPN Industrial Safety and Health Law (Labelling duty of notifiable substances and Specified Group-2 Substances of Ordinance on Prevention of Hazards Due to Specified Chemical Substances)
Fluorine based greenhouse gasses (HFC, PFC, SF6)			
16	-	-	JPN Law Concerning the Promotion of Measures Against Global Warming EU Regulation (EC) No.842/2006
17	-	2,4,6-tris(tert-butyl)phenol (2,4,6-TTBP)	TSCA PBT Regulation
18	-	Isopropylphenyl phosphate (PIP(3:1))	TSCA PBT Regulation
19	-	Pentachlorothiophenol (PCTP)	TSCA PBT Regulation
20	-	Hexachlorobutadiene (HCBd)	TSCA PBT Regulation
21	-	Per/polyfluoroalkyl compounds (PFAS)	•EU REACH/Restriction
22	-	Decabromodiphenylethane (DBDPE)	•Canada CTSR
Polycyclic-aromatic hydrocarbons (PAHs) corresponding to REACH/restriction substance			
23	See Appendix 6 for the applicable substances	EU REACH Regulation/Restriction (See Appendix 6 for the applicable substances)	
REACH/Restriction substances			
24	See Appendix 6 for the applicable substances	EU REACH Regulation/Restriction (See Appendix 6 for the applicable substances)	
REACH/Authorization substances			
25	See Appendix 7 for the applicable substances	EU REACH Regulation/Authorization (See Appendix 7 for the applicable substances)	
REACH/SVHC			
26	See Appendix 7 for the applicable substances	EU REACH Regulation/SVHC (See Appendix 7 for the applicable substances)	
JAMP declarable substances (Including chemSHERPA)			
27	-	JAMP declarable substances (Including chemSHERPA#10)	

(Notes)

In relation to REACH/restriction substance group

Although this substance group belongs to the Level 2 (Controlled substance group), it may be prohibited to use in some particular applications.

Each substance in this group is restricted to be banned etc. When the substance is used under the condition of restriction which is individually specified in REACH Regulation.

Therefore, when one or more of the substances is contained in a product, it is necessary to compare the use of the relevant product with the restricted use of the

Appendix 3-1. The exemptions of RoHS II Annex3

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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	Hg	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	Exoires on 24 February 2023
1(b)		For general lighting purposes ≥ 30 W and < 50 W: 5 mg	5 mg	Expired on 31 December 2011
			3.5 mg	Exoires on 24 February 2023
1(c)		For general lighting purposes ≥ 50 W and < 150 W: 5 mg	5 mg	Exoires on 24 February 2023
1(d)		For general lighting purposes ≥ 150 W: 15 mg	15 mg	Exoires on 24 February 2023
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	Exoires on 24 February 2023
1(f)-I		For lamps designed to emit mainly light in the ultraviolet spectrum	5 mg	Expires on 24 February 2027
1(f)-II		For special purposes	5mg	Expires on 24 February 2025
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 ⇒Remain in force until the decision on
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	Exoires on 24 February 2023
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	Exoires on 24 February 2023
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	Exoires on 24 February 2023
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	Exoires on 24 February 2023
2(a)(5)		Tri-band phosphor with long lifetime (≥ 25000h): 8 mg	8.0mg	Expired on 31December 2011
			5.0mg	Exoires on 24 February 2023
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	Expires on 24 February 2023 (*Applies from 25 February 2023 and expires 24 February 2025)
2(b)(4)-I		Lamps for other general lighting and special purposes (e.g. induction lamps)	No limitation of use	Expired on 31December 2011
	15 mg		Exoires on 24 February 2023	
2(b)(4)-II	Lamps emitting mainly light in the ultraviolet spectrum	15 mg	Expires on 24 February 2027	
2(b)(4)-III	Emergency lamps	15mg	Expires on 24 February 2027	
3(a)	Short length (≤500 mm)	No limitation of use	Expired on 31December 2011	
		3.5mg	Expires on 24 February 2025	
3(b)	Medium length (>500mm and ≤ 1500 mm)	No limitation of use	Expired on 31December 2011	
		5mg	Expires on 24 February 2025	
3(c)	Long length (> 1500 mm)	No limitation of use	Expired on 31December 2011	
		13mg	Expires on 24 February 2025	
4(a)	Mercury in other low pressure discharge lamps (see lamps)	No limitation of use	Expired on 31December 2011	

No	Substance	Exemption	Scope and dates of applicability	
4(a)		Mercury in other low pressure discharge lamps (per lamp)	15mg	Expires on 24 February 2023
4(a)-I		Low pressure non-phosphor coated discharge lamps, where the application requires the main range of the lamp-spectral output to be in the ultraviolet spectrum	15mg	Expires on 24 February 2027
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:		Expires on 24 February 2027
4(b)-I		P ≤ 155 W	No limitation of use	Expired on 31 December 2011
			30mg	Expires on 24 February 2023
4(b)-II		155W < P ≤ 405 W	No limitation of use	Expired on 31 December 2011
			40mg	Expires on 24 February 2023
4(b)-III		P > 405 W	No limitation of use	Expired on 31 December 2011
			40mg	Expires on 24 February 2023
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 31 December 2011
			25mg	Expires on 30 September 2022
			20mg	Expires on 24 February 2027
4(c)-II		155W < P ≤ 405W	No limitation of use	Expired on 31 December 2011
			30mg	Expires on 30 September 2022
			25mg	Expires on 24 February 2027
4(c)-III		P > 405 W	No limitation of use	Expired on 31 December 2011
			40mg	Expires on 30 September 2022
			25mg	Expires on 24 February 2027
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)		Categories 8 and 9 except for the following; Expired on 21 July 2021 (exclusion abolition) Expires on 24 February 2027
4(f)-I		Other discharge lamps for special purposes not specifically mentioned in this Annex		Expires on 24 February 2025
4(f)-II		High pressure mercury vapour lamps used in projectors where an output >= 2000 lumen ANSI is required		Expires on 24 February 2027
4(f)-III		High pressure sodium vapour lamps used for horticulture lighting		Expires on 24 February 2027
4(f)-IV		Lamps emitting light in the ultraviolet spectrum		Expires on 24 February 2027
4(g)		Mercury in hand crafted luminous discharge tubes used for signs, decorative or architectural and specialist lighting and light-artwork, where the mercury content shall be limited as follows: (a) 20 mg per electrode pair + 0,3 mg per tube length in cm, but not more than 80 mg, for outdoor applications and indoor applications exposed to temperatures below 20 °C; (b) 15 mg per electrode pair + 0,24 mg per tube length in cm, but not more than 80 mg, for all other indoor applications.		Expires on 31 December 2018
5(a)		Lead in glass of cathode ray tubes		Cat. 1-7 and 10 :Expired on 21 July 2016 Cat. 8 and 9 except for the following:Expired on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 (exclusion abolition) 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		Categories 8 and 9 except for the following; Expired on 21 July 2021 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 (exclusion abolition) Categories 1-7,10; Remain in force until the decision on extension application continuously Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
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	Categories 1-7 and 10;Expired on 30 June 2019 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 (exclusion abolition) Categories 8 and 9 except for the following; Remain in force until the decision on extension application continuously Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
6(a)-I		Lead as an alloying element in steel for machining purposes containing up to 0.35 % lead by weight and in batch hot dip galvanised steel components containing up to 0.2% lead by weight	up to 0.35 % lead by weight	Categories 1-7 and 10; Remain in force until the decision on extension application continuously Categories 1-7 and 10; Expired on 30 June 2019 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 (exclusion abolition)

No	Substance	Exemption	Scope and dates of applicability	
6(b)	Pb	Lead as an alloying element in aluminium containing up to 0,4% lead by weight	up to 0.4 % by weight	Categories 8 and 9 except for the following; Remain in force until the decision on extension application continuously Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
6(b)-I		Lead as an alloying element in aluminium containing up to 0.4% lead by weight, provided it stems from lead-bearing aluminium scrap recycling	up to 0.4 % by weight	Categories 1-7 and 10; Remain in force until the decision on extension application continuously
6(b)-II		Lead as an alloying element in aluminium for machining purposes with a lead content up to 0.4% by weight	up to 0.4 % by weight	Categories 1-7 and 10; 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	Categories 1-7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices, Category 9 industrial monitoring and control instruments and Category 11
7(a)		Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)		Categories 1-7 and 10 (Except applications covered by point 24) and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
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 Cat. 8 and 9 except for the following: Expires on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 (the exclusion abolition) 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		Categories 1-7 and 10 (Except applications covered by point 34) and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher		Categories 1-7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024	
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'		Expired on: — 21 July 2021 for categories 1-7 and 10 — 21 July 2021 for categories 8 and 9 except for the following; — 21 July 2023 for category 8 in vitro diagnostic medical devices (exclusion abolition) Expires on: — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11	
8(a)	Cd	Cadmium and its compounds in one shot pellet type thermal cut-offs		Expires on 1 January 2012 (the exclusion abolition) — 29 Feb 2020 for categories 1-7 and 10 (the exclusion abolition)
8(b)		Cadmium and its compounds in electrical contacts		Categories 8 and 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
8(b)-I		Cadmium and its compounds in electrical contacts used in: — circuit breakers, — thermal sensing controls, — thermal motor protectors (excluding hermetic thermal motor protectors), — AC switches rated at: — 6 A and more at 250 V AC and more, or — 12 A and more at 125 V AC and more, — DC switches rated at 20 A and more at 18 V DC and more, and — switches for use at voltage supply frequency ≥ 200 Hz.		Categories 1-7 and 10; Remain in force until the decision on extension application continuously Apply from March 1, 2020
9	Cr(VI)	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling systems in absorption refrigerators up to 0.75 % by weight in the cooling solution		Expired on: — 21 July 2021 for categories 8 and 9 other than the following; — 21 July 2023 for category 8 in vitro diagnostic medical devices; (exclusion abolition) Expires on: — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11
9(a)-I		Up to 0,75 % hexavalent chromium by weight, used as an anticorrosion agent in the cooling solution of carbon steel cooling systems of absorption refrigerators (including minibars) designed to operate fully or partly with electrical heater, having an average utilised power input <75W at constant running conditions		Applies to categories 1-7 and 10 and expired on 5 March 2021. (exclusion abolition)

No	Substance	Exemption	Scope and dates of applicability
9(a)-II		Up to 0,75 % hexavalent chromium by weight, used as an anticorrosion agent in the cooling solution of carbon steel cooling systems of absorption refrigerators: — designed to operate fully or partly with electrical heater, having an average utilised power input ≥75 W at constant running conditions, — designed to fully operate with non-electrical heater	Categories 1-7 and 10; 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	Expired on: — 21 July 2021 for categories 8 and 9 other than the following; Applies to categories 8, 9 and 11; expires on: — 21 July 2023 for category 8 in vitro diagnostic medical devices, (exclusion abolition) — 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)	Pb	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)
13(a)		Lead in white glasses used for optical applications	Categories 1-7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
13(b)	Cd Pb	Cadmium and lead in filter glasses and glasses used for reflectance standards	Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
13(b)-(I)	Pb	Lead in ion coloured optical filter glass types	Categories 1-7 and 10; Remain in force until the decision on extension application continuously
13(b)-(II)	Cd	Cadmium in striking optical filter glass types; excluding applications falling under point 39	Categories 1-7 and 10; Remain in force until the decision on extension application continuously
13(b)-(III)	Cd Pb	Cadmium and lead in glazes used for reflectance standards	Categories 1-7 and 10; Remain in force until the decision on extension application continuously
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	Expires on — 29 Feb 2020 for categories 1-7 and 10 (the exclusion abolition) Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
15(a)		Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies: — a semiconductor technology node of 90 nm or larger; — a single die of 300 mm ² or larger in any semiconductor technology node; — stacked die packages with die of 300 mm ² or larger, or silicon interposers of 300 mm ² or larger.	Categories 1-7 and 10; Remain in force until the decision on extension application continuously Apply from March 1, 2020
16		Lead in linear incandescent lamps with silicate coated tubes	Expired on 1 September 2013
17	Pb	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 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)	Categories 1-7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
		Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps	Category 8 in vitro diagnostic medical devices; Expired on 21 July 2021 (exclusion abolition)

No	Substance	Exemption	Scope and dates of applicability
18(b)-1		containing phosphors such as BSP (BaSi2O5:Pb) when used in medical phototherapy equipment	Categories 5 and 8 (except applications covered by entry 34 of Annex IV); 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	Expires on: - 29 Feb 2020 for categories 1-7 and 10 - 21 July 2021 for categories 8 and 9 other than the following; — 21 July 2023 for category 8 in vitro diagnostic medical devices (exclusion abolition) expires on: — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11
21(a)		Cadmium when used in colour printed glass to provide filtering functions, used as a component in lighting applications installed in displays and control panels of EEE	Expires on 21 July 2021 for Categories 1 to 7 and 10 except applications covered by entry 21(b) or entry 39 Apply from March 20, 2020
21(b)	Cd	Cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	Expires on 21 July 2021 for Categories 1 to 7 and 10 except applications covered by entry 21(a) or 39 Apply from March 20, 2020
21(c)	Pb	Lead in printing inks for the application of enamels on other than borosilicate glasses	expires on 21 July 2021 for categories 1 to 7 and 10 Apply from March 20, 2020
23		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	Categories 1-7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
25	Pb	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring	Categories 1-7 and 10: Expired on 21 July 2016 Categories 8 and 9 except for the following: Expired on 21 July 2021 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; 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	Categories 8 and 9 except for the following; Expired on 21 July 2021 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 (exclusion abolition) Categories 1-7,10; Remain in force until the decision on extension application continuously Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
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	Categories 1-7 and 10: Expired on 21 July 2016 Categories 8 and 9 except for the following: Expired on 21 July 2021 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; 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)	Categories 1-7 and 10: Expired on 21 July 2016 Categories 8 and 9 except for the following: Expired on 21 July 2021 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
32	Pb	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes	Category 8 in vitro diagnostic medical devices; Expired on 21 July 2023 (exclusion abolition) Categories 1-7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024

No	Substance	Exemption	Scope and dates of applicability
33		Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers	Categories 1-7 and 10: Expired on 21 July 2016 Categories 8 and 9 except for the following: Expired on 21 July 2021 (exclusion abolition) Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
34		Lead in cermet-based trimmer potentiometer elements	Categories 1-7, 10 and Categories 8, 9 except for the following: Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
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	Categories 1-7 and 10: Expired on 21 July 2021 Categories 8 and 9 other than the following: Expired on 21 July 2021 — 21 July 2023 for category 8 in vitro diagnostic medical devices (exclusion abolition) Expires on: — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11
38	Cd	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide	Categories 1-7 and 10: Expired on 21 July 2016 Categories 8 and 9 except for the following: Expired on 21 July 2021 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; 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
39(a)		Cadmium selenide in downshifting cadmium-based semiconductor nanocrystal quantum dots for use in display lighting applications (< 0,2 µg Cd per mm ² of display screen area)	Remain in force until the decision on extension application continuously
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	Applies to all categories and expires on: - 31 March 2022 for categories 1 to 7, 10 and 11; - 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; - 21 July 2023 for category 8 in vitro diagnostic medical devices;
42		Lead in bearings and bushes of diesel or gaseous fuel powered internal combustion engines applied in non-road professional use equipment: — with engine total displacement ≥ 15 litres; or — with engine total displacement < 15 litres and the engine is designed to operate in applications where the time between signal to start and full load is required to be less than 10 seconds; or regular maintenance is typically performed in a harsh and dirty outdoor environment, such as mining, construction, and agriculture applications	Applies to all categories and expires on: — 21 July 2024 for category 9 industrial monitoring and control instruments.
43	DEHP	Bis (2-ethylhexyl) phthalate in rubber components in engine systems, designed for use in equipment that is not intended solely for consumer use and provided that no plasticised material comes into contact with human mucous membranes or into prolonged contact with human skin and the concentration value of bis(2-ethylhexyl) phthalate does not exceed: (a) 30% by weight of the rubber for (i) gasket coatings; (ii) solid-rubber gaskets; or (iii) rubber components included in assemblies of at least three components using electrical, mechanical or hydraulic energy to do work, and attached to the engine. (b) 10% by weight of the rubber, for rubber-containing components not referred to in point (a). For the purposes of this entry, 'prolonged contact with human skin' means continuous contact of more than 10 minutes duration or intermittent contact over a period of 30 minutes, per day.	Expires on 21 July 2024 for Category 11, excluding applications covered by entry 6(c)
43	DEHP		Applies to category 11 and expires on 21 July 2024
44	Pb	Lead in solder of sensors, actuators, and engine control units (ECUs) of combustion engines within the scope of Regulation (EU) 2016/1628 of the European Parliament and of the Council, installed in equipment used at fixed positions while in operation which is designed for professionals, but also used by non-professional users	Applies to category 11 and expires on 21 July 2024
45	Pb Cr	Lead diazide, lead styphnate, lead dipicramate, orange lead (lead tetroxide), lead dioxide in electric and electronic initiators of explosives for civil (professional) use and barium chromate in long time pyrotechnic delay charges of electric initiators of explosives for civil (professional) use	Expires on 20 April 2026

(Disclaimers)

PROTERIAL 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 3–2. The exemptions of RoHS II Annex4 (The exemptions of category 8&9)

rev.1.0/2023.1.4

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. Expires on 21 July 2021 for medical devices other than in-vitro diagnostic medical devices and industrial instruments other than monitoring and control
5	Lead in shielding for ionising radiation.
6	Lead in X-ray test objects. Expires on 21 July 2021 for medical devices other than in-vitro diagnostic medical devices and industrial instruments other than monitoring and control
7	Lead stearate X-ray diffraction crystals. Expires on 21 July 2021 for medical devices other than in-vitro diagnostic medical devices and industrial instruments other than monitoring and control
8	Radioactive cadmium isotope source for portable X-ray fluorescence spectrometers. Expires on 21 July 2021 for medical devices other than in-vitro diagnostic
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. Expires on 21 July 2021 for medical devices other than in-vitro diagnostic medical devices and industrial instruments other than monitoring and control
Others	
9	Cadmium in helium-cadmium lasers. Expires on 21 July 2021 for medical devices other than in-vitro diagnostic medical devices and industrial instruments other than monitoring and control
10	Lead and cadmium in atomic absorption spectroscopy lamps. Expires on 21 July 2021 for medical devices other than in-vitro diagnostic medical devices and industrial instruments other than monitoring and control
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 21 July 2021 for medical devices other than in-vitro diagnostic medical devices and industrial instruments other than monitoring and control
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. Expires on 21 July 2021 for medical devices other than in-vitro diagnostic medical devices and industrial instruments other than monitoring and control
17	Lead in solders in portable emergency defibrillators.

No.	Exemption
18	Lead in solders of high performance infrared imaging modules to detect in the range 8-14 μm . Expires on 21 July 2021 for medical devices other than in-vitro diagnostic medical devices and industrial instruments other than monitoring and control
19	Lead in Liquid crystal on silicon (LCoS) displays. Expires on 21 July 2021 for medical devices other than in-vitro diagnostic medical devices and industrial instruments other than monitoring and control
20	Cadmium in X-ray measurement filters. Expires on 21 July 2021 for medical devices other than in-vitro diagnostic medical devices and industrial instruments other than monitoring and control
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 — 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 $-20\text{ }^{\circ}\text{C}$ 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 $-150\text{ }^{\circ}\text{C}$. Expires on 30 June 2021. For in-vitro diagnostic medical devices; Expires on 30 June 2021 For others in Categories 8 and 9: Remain in force until the decision on
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.
28	Lead in solders for mounting cadmium telluride and cadmium zinc telluride digital array detectors to printed circuit boards. Expires on 31 December 2017.

No.	Exemption
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. For others in Categories 8 and 9; Remain in force until the decision on extension application continuously.
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. For the use in medical devices other than in vitro diagnostic medical devices; Remain in force until the decision on extension application continuously For the use in in vitro diagnostic medical devices; Remain in force until the decision on extension application continuously For the use in electron microscopes and their accessories; Expires on 21 July 2024.
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 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.
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 2025.

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>
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>
41	<p>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.</p> <p>Expires on 31 Dec 2018.</p> <p>⇒Remain in force until the decision on extension application continuously</p>
42	<p>Mercury in electric rotating connectors used in intravascular ultrasound imaging systems capable of high operating frequency (> 50 MHz) modes of operation.</p> <p>Expires on 30 June 2019.</p> <p>Remain in force until the decision on extension application continuously</p>
43	<p>Cadmium anodes in Hersch cells for oxygen sensors used in industrial monitoring and control instruments, where sensitivity below 10 ppm is required.</p> <p>Expires on 15 July 2023.</p>
44	<p>Cadmium in radiation tolerant video camera tubes designed for cameras with a centre resolution greater than 450 TV lines which are used in environments with ionising radiation exposure exceeding 100 Gy/hour and a total dose in excess of 100kGy. Applies to category 9. Expires on</p>
45	<p>Bis(2-ethylhexyl) phthalate (DEHP) in ion-selective electrodes applied in point of care analysis of ionic substances present in human body fluids and/or in dialysate fluids.</p> <p>Expires on: 21 July 2028</p>
46	<p>Bis(2-ethylhexyl) phthalate (DEHP) in plastic components in MRI detector coils.</p>
47	<p>Bis(2-ethylhexyl) phthalate (DEHP), butyl benzyl phthalate (BBP), dibutyl phthalate (DBP) and diisobutyl phthalate (DIBP) in spare parts recovered from and used for the repair or refurbishment of medical devices, including in vitro diagnostic medical devices, 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.</p>

(Disclaimers)

No.	Exemption
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PROTERIAL 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 4. Ozone depleting substances

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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) 1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)(CAS No 76-13-1) 1,1,1-Trichloro-2,2,2-trifluoroethane (CFC-113a)(CAS No 354-58-5) Trichlorotrifluoroethane (CFC-113) (CAS No 26523-64-8)	C ₂ F ₃ Cl ₃	26523-64-8 354-58-5 76-13-1				
				CFC-114	Dichlorotetrafluoroethane (CFC-114) 1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC-114)(CAS No 76-14-2) 1,1-Dichloro-1,2,2,2-tetrafluoroethane (CFC-114a) (CAS No 1320-37-2, 374-Dichlorotetrafluoroethane (CFC-114) (CAS No 1320-37-2, 374-07-2)	C ₂ F ₄ Cl ₂	1320-37-2 374-07-2 76-14-2				
				CFC-115	Chloropentafluoroethane (CFC-115) 1-Chloro-1,1,2,2,2-pentafluoroethane (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 1,2-Dibromo-1,1,2,2-tetrafluoroethane (CAS No 124-73-2) 2,2-Dibromo-1,1,1,2-tetrafluoroethane (CAS No 27336-23-8) Dibromotetrafluoroethane (CAS No 25497-30-7)	C ₂ F ₄ Br ₂	124-73-2 25497-30-7 27336-23-8								
I	B	I	Other completely halogenated CFC	CFC-13	Chlorotrifluoromethane	CF ₃ Cl	75-72-9				
				CFC-111	Pentachlorofluoroethane (CFC-111) (CAS No 354-56-3) 1,1,1,2,2-Pentachloro-2-fluoroethane (CAS No 354-56-3, 29756-45-4) 1,1,2,2,2-Pentachloro-1-fluoroethane (CAS No 354-56-3) Chlorofluorocarbon-111 (CAS No 954-56-3)	C ₂ FCl ₅	354-56-3 954-56-3 29756-45-4				
				CFC-112	Tetrachlorodifluoroethane (CFC-112) 1,1,2,2-Tetrachloro-1,2-difluoroethane (CFC-112) (CAS No 76-12-0) 1,1,1,2-Tetrachloro-2,2-difluoroethane (CFC-112a) (CAS No 76-11-9)	C ₂ F ₂ Cl ₄	76-11-9 76-12-0				
				CFC-211	Heptachlorofluoropropane (CFC-211) 1,1,1,2,2,3,3-Heptachloro-3-fluoropropane (CFC-211aa) (CAS No 422-78-6) 1,1,1,2,3,3,3-Heptachloro-2-fluoropropane (CFC-211ba) (CAS No 422-81-1) Heptachlorofluoropropane (CFC-211) (CAS No 135401-87-5)	C ₃ FCl ₇	422-78-6 422-81-1 135401-87-5				
				CFC-212	Hexachlorodifluoropropane (CFC-212) 1,1,1,3,3,3-Hexachloro-2,2-difluoropropane (HCFC-212) (CAS No 3182-26-1) Hexachlorodifluoropropane (CFC-212) (CAS No 134452-44-1)	C ₃ F ₂ Cl ₆	134452-44-1 3182-26-1				
				CFC-213	Pentachlorotrifluoropropane (CFC-213) 1,1,1,3,3,3-Pentachloro-2,2,3-trifluoropropane (CFC-213) (CAS No 2354-06-5) Pentachlorotrifluoropropane (CFC-213) (CAS No 134237-31-3)	C ₃ F ₃ Cl ₆	134237-31-3 2354-06-5				
				CFC-214	Tetrachlorotetrafluoropropane (CFC-214) 1,2,2,3-Tetrachloro-1,1,3,3-tetrafluoropropane (CFC-214aa) (CAS No 677-68-1) 1,1,1,3-Tetrachloro-2,2,3,3-tetrafluoropropane (CFC-214cb) (CAS No 2268-Tetrachlorotetrafluoropropane (CFC-214) (CAS No 29255-31-0, Mixed	C ₃ F ₄ Cl ₄	2268-46-4 29255-31-0 677-68-9				
				CFC-215	Trichloropentafluoropropane (CFC-215) 1,2,2-Trichloro-1,1,3,3,3-pentafluoropropane (CFC-215aa) (CAS No 1599-41-1) 1,2,3-Trichloro-1,1,2,3,3-pentafluoropropane (CFC-215ba) (CAS No 76-17-5) 1,1,2-Trichloro-1,2,3,3,3-pentafluoropropane (CFC-215bb) (CAS No 812-30-6) 1,1,3-Trichloro-1,2,2,3,3-pentafluoropropane (CFC-215ca) (CAS No 1652-81-1) 1,1,1-Trichloro-2,2,3,3,3-pentafluoropropane (CFC-215cb) (CAS No 4259-43-3)	C ₃ F ₅ Cl ₃	1599-41-3 1652-81-9 4259-43-2 76-17-5 812-30-6				
				CFC-216	Dichlorohexafluoropropane 1,2-Dichloro-1,1,2,3,3,3-hexafluoropropane (CFC-216ba) (CAS No 661-97-2) 1,3-Dichloro-1,1,2,2,3,3-hexafluoropropane (CFC-216ca) (CAS No 662-01-1)	C ₃ F ₆ Cl ₂	661-97-2 662-01-1				
				CFC-217	Chloroheptafluoropropane (CFC-217) 2-Chloro-1,1,1,2,3,3,3-heptafluoropropane (CFC-217ba) (CAS No 76-18-6) 1-Chloro-1,1,2,2,3,3,3-heptafluoropropane (CFC-217ca) (CAS No 422-86-6)	C ₃ F ₇ Cl	422-86-6 76-18-6				
				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	Dibromodifluoromethane (HBFC-21 B2)	CHFBr 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) 1,1,2,2-Tetrabromo-1-fluoroethane (CAS No 306-80-9) Tetrabromofluoroethane (CAS No 353-93-5)	C ₂ HFBBr ₄	306-80-9 353-93-5								
Halon-2203	Tribromodifluoroethane (HBFC-122 B3) 1,1,2-Tribromo-1,2-difluoroethane (CAS No 353-97-9) 1,2,2-Tribromo-1,1-difluoroethane (CAS No 677-34-9) Tribromodifluoroethane (CAS No 7304-53-2)	C ₂ HF ₂ Br ₃	353-97-9 677-34-9 7304-53-2								
Halon-2302	Dibromotrifluoroethane (HBFC-123 B2) 1,2-Dibromo-1,1,2-trifluoroethane	C ₂ HF ₃ Br ₂	354-04-1								
Halon-2401	Bromotetrafluoroethane (HBFC-124 B1) 2-Bromo-1,1,1,2-tetrafluoroethane (CAS No 124-72-1) 1-Bromo-1,2,2,2-tetrafluoroethane (CAS No 354-07-4)	C ₂ HF ₄ Br	124-72-1 354-07-4								
Halon-2103	Tribromofluoroethane (HBFC-131 B3) 1,1,2-tribromo-1-fluoroethane (CAS No 420-88-2) 1,1,2-tribromo-2-fluoroethane (CAS No 598-67-4)	C ₂ H ₂ FBr ₃	420-88-2 598-67-4								
Halon-2202	Dibromodifluoroethane (HBFC-132 B2) 1,2-Dibromo-1,1-difluoroethane (CAS No 75-82-1) 1,1-Dibromo-2,2-difluoroethane (CAS No 359-19-3, 430-85-3)	C ₂ H ₂ F ₂ Br ₂	359-19-3 430-85-3 75-82-1								
Halon-2301	Bromotrifluoroethane (HBFC-133 B1) 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 ₂ H ₂ F ₃ Br	421-06-7								
Halon-2102	Dibromofluoroethane (HBFC-141 B2) 1,2-Dibromo-1-fluoroethane	C ₂ H ₃ FBr ₂	358-97-4								
Halon-2201	Bromodifluoroethane (HBFC-142 B1) 2-Bromo-1,1-difluoroethane	C ₂ H ₃ F ₂ Br	359-07-9								
Halon-2101	Bromofluoroethane (HBFC-151 B1) 1-Bromo-2-fluoroethane	C ₂ H ₄ FBr	762-49-2								
Halon-3106	Hexabromofluoropropane (HBFC-221 B6)	C ₃ HFBBr ₆									
Halon-3205	Pentabromodifluoropropane (HBFC-222 B5)	C ₃ HFB ₂ Br ₅									

Montreal Protocol			Sample substances	Chemical formula	Sample CAS No
Class	Annex	Group			
			Halon-3304	Tetrabromotrifluoropropane (HBFC-223 B4) C ₃ HF ₃ Br ₄	
			Halon-3403	Tribromotetrafluoropropane (HBFC-224 B3) C ₃ HF ₂ Br ₃	666-48-8
			Halon-3502	Dibromopentafluoropropane (HBFC-225 B2) 1,2-Dibromo-1,1,3,3,3-pentafluoropropane C ₃ HF ₅ Br 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 ₃ HF ₆ Br	2252-78-0 2252-79-1
			Halon-3105	Pentabromofluoropropane (HBFC-231 B5) C ₃ H ₂ FBr ₅	
			Halon-3204	Tetrabromodifluoropropane (HBFC-232 B4) 1,1,1,3-Tetrabromo-3,3-difluoropropane C ₃ H ₂ F ₂ Br ₄	148875-98-3
			Halon-3303	Tribromotrifluoropropane (HBFC-233 B3) 2,2,3-Tribromo-1,1,1-trifluoropropane (CAS No 421-90-9) C ₃ H ₂ F ₃ Br ₃	421-90-9
			Halon-3402	Dibromotetrafluoropropane (HBFC-234 B2) 1,3-Dibromo-1,1,3,3-tetrafluoropropane C ₃ H ₂ F ₄ Br 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 ₃ H ₂ F ₅ Br	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 ₃ H ₃ FBr ₄	148875-95-0
			Halon-3203	Tribromodifluoropropane (HBFC-242 B3) 1,1,1-Tribromo-2,2-difluoropropane (CAS No 70192-80-2) C ₃ H ₃ F ₂ Br 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) 1,2-Dibromo-3,3,3-trifluoropropane (CAS No 431-21-0) C ₃ H ₃ F ₃ Br ₂	431-21-0
			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 ₃ H ₃ F ₄ Br	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 ₃ H ₄ FBr ₃	75372-14-4
			Halon-3202	Dibromodifluoropropane (HBFC-252 B2) 1,3-Dibromo-1,1-difluoropropane (CAS No 460-25-3) C ₃ H ₄ F ₂ Br ₂	460-25-3
			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 ₃ H ₄ F ₃ Br	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 ₃ H ₅ FBr 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 ₃ H ₅ F ₂ Br	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 ₃ H ₆ FBr	1871-72-3 352-91-0
II	C	I	HCFC [Hydrochlorofluorocarbon]		
			HCFC-21	Dichlorodifluoromethane CHFCl ₂	75-43-4
			HCFC-22	Chlorodifluoromethane CHF ₂ Cl	75-45-6
			HCFC-31	Chlorofluoromethane CH ₂ FCl	593-70-4
			HCFC-121	Tetrachlorofluoroethane (HCFC-121) 1,1,2,2-Tetrachloro-1-fluoroethane (HCFC-121) (CAS No 354-14-3, 134237-32-1) 1,1,1,2-Tetrachloro-2-fluoroethane (HCFC 121a) (CAS No 354-11-0) C ₂ HFCl ₄	134237-32-4 354-11-0 354-14-3
			HCFC-122	Trichlorodifluoroethane (HCFC-122) 1,2,2-Trichloro-1,1-difluoroethane (HCFC-122) (CAS No 354-21-2, 134237-33-1) 1,1,2-Trichloro-1,2-difluoroethane (HCFC-122a) (CAS No 354-15-4) 1,1,1-Trichloro-2,2-difluoroethane (HCFC-122b) (CAS No 354-12-1) Trichlorodifluoroethane (HCFC-122) (CAS No 354-15-4, 354-21-2, 134237-33-1) C ₂ HF ₂ Cl ₃	354-12-1 354-15-4 354-21-2
			HCFC-123	Dichlorotrifluoroethane (HCFC-123) 2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123) (CAS No 306-83-2) 1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a) (CAS No 354-23-4) 1,1-Dichloro-1,2,2-trifluoroethane (HCFC-123b) (CAS No 812-04-4) Dichlorotrifluoroethane (HCFC-123) (CAS No 34077-87-7) C ₂ HF ₃ Cl ₂ CHCl ₂ CF ₃ (*)	306-83-2 34077-87-7 354-23-4 812-04-4
			HCFC-124	Chlorotetrafluoroethane (HCFC-124) 2-Chloro-1,1,1,2-tetrafluoroethane (HCFC-124) (CAS No 2837-89-0) 1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a) (CAS No 354-25-6) Chlorotetrafluoroethane (HCFC-124) (CAS No 63938-10-3) 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) (CAS No 359-28-4, 134237-34-6) 1,1,2-Trichloro-1-fluoroethane (HCFC-131a) (CAS No 811-95-0) 1,1,1-Trichloro-2-fluoroethane (HCFC-131b) (CAS No 2366-36-1) Trichlorofluoroethane (HCFC-131) (CAS No 27154-33-2) C ₂ H ₂ FCl 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) (CAS No 431-06-1) 1,1-Dichloro-2,2-difluoroethane (HCFC-132a) (CAS No 471-43-2) 1,2-Dichloro-1,1-difluoroethane (HCFC-132b) (CAS No 1649-08-7) 1,1-Dichloro-1,2-difluoroethane (CAS No 1842-05-3) Dichlorodifluoroethane (HCFC-132) (CAS No 25915-78-0) 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) (CAS No 431-07-2) 2-Chloro-1,1,1-trifluoroethane (HCFC-133a) (CAS No 75-88-7) 1-Chloro-1,1,2-trifluoroethane (HCFC-133b) (CAS No 421-04-5) Chlorotrifluoroethane (HCFC-133) (CAS No 1330-45-6) C ₂ H ₂ F ₃ Cl	1330-45-6 421-04-5 431-07-2 75-88-7

Montreal Protocol			Sample substances	Chemical formula	Sample CAS No
Class	Annex	Group			
			HCFC-141 Dichlorofluoroethane (HCFC-141) 1,2-Dichloro-1-fluoroethane (HCFC-141) (CAS No 430-57-9) 1,1-Dichloro-2-fluoroethane (HCFC-141a) (CAS No 430-53-5) 1,1-Dichloro-1-fluoroethane (HCFC-141b) (CAS No 1717-00-6) Dichlorofluoroethane (HCFC-141) (CAS No 25167-88-8)	$C_2H_3FCl_2$ CH_3CFCl_2 (*)	1717-00-6 25167-88-8 430-53-5 430-57-9
			HCFC-142 Chlorodifluoroethane (HCFC-142) 2-Chloro-1,1-difluoroethane (HCFC-142) (CAS No 338-65-8) 1-Chloro-1,2-difluoroethane (HCFC-142a) (CAS No 338-64-7) 1-Chloro-1,1-difluoroethane (HCFC-142b) (CAS No 75-68-3) Chlorodifluoroethane (HCFC-142) (CAS No 25497-29-4)	$C_2H_3F_2Cl$ CH_3CF_2Cl (*)	25497-29-4 338-64-7 338-65-8 75-68-3
			HCFC-151 Chlorofluoroethane (HCFC-151) 1-Chloro-2-fluoroethane (HCFC-151) (CAS No 762-50-5) 1-Chloro-1-fluoroethane (HCFC-151a) (CAS No 1615-75-4) Chlorofluoroethane (HCFC-151) (CAS No 110587-14-9)	C_2H_4FCI	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) (CAS No 422-26-4) Hexachlorofluoropropane (HCFC-221) (CAS No 134237-35-7)	C_3HFCl_6	134237-35-7 422-26-4
			HCFC-222 Pentachlorodifluoropropane (HCFC-222) 1,2,2,3,3-Pentachloro-1,1-difluoropropane (HCFC-222aa) (CAS No 422-30-0) 1,1,1,3,3-Pentachloro-2,2-difluoropropane (HCFC-222ca) (CAS No 422-49-1) Pentachlorodifluoropropane (HCFC-222) (CAS No 134237-36-8)	$C_3HF_2Cl_5$	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) (CAS No 134237-37-9, 422-52-6)	$C_3HF_3Cl_4$	134237-37-9 422-52-6
			HCFC-224 Trichlorotetrafluoropropane (HCFC-224) 1,3,3-Trichloro-1,1,2,2-tetrafluoropropane (HCFC-224ca) (CAS No 134237-38-0, 422-54-8) 1,1,1-Trichloro-2,2,3,3-tetrafluoropropane (HCFC-224cc) (CAS No 422-51-5)	$C_3HF_4Cl_3$	134237-38-0 422-51-5 422-54-8
			HCFC-225 Dichloropentafluoropropane (HCFC-225) 2,2-Dichloro-1,1,1,3,3-pentafluoropropane (HCFC-225aa) (CAS No 128903-2,3-Dichloro-1,1,1,2,3-pentafluoropropane (HCFC-225ba) (CAS No 422-48-0) 1,2-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225bb) (CAS No 422-44-6) 3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca) (CAS No 422-56-1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb) (CAS No 507-55-1,1-Dichloro-1,2,2,3,3-pentafluoropropane (HCFC-225cc) (CAS No 13474-88-8) 1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC-225da) (CAS No 431-86-7) 1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225ea) (CAS No 136013-1,1-Dichloro-1,2,3,3,3-pentafluoropropane (HCFC-225eb) (CAS No 111512-Dichloropentafluoropropane (HCFC-225) (CAS No 127564-92-5)	$C_3HF_5Cl_2$ $CF_3CF_2CHCl_2$ (*) CF_2ClCF_2CHClF (*)	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) 3-Chloro-1,1,1,2,2,3-hexafluoropropane (HCFC-226ca) (CAS No 422-57-1) 1-Chloro-1,1,2,2,3,3-hexafluoropropane (HCFC-226cb) (CAS No 359-58-0, 2-Chloro-1,1,1,3,3,3-hexafluoropropane (HCFC-226da) (CAS No 134308-72-8, 431-87-8)	C_3HF_6Cl	134308-72-8 359-58-0 422-55-9 422-57-1 431-87-8
			HCFC-231 Pentachlorofluoropropane (HCFC-231) Pentachlorofluoropropane (HCFC-231) (CAS No 134190-48-0, 421-94-3)	$C_3H_2FCl_5$	134190-48-0 421-94-3
			HCFC-232 Tetrachlorodifluoropropane (HCFC-232) Tetrachlorodifluoropropane (HCFC-232) (CAS No 134237-39-1, 460-89-9)	$C_3H_2F_2Cl_4$	134237-39-1 460-89-9
			HCFC-233 Trichlorotrifluoropropane (HCFC-233) 1,1,1-Trichloro-3,3,3-trifluoropropane (HCFC-233fb) (CAS No 7125-83-9) Trichlorotrifluoropropane (HCFC-233) (CAS No 134237-40-4)	$C_3H_2F_3Cl_3$	134237-40-4 7125-83-9
			HCFC-234 Dichlorotetrafluoropropane (HCFC-234) 2,2-Dichloro-1,1,3,3-tetrafluoropropane (HCFC-234aa) (CAS No 17705-30-5) 1,1-Dichloro-2,2,3,3-tetrafluoropropane (HCFC-234cb) (CAS No 4071-01-6) 2,3-Dichloro-1,1,1,3-tetrafluoropropane (HCFC-234da) (CAS No 146916-90-7) 1,1-ジクロロ-1,3,3,3-tetrafluoropropane (HCFC-234fb) (CAS No 64712-27-2) Dichlorotetrafluoropropane (HCFC-234) (CAS No 127564-83-4, 425-94-5)	$C_3H_2F_4Cl_2$	127564-83-4 146916-90-7 17705-30-5 4071-01-6 425-94-5 64712-27-2
			HCFC-235 Chloropentafluoropropane (HCFC-235) 1-Chloro-1,2,2,3,3-pentafluoropropane (HCFC-235ca) (CAS No 679-99-2) 3-Chloro-1,1,1,2,3-pentafluoropropane (HCFC-235cb) (CAS No 422-02-6) 1-Chloro-1,1,2,2,3-pentafluoropropane (HCFC-235cc) (CAS No 677-55-4) 1-Chloro-1,1,3,3,3-pentafluoropropane (HCFC-235fa) (CAS No 460-92-4) Chloropentafluoropropane (HCFC-235) (CAS No 134237-41-5)	$C_3H_2F_5Cl$	134237-41-5 422-02-6 460-92-4 677-55-4 679-99-2
			HCFC-241 Tetrachlorofluoropropane (HCFC-241) Tetrachlorofluoropropane (HCFC-241) (CAS No 134190-49-1, 666-27-3)	$C_3H_3FCl_4$	134190-49-1 666-27-3
			HCFC-242 Trichlorodifluoropropane (HCFC-242) Trichlorodifluoropropane (HCFC-242) (CAS No 127564-90-3, 134237-42-6, 460-63-9)	$C_3H_3F_2Cl_3$	127564-90-3 134237-42-6 460-63-9
			HCFC-243 Dichlorotrifluoropropane (HCFC-243) 2,3-Dichloro-1,1,1-trifluoropropane (HCF-243db) (CAS No 338-75-0) 3,3-Dichloro-1,1,1-trifluoropropane (HCF-243fa) (CAS No 460-69-5) Dichlorotrifluoropropane (HCFC-243) (CAS No 134237-43-7)	$C_3H_3F_3Cl_2$	134237-43-7 338-75-0 460-69-5
			HCFC-244 Chlorotetrafluoropropane (HCFC-244) 2-Chloro-1,1,3,3-tetrafluoropropane (HCFC-244da) (CAS No 19041-02-2) 1-Chloro-1,1,3,3-tetrafluoropropane (HCFC-244fb) (CAS No 2730-64-5) Chlorotetrafluoropropane (HCFC-244) (CAS No 134190-50-4)	$C_3H_3F_4Cl$	134190-50-4 19041-02-2
			HCFC-251 Trichlorofluoropropane (HCFC-251) 1,1,2-Trichloro-1-fluoropropane (HCFC-251dc) (CAS No 421-41-0) 1,1,3-Trichloro-1-fluoropropane (HCFC-251fb) (CAS No 818-99-5) Trichlorofluoropropane (HCFC-251) (CAS No 134190-51-5)	$C_3H_4FCl_3$	134190-51-5 421-41-0 818-99-5
			HCFC-252 Dichlorodifluoropropane (HCFC-252) 1,2-Dichloro-1,1-difluoropropane (HCFC-252dc) (CAS No 7126-15-0) 1,3-Dichloro-1,1-difluoropropane (HCFC-252fb) (CAS No 819-00-1) Dichlorodifluoropropane (HCFC-252) (CAS No 134190-52-6)	$C_3H_4F_2Cl_2$	134190-52-6 819-00-1 7126-15-0
			HCFC-253 Chlorotrifluoropropane (HCFC-253) 3-Chloro-1,1,1-trifluoropropane (HCFC-253fb) (CAS No 460-35-5) Chlorotrifluoropropane (HCFC-253) (CAS No 134237-44-8)	$C_3H_4F_3Cl$	134237-44-8 460-35-5
			HCFC-261 Dichlorofluoropropane (HCFC-261) 1,2-Dichloro-2-fluoropropane (HCFC-261ba) (CAS No 420-97-3) 1,1-Dichloro-1-fluoropropane (HCFC-261fc) (CAS No 7799-56-6) Dichlorofluoropropane (HCFC-261) (CAS No 7799-56-6)	$C_3H_5FCl_2$	134237-45-9 420-97-3 7799-56-6
			HCFC-262 Chlorodifluoropropane (HCFC-262) 2-Chloro-1,3-difluoropropane (HCFC-262da) (CAS No 102738-79-4) 1-Chloro-1,1-difluoropropane (HCFC-262fc) (CAS No 421-02-3)	$C_3H_5F_2Cl$	102738-79-4 134190-53-7 421-02-3

Montreal Protocol					Sample substances	Chemical formula	Sample CAS No
Class	Annex	Group					
				HCFC-271	Chlorodifluoropropane (HCFC-262) (CAS No 134190-53-7) Chlorofluoropropane (HCFC-271) 2-Chloro-2-fluoropropane (HCFC-271ba) (CAS No 420-44-0) 1-Chloro-1-fluoropropane (HCFC-271fb) (CAS No 430-55-7) Chlorofluoropropane (HCFC-271) (CAS No 134190-54-8)	C ₃ H ₆ FCI	134190-54-8 420-44-0 430-55-7

(*)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 5. PFOS/PFOS relative compounds <Perfluorooctane sulfonates>

rev..0 2021.11.01

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 (S ₂ Cl ₂) 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-Decanaminiium, 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
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

No	Substance name	例示 CAS No
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-(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-octanesulphon(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-hexanediylbis[(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-octanesulfonyl 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
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

No	Substance name	例示 CAS No
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-(phosphonooxy)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]amino]ethyl 2-propenoate(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
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']]-mu-hydroxybis(2-methylpropanol)di-(PFOS)	68891-96-3

No	Substance name	例示 CAS No
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-propenamide, 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]ethyl 2-propenoate, 2-(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 修
96	1-Propanesulphonic acid, 3-[[[3-(dimethylamino)propyl]amino]ethyl]-(heptadecafluorooctyl)sulphonyl]-2-hydroxy-, monosodium salt(PFOS)	94133-90-1
97	Carbamic acid, [5-[[[2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethoxy]carbonyl]amino]-2-methylphenyl]-, ethyl]	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,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 6:**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

rev.1.0/2023.10.1

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 mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008:	—	Ornamental oil lamps, etc.	Banning the use
4	Tris(2,3-dibromopropyl)phosphate	126-72-7	Textile articles coming into contact with the	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-aziridiny-phosphinoxide	545-55-1	Textile articles, come into contact with the	Banning the use
8	Polybromobiphenyls (PBB)	59536-65-1	Textile articles, come into contact with the	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(PbxSO ₄)	15739-80-7		
18a		7439-97-6	Ffever thermometers, measuring devices including mercury	Banning the use (*) from 2014/4/10
18	Mercury compounds	—	boats and ships, equipment used for fish or	Banning the use
19	Arsenic compounds	—	shellfish farming, preservation of wood, the	
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	
	Dioctyltin (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

No.	Chemical Name	Sample CAS No.	Main use of restriction	Maximum acceptable value
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		
27	Nickel and its compounds	7440-02-0 etc.	The use intended to come into direct and prolonged contact with the skin (Discharge > 0.2µg/cm ² /week)	Banning the use (0.2µg/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
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, wash oil	8001-58-9	Substances or mixtures where the substance or mixture is intended for the treatment of wood	Banning the use
	(b) Creosote oil	61789-28-4		
	(c) Distillates (coal tar), naphthalene oils	84650-04-4		
	(d) Creosote oil, acenaphthene fraction, wash oil	90640-84-9		
	(e) Distillates (coal tar), upper, heavy anthracene oil	65996-91-0		
	(f) Anthracene oil	90640-80-5		
	(g) Tar acids, coal, crude, crude phenols	65996-85-2		
	(h) Creosote, wood	8021-39-4		
	(i) Low temperature tar oil, alkaline, extract residues (coal), low temperature coal	122384-78-5		
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	—	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 8)	—	Articles intended to come into direct and prolonged contact with the skin (textile and leather articles)	30ppm
	4-aminoazobenzene	60-09-3		
	o-anisidine;	90-04-0		
	2-methoxyaniline			
	2-naphthylamine	91-59-8		
	3,3'-dichlorobenzidine;	91-94-1		
	3,3'-dichlorobiphenyl-4,4'-ylenediamine			
	4-aminobiphenyl	92-67-1		
	benzidine	92-87-5		
	o-toluidine;	95-53-4		
	2-aminotoluene			
	4-chloro-o-toluidine	95-69-2		
	4-methyl-m-phenylenediamine	95-80-7		
	o-aminoazotoluene;	97-56-3		
	4-amino-2',3-dimethylazobenzene;			
	4-o-tolylazo-o-toluidine			
	5-nitro-o-toluidine	99-55-8		
	2,2'-dichloro-4,4'-methylenedianiline;	101-14-4		
	4,4'-methylene bis(2-chloroaniline)			
	4,4'-diaminodiphenylmethane;	101-77-9		
	4,4'-methylenedianiline			
	4,4'-oxydianiline	101-80-4		

No.	Chemical Name	Sample CAS No.	Main use of restriction	Maximum acceptable value
	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	615-05-4		
	4,4'-methylenedi-o-toluidine	838-88-0		
44	(Missing number)	-		
45	Diphenyl ether, octabromo derivative	-	Substances, mixtures or articles	1000ppm
46	(a) Nonylphenol (b) Nonylphenol ethoxylates	25154-52-3 —	Cleaner, etc.	1000ppm
46a	Nonylphenol ethoxylates (NPE)		Textile articles after 2021/Feb/3	100ppm
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	0.5ppm
	(g) Benzo(k)fluoranthene (BkFA)	207-08-9		
	(h) Dibenzo(a, h)anthracene (DBAhA)	53-70-3		
51	The following phthalates		Shall not be used as substances or in mixtures, individually or in any combination of the phthalates listed in this entry, in the plasticised material, in toys and childcare articles. - Shall not be placed on the market in toys and childcare articles, individually or in any combination of the phthalates listed in this entry, in the plasticised material (DIBP shall not be placed on the market after 7 July 2020). - Shall not be placed on the market after 7 July 2020 in articles, individually or in any combination of the	1000ppm
	(a) Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7		
	(b) Dibutyl phthalate (DBP)	84-74-2		
	(c) Benzyl butyl phthalate (BBP)	85-68-7		
	(d) Diisobutyl phthalate (DIBP)	84-69-5		
52	The following phthalates		Toys and childcare articles	1000ppm
	(a) Di-isononyl phthalate (DINP)	28553-12-0 68515-48-0		
	(b) Di-isodecyl phthalate (DIDP)	26761-40-0 68515-49-1		
	(c) Di-n-octyl phthalate (DNOP)	117-84-0		
53	(Missing number)	-		
54	2-(2-methoxyethoxy)ethanol (DEGME)	111-77-3	Paints, paint strippers, cleaning agents, self-shining emulsions or floor sealants	1000pm
55	2-(2-butoxyethoxy)ethanol (DEGBE)	112-34-5	Spray paints for supply to the general	30000ppm
56	Methylenediphenyl diisocyanate (MDI) including the following specific isomers	26447-40-5	Mixtures for supply to the general public	1000ppm
	(a) 4,4'-Methylenediphenyl diisocyanate	101-68-8		
	(b) 2,4'-Methylenediphenyl diisocyanate	5873-54-1		
	(c) 2,2'-Methylenediphenyl diisocyanate	2536-05-2		
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	Banning the use

No.	Chemical Name	Sample CAS No.	Main use of restriction	Maximum acceptable value
			Substances or in mixtures that contain more than 16 % by weight of nitrogen in relation to AN	Banning the use except agriculture
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	62-38-4	Articles	mercury 100ppm or maximum Banning the use
	(b) Phenylmercury propionate	103-27-5	Mixtures	
	(c) Phenylmercury 2-ethylhexanoate	13302-00-6	Substances	
	(d) Phenylmercury octanoate	13864-38-5		
	(e) Phenylmercury neodecanoate	26545-49-3	*After 10 October 2017	
63	Lead and its compounds	7439-92-1 —	Jewelry articles Articles or accessible parts thereof may, during normal or reasonably foreseeable conditions of use, be placed in the mouth by children. Articles produced from polymers or copolymers of vinyl chloride ('PVC'), if the concentration of lead is equal to or greater	500ppm 1000ppm
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
64	Inorganic ammonium salts	-	Cellulose Insulation mixtures or cellulose Insulation articles After 14 July 2018	Technical Specification CEN/TS 16516 the emission of ammonia from those mixture or articles results in a concentration of less than 3 ppm by
65	Inorganic ammonium salts		Cellulose insulation mixtures or cellulose insulation articles After 14 July 2018	Technical Specification CEN/TS 16516 the emission of ammonia from those mixtures or articles results in a concentration of
66	Bisphenol A	80-05-7	thermal paper After 2 January 2020	200ppm
67	Bis(pentabromophenyl)ether (decabromodiphenyl ether; decaBDE)	1163-19-5	Substance Another substance, as a constituent Mixture Article, or any part After 2 March 2019	Banning the manufactured or placing on the market 1000ppm
68	Perfluorocarboxylic acids containing 9 to 14 carbon atoms in the chain (C9-C14 PFCAs), their salts and C9-C14 PFCA-related substances	375-95-1 335-76-2 2058-94-8 307-55-1 72629-94-8 376-06-7	Substance, mixtures and article After 25 February 2023	Banning the use or placing on the market Sum of C9-C14 PFCAs, their salts: <25ppb Sum of C9-C14 PFCA-related substances: <260ppb
69	Methanol	67-56-1	Shall not be placed on the market to the general public after 9 May 2018 in windscreen washing or defrosting fluids, in a concentration equal to or greater than 0,6 % by weight.'	COMMISSION REGULATION (EU) 2018/589

No.	Chemical Name	Sample CAS No.	Main use of restriction	Maximum acceptable value
70	Octamethylcyclotetrasiloxane (D4) Decamethylcyclopentasiloxane (D5)	556-67-2 541-02-6	1. Shall not be placed on the market in wash-off cosmetic products in a concentration equal to or greater than 0,1 % by weight of either substance, after 31 January 2020. 2. For the purposes of this entry, "wash-off cosmetic products" means cosmetic products as defined in Article 2(1)(a) of Regulation (EC) No 1223/2009 that, under normal conditions of use, are washed off with water after application	COMMISSION REGULATION (EU) 2018/35
71	1-methyl-2-pyrrolidone (NMP)	872-50-4	1. Shall not be placed on the market as a substance on its own or in mixtures in a concentration equal to or greater than 0,3 % after 9 May 2020 unless manufacturers, importers and downstream users have included in the relevant chemical safety reports and safety data sheets, Derived No-Effect Levels (DNELs) relating to exposure of workers of 14,4 mg/m ³ for exposure by inhalation and 4,8 mg/kg/day for dermal exposure. 2. Shall not be manufactured, or used, as a substance on its own or in mixtures in a concentration equal to or greater than 0,3 % after 9 May 2020 unless manufacturers and downstream users take the appropriate risk management measures and provide the appropriate operational conditions to ensure that exposure of workers is below the DNELs specified in paragraph 1. 3. By way of derogation from paragraphs 1 and 2, the obligations laid down therein shall apply from 9 May 2020	COMMISSION REGULATION (EU) 2018/588
72	The substances listed in column 1 of the Table in Appendix 12		Clothing or related accessories; Textiles other than clothing which, under normal or reasonably foreseeable conditions of use, come into contact with human skin to an extent similar to clothing; Footwear if the clothing, related accessory, textile other than clothing or footwear is for use by consumers and the substance is present in a concentration, measured in homogeneous material, equal to or greater than that specified for that substance in Appendix 12.	Banning the placing on the market
73	3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) silanetriol Any of its mono-, di- or tri-O- (alkyl) derivatives (TDFAs)	-	Mixtures containing organic solvents, in spray products. After 2 January 2021	Banning the placing on the market Concentration equal to or greater than 2 ppb by weight of either substance or any
74	Diisocyanates, O = C=N-R-N = C=O, with R an aliphatic or aromatic hydrocarbon unit of unspecified length		Substances on their own, as a constituent in other substances or in mixtures for industrial and professional use(s) after 24 February 2022 (Except the supplier ensures that the recipient of the substance(s) or mixture(s) is provided with information on the requirements and the following statement is placed on the packaging, in a manner that is visibly distinct from the rest of the label information: "As from 24 August 2023 adequate training is required before industrial or professional use".) after 24 August 2023 (Except the employer or self-employed ensures that industrial or professional user(s) have successfully completed training on the safe use of diisocyanates prior to the use of the substance(s) or mixture(s).)	Banning the placing on the market Concentration of diisocyanates individually and in combination equal to or greater than 0,1 % by weight Banning the use Concentration of diisocyanates individually and in combination equal to or greater than 0,1 % by weight
75	Substances falling within one or more of the following points: (1) substances classified as any of the following in Part 3 of Annex VI to Regulation (EC) No 1272/2008: a) carcinogen category 1A, 1B or 2, or germ cell mutagen category 1A, 1B or 2, but excluding any such substances classified due to effects only following exposure by inhalation b) reproductive toxicant category 1A, 1B or 2 but excluding any such substances classified due to effects only following exposure by inhalation c) skin sensitiser category 1, 1A or 1B d) skin corrosive category 1, 1A, 1B or 1C or skin irritant category 2 e) serious eye damage category 1 or eye irritant category 2 (2) substances listed in Annex II to Regulation (EC) No 1223/2009 of the European Parliament and of the Council (3) substances listed in Annex IV to Regulation (EC) No 1223/2009 for which a condition is specified in at least one		after 4 January 2022	Banning the placing on the market and the use Concentration of mixture equal to or greater than: (1) a) 0.00005wt% b) 0.001wt% c) 0.001% d) e) 0.1wt% for pH regulator 0.01wt% for the others (2) 0.00005wt% (3) (4) see (EU) 2020/2081

No.	Chemical Name	Sample CAS No.	Main use of restriction	Maximum acceptable value
76	N,N-dimethylformamide (DMF)	68-12-2	Substance on its own, constituent of other substances, or in mixtures after 12 December 2023 (Except in the following cases; appropriate description is included in the relevant chemical safety reports and safety data sheets, appropriate risk management measures are taken, and appropriate	Banning the placing on the market and the use 0.3%

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

Appendix 7:

REACH-Annex XIV Authorisation and Candidate (SVHC) List

Note: Refer the URL below for detail. Attn: SVHC will be updated about every 6 months.

SVHC Candidate List → http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp

Annex XIV authorisation List → <http://echa.europa.eu/web/guest/addressing-chemicals-of-concern/authorisation/recommendation-for-inclusion-in-the-authorisation-list/authorisation-list>

rev.2.0/2023.10.1

List	No.	Chemical Name	Abbreviation or Chemical formula	Sample CAS No.	EC No.	Subject to the authorization (Sunset date)
1st	1	Anthracene	C ₁₄ H ₁₀	120-12-7	204-371-1	
	2	4,4'-Diaminodiphenylmethane 4,4'-Methylenedianiline	C ₁₃ H ₁₄ N ₂ MDA	101-77-9	202-974-4	● (14/8)
	3	Dibutylphthalate (DBP)	C ₁₆ H ₂₂ O ₄ DBP	84-74-2	201-557-4	● (15/2)
	4	Cobalt Dichloride	CoCl ₂	7646-79-9	231-589-4	
	5	Diarsenic pentaoxide	As ₂ O ₅	1303-28-2	215-116-9	● (15/5)
	6	Diarsenic Trioxide	As ₂ O ₃	1327-53-3	215-481-4	● (15/5)
	7	Sodium dichromate, dihydrate	Cr ₂ Na ₂ O ₇ ·2H ₂ O Cr ₂ H ₄ Na ₂ O ₉	7789-12-0 10588-01-9	234-190-3	● (17/9)
	8	5-tert-Butyl-2,4,6-trinitro-m-xylene (Musk xylene)	C ₁₂ H ₁₅ N ₃ O ₆ Musk xylene	81-15-2	201-329-4	● (14/8)
	9	Bis(2-ethylhexyl)phthalate Phthalic acid bis(2-ethylhexyl) Diocetyl phthalate	C ₂₄ H ₃₈ O ₄ DEHP DOP	117-81-7	204-211-0	● (15/2)
	10	Hexabromocyclododecane and all major diastereoisomers identified (α-HBCDD, β-HBCDD, γ-HBCDD)	C ₁₂ H ₁₈ Br ₆ HBCDD (α-HBCDD, β-HBCDD, γ-HBCDD)	134237-50-6 134237-51-7 134237-52-8 25637-99-4 3194-55-6	247-148-4 221-695-9	● (15/8)
	11	Alkanes, C10-13, chloro Short Chain Chlorinated Paraffins	SCCPs	85535-84-8	287-476-5	
	12	Bis(tributyltin)oxide (TBTO)	C ₂₄ H ₅₄ OSn ₂ TBTO	56-35-9	200-268-0	
	13	Lead hydrogen arsenate	AsHO ₄ Pb	7784-40-9	232-064-2	
	14	Benzyl butyl phthalate (BBP)	C ₁₉ H ₂₀ O ₄ BBP	85-68-7	201-622-7	● (15/2)
	15	Triethyl arsenate	C ₆ H ₁₅ AsO ₄	15606-95-8	427-700-2	
2nd	16	2,4-Dinitrotoluene	C ₇ H ₆ N ₂ O ₄ 2,4-DNT	121-14-2	204-450-0	● (15/8)
	17	Acrylamide	C ₃ H ₅ NO	79-06-1	201-173-7	
	18	Anthracene oil		90640-80-5	292-602-7	● (20/10)
	19	Anthracene oil, anthracene paste, distn. Lights		91995-17-4	295-278-5	
	20	Anthracene oil, anthracene paste, anthracene		91995-15-2	295-275-9	
	21	Anthracene oil, anthracene-low		90640-82-7	292-604-8	
	22	Anthracene oil, anthracene paste		90640-81-6	292-603-2	
	23	Diisobutyl phthalate	C ₁₆ H ₂₂ O ₄ DIBP	84-69-5	201-553-2	● (15/2)
	24	Lead chromate	CrO ₄ Pb	7758-97-6	231-846-0	● (15/5)
	25	Lead chromate molybdate sulfate red Molybdate Red (C.I. Pigment Red 104)	C.I. Pigment Red 104	12656-85-8	235-759-9	● (15/5)
	26	Lead sulfochromate yellow Chrome yellow (C.I. Pigment Yellow 34)	C.I. Pigment Yellow 34	1344-37-2	215-693-7	● (15/5)
	27	Tris(2-chloroethyl)phosphate	C ₆ H ₁₂ Cl ₃ O ₄ P TCEP	115-96-8	204-118-5	● (15/8)
	28	Coal tar pitch, high temperature		65996-93-2	266-028-2	● (20/10)
3rd	29	Trichloroethylene	C ₂ HCl ₃ TCE	79-01-6	201-167-4	● (16/4)
	30	Boric acid	BH ₃ O ₃	10043-35-3 11113-50-1	233-139-2 234-343-4	
	31	Disodium tetraborate, anhydrous	B ₄ Na ₂ O ₇	12179-04-3 1303-96-4 1330-43-4	215-540-4	
	32	Tetraboron disodium heptaoxide, hydrate	B ₄ Na ₂ O ₇ ·xH ₂ O	12267-73-1	235-541-3	

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3rd	33	Sodium chromate	CrNa ₂ O ₄	7775-11-3	231-889-5	● ('17/9)
	34	Potassium chromate	CrK ₂ O ₄	7789-00-6	232-140-5	● ('17/9)
	35	Ammonium dichromate	Cr ₂ H ₈ N ₂ O ₇	7789-09-5	232-143-1	● ('17/9)
	36	Potassium dichromate	Cr ₂ K ₂ O ₇	7778-50-9	231-906-6	● ('17/9)
4th	37	Cobalt(II) sulphate	CoO ₄ S	10124-43-3	233-334-2	
	38	Cobalt(II) dinitrate	CON ₂ O ₆	10141-05-6	233-402-1	
	39	Cobalt(II) carbonate	CCoO ₃	513-79-1	208-169-4	
	40	Cobalt(II) diacetate	C ₄ H ₆ CoO ₄	71-48-7	200-755-8	
	41	2-Methoxyethanol Ethylene glycol monomethyl ether	C ₃ H ₈ O ₂	109-86-4	203-713-7	
	42	2-Ethoxyethanol Ethylene glycol monoethyl ether	C ₄ H ₁₀ O ₂	110-80-5	203-804-1	
	43	Chromium trioxide Chromic anhydride	CrO ₃	1333-82-0	215-607-8	● ('17/9)
5th	4	Cobalt dichloride	Cl ₂ Co	7646-79-9	231-589-4	
	45	2-Ethoxyethyl acetate Ethylene glycol monoethyl ether acetate	C ₆ H ₁₂ O ₃	111-15-9	203-839-2	
	46	Strontium chromate (C.I.Pigment yellow 32)	CrO ₄ Sr	7789-06-2	232-142-6	● ('19/1)
	47	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters Di(heptyl, nonyl, undecyl) phthalate (DHNUP)	DHNUP	68515-42-4	271-084-6	● ('20/7)
	48	Hydrazine	H ₄ N ₂	302-01-2 7803-57-8	206-114-9	
	49	1-Methyl-2-pyrrolidone	C ₅ H ₉ NO	872-50-4	212-828-1	
	50	1,2,3-Trichloropropane	C ₃ H ₅ Cl ₃	96-18-4	202-486-1	
	51	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich Diisooctyl phthalate (DIHP)	DIHP	71888-89-6	276-158-1	● ('20/7)
6th	52	Lead dipicrate	C ₁₂ H ₄ N ₆ O ₁₄ Pb	6477-64-1	229-335-2	
	53	Lead styphnate 2,4,6-Trinitro-1,3-phenylenedioxylead(II) 2,4,6-Trinitroresorcinol lead salt	C ₆ HN ₃ O ₈ Pb	15245-44-0	239-290-0	
	54	Lead diazide	N ₆ Pb	13424-46-9	236-542-1	
	55	Phenolphthalein	C ₂₀ H ₁₄ O ₄	77-09-8	201-004-7	
	56	2,2'-Dichloro-4,4'-methylenedianiline 4,4'-Methylene bis(2-chlorobenzeneamine)	C ₁₃ H ₁₂ Cl ₂ N ₂ MOCA	101-14-4	202-918-9	● ('17/11)
	57	N,N-Dimethylacetamide	C ₄ H ₉ NO DMAC	127-19-5	204-826-4	
	58	Trilead diarsenate	As ₂ O ₈ Pb ₃	3687-31-8	222-979-5	
	59	Calcium arsenate	As ₂ Ca ₃ O ₈	7778-44-1	231-904-5	
	60	Arsenic acid	AsH ₃ O ₄	7778-39-4	231-901-9	● ('17/8)
	61	Bis(2-methoxyethyl) ether Diethylene glycol dimethyl ether	C ₆ H ₁₄ O ₃	111-96-6	203-924-4	● ('17/8)
	62	1,2-Dichloroethane	C ₂ H ₄ Cl ₂	107-06-2	203-458-1	● ('17/11)
	63	4-(1,1,3,3-Tetramethylbutyl)phenol, (4-tert-Octylphenol)	C ₁₄ H ₂₂ O	140-66-9	205-426-2	
	64	2-Methoxyaniline o-Anisidine	C ₇ H ₉ NO	90-04-0	201-963-1	
	65	Bis(2-methoxyethyl) phthalate	C ₁₄ H ₁₈ O ₆	117-82-8	204-212-6	● ('20/7)
66	Formaldehyde, oligomeric reaction products with aniline (technical MDA)	(C ₆ H ₇ N.CH ₂ O) _x MDA	25214-70-4	500-036-1	● ('17/8)	
67	Zirconia Aluminosilicate Refractory Ceramic Fibres (Zr-RCF) a length less than 6µm (Na ₂ O+K ₂ O+CaO+MgO+BaO) less or equal to 18%	Zr-RCF	—	(650-017-00-8*)		
68	Aluminosilicate Refractory Ceramic Fibres (RCF) a length less than 6µm (Na ₂ O+K ₂ O+CaO+MgO+BaO) less or equal to 18%	RCF	—	(650-017-00-8*)		

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	69	Pentazinc chromate octahydroxide (C. I. Pigment Yellow 36)	$\text{CrH}_8\text{O}_{12}\text{Zn}_5$	49663-84-5	256-418-0	● (19/1)
	70	Potassium hydroxyoctaoxodizincatedichromate Potassium zinc chromate hydroxide	$\text{Cr}_2\text{HKO}_9\text{Zn}_2$	11103-86-9	234-329-8	● (19/1)
	71	Dichromium tris(chromate) Chromic acid,chromium(3+)salt(3:2)	Cr_5O_{12}	24613-89-6	246-356-2	● (19/1)
7th	72	1,2-Bis(2-methoxyethoxy)ethane Triethylene glycol dimethyl ether [TEGDME, triglyme]	$\text{C}_8\text{H}_{18}\text{O}_4$ TEGME (triglyme)	112-49-2	203-977-3	
	73	1,2-Dimethoxyethane Ethylene glycol dimethyl ether [EGDME]	$\text{C}_4\text{H}_{10}\text{O}_2$ EGDME	110-71-4	203-794-9	
	74	Diboron trioxide	B_2O_3	1303-86-2	215-125-8	
	75	Formamide	CH_3NO	75-12-7	200-842-0	
	76	Lead(II) bis(methanesulfonate)	$\text{C}_2\text{H}_6\text{O}_6\text{PbS}_2$	17570-76-2 95860-12-1	401-750-5	
	77	1,3,5-Tris(oxiranylmethyl)-1,3,5-triazine- 2,4,6-(1H,3H,5H)-trione 1,3,5-Trisglycidylisocyanuric acid [TGIC]	$\text{C}_{12}\text{H}_{15}\text{N}_3\text{O}_6$ TGIC	2451-62-9	219-514-3	
	78	1,3,5-Tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5- triazine-2,4,6-(1H,3H,5H)-trione [β-TGIC]	$\text{C}_{12}\text{H}_{15}\text{N}_3\text{O}_6$ β-TGIC	59653-74-6	423-400-0	
	79	4,4'-Bis(dimethylamino)benzophenone [Michler's ketone] Bis[4-(dimethylamino)phenyl] ketone	$\text{C}_{17}\text{H}_{20}\text{N}_2\text{O}$ Michler's ketone	90-94-8	202-027-5	
	80	N,N,N',N'-Tetramethyl-4,4'-methylenedianiline 4,4'-Bis(dimethylamino)diphenylmethane [Michler's base]	$\text{C}_{17}\text{H}_{22}\text{N}_2$ Michler's base	101-61-1	202-959-2	
	81	[4-[4,4'-Bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1- ylidene]dimethylammonium chloride [C.I. Basic Violet 3]	$\text{C}_{25}\text{H}_{30}\text{N}_3\text{Cl}$ C.I. Basic Violet 3	548-62-9	208-953-6	
82	[4-[[4-Anilino-1-naphthyl][4- (dimethylamino)phenyl]methylene]cyclohexa-2,5- dien-1-ylidene] dimethylammonium chloride [C.I. Basic Blue 26]	$\text{C}_{13}\text{H}_{32}\text{N}_3$ C.I. Basic Blue 26	2580-56-5	219-943-6		
83	α,α-Bis[4-(dimethylamino)phenyl]-4 (phenylamino)naphthalene-1-methanol [C.I. Solvent Blue 4]	$\text{C}_{33}\text{H}_{33}\text{N}_3\text{O}$ C.I. Solvent Blue 4	6786-83-0	229-851-8		
84	4,4'-Bis(dimethylamino)-4''-(methylamino)trityl alcohol [with ≥ 0.1% of Michler's ketone (EC No. 202-027- 5) or Michler's base (EC No. 202-959-2)] [C.I. Solvent Violet 8] Bis(4-dimethylaminophenyl)(4- methylaminophenyl)methanol α,α-Bis[4-(dimethylamino)phenyl]-4- (methylamino)benzenemethanol	$\text{C}_{24}\text{H}_{29}\text{N}_3\text{O}$ C.I. Solvent Violet 8	561-41-1	209-218-2	● (25/5)	
85	Bis(pentabromophenyl) ether Decabromodiphenylether	$\text{C}_{12}\text{Br}_{10}\text{O}$ DecaBDE	1163-19-5	214-604-9		
86	Pentacosafuorotridecanoic acid Perfluorotridecanoic acid	$\text{C}_{13}\text{HF}_{25}\text{O}_2$	72629-94-8	276-745-2		
87	Tricosafuorododecanoic acid Perfluorododecanoic acid	$\text{C}_{12}\text{HF}_{23}\text{O}_2$ PFUA	307-55-1	206-203-2		
88	Henicosafuoroundecanoic acid	$\text{C}_{11}\text{HF}_{21}\text{O}_2$	2058-94-8	218-165-4		
89	Heptacosafuorotetradecanoic acid Perfluorotetradecanoic acid	$\text{C}_{14}\text{HF}_{27}\text{O}_2$	376-06-7	206-803-4		
90	4-(1,1,3,3-Tetramethylbutyl)phenol, ethoxylated [covering well-defined substances and UVCB substances, polymers and homologues]	($\text{C}_{14}\text{H}_{22}\text{O}$)他	(140-66-9)他	(205-426-2 他)	● (21/1)	
91	4-Nonylphenol, branched and linear [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB(*)- and well-defined substances which include any of the individual isomers or a combination thereof]	$\text{C}_{15}\text{H}_{24}\text{O}$	104-40-5 (84852-15-3 他)	(284-325-5 他)		

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	92	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))	C ₂ H ₄ N ₄ O ₂	123-77-3	204-650-8	
	93	Cyclohexane-1,2-dicarboxylic anhydride [1] cis-cyclohexane-1,2-dicarboxylic anhydride [2] trans-cyclohexane-1,2-dicarboxylic anhydride [3] [The individual cis- [2] and trans- [3] isomer substances and all possible combinations of the cis- and trans-isomers [1] are covered by this entry] (Hexahydrophthalic anhydride - HHPA)	C ₈ H ₁₀ O ₃ HHPA	13149-00-3 14166-21-3 85-42-7	201-604-9 236-086-3 238-009-9	
	94	Hexahydromethylphthalic anhydride [1], Hexahydro-4-methylphthalic anhydride [2], Hexahydro-1-methylphthalic anhydride [3], Hexahydro-3-methylphthalic anhydride [4] [The individual isomers [2], [3] and [4] (including their cis- and trans- stereo isomeric forms) and all possible combinations of the isomers [1] are covered by this entry]	C ₉ H ₁₂ O ₃	19438-60-9 25550-51-0 48122-14-1 57110-29-9	247-094-1 243-072-0 256-356-4 260-566-1	
	95	Methoxy acetic acid	C ₃ H ₆ O ₃	625-45-6	210-894-6	
	96	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	C ₁₈ H ₂₆ O ₄	84777-06-0	284-032-2	● (20/7)
	97	Diisopentylphthalate (DIPP)	C ₁₈ H ₂₆ O ₄ DIPP	605-50-5	210-088-4	● (20/7)
	98	N-Pentyl-isopentylphthalate	C ₁₈ H ₂₆ O ₄	776297-69-9	-	● (20/7)
	99	1,2-Diethoxyethane Ethylene glycol diethyl ether	C ₆ H ₁₄ O ₂	629-14-1	211-076-1	
	100	N,N-Dimethylformamide; dimethyl formamide	C ₃ H ₇ NO DMF	68-12-2	200-679-5	
	101	Dibutyltin dichloride (DBT)	C ₈ H ₁₈ Cl ₂ Sn DBT	683-18-1	211-670-0	
	102	Acetic acid, lead salt, basic	C ₂ H ₄ O ₃ Pb	51404-69-4	257-175-3	
	103	Basic lead carbonate Trilead bis(carbonate)dihydroxide	C ₂ H ₂ O ₈ Pb ₃ White lead	1319-46-6	215-290-6	
	104	Lead oxide sulfate Basic lead sulfate	O ₅ Pb ₂ S	12036-76-9	234-853-7	
	105	[Phthalato(2-)]dioxotrilead Dibasic lead phthalate	C ₈ H ₄ O ₆ Pb ₃	69011-06-9	273-688-5	
8th	106	Dioxobis(stearato)trilead	C ₃₆ H ₇₀ O ₆ Pb ₃	12578-12-0	235-702-8	
	107	Fatty acids, C16-18, lead salts		91031-62-8	292-966-7	
	108	Lead bis(tetrafluoroborate)	B ₂ F ₈ Pb	13814-96-5	237-486-0	
	109	Lead cyanamidate Lead cyanamide	CH ₂ N ₂ Pb	20837-86-9	244-073-9	
	110	Lead dinitrate	N ₂ O ₆ Pb	10099-74-8	233-245-9	
	111	Lead oxide (Lead monoxide)	OPb	1317-36-8	215-267-0	
	112	Lead tetraoxide (orange lead) Lead(II,IV) oxide	O ₄ Pb ₃	1314-41-6	215-235-6	
	113	Lead titanium trioxide	O ₃ PbTi	12060-00-3	235-038-9	
	114	Lead Titanium Zirconium Oxide	O ₂ PbTiZr PZT	12626-81-2	235-727-4	
	115	Pentalead tetraoxide sulphate	O ₈ Pb ₅ S	12065-90-6	235-067-7	
	116	Pyrochlore, antimony lead yellow (C.I. Pigment yellow 41)	C.I. Pigment Yellow 41	8012-00-8	232-382-1	
	117	Silicic acid, barium salt, lead-doped		68784-75-8	272-271-5	
	118	Silicic acid, lead salt		11120-22-2	234-363-3	
	119	Sulfurous acid, lead salt, dibasic	H ₂ O ₅ Pb ₂ S	62229-08-7	263-467-1	
	120	Tetraethyllead	C ₈ H ₂₀ Pb TEL	78-00-2	201-075-4	● (25/5)
	121	Tetralead trioxide sulphate	O ₇ Pb ₄ S	12202-17-4	235-380-9	
	122	Trilead dioxide phosphonate	HO ₅ PPb ₃	12141-20-7	235-252-2	
	123	Furan	C ₄ H ₄ O	110-00-9	203-727-3	
	124	Propylene oxide; 1,2-Epoxypropane; Methyloxirane	C ₃ H ₆ O	75-56-9	200-879-2	
	125	Diethyl sulphate	C ₄ H ₁₀ O ₄ S DES	64-67-5	200-589-6	

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	126	Dimethyl sulphate	C ₂ H ₆ O ₄ S	77-78-1	201-058-1	
	127	3-Ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	C ₁₁ H ₂₃ NO	143860-04-2	421-150-7	
	128	Dinoseb 6-sec-Butyl-2,4-dinitrophenol	C ₁₀ H ₁₂ N ₂ O ₅ DNSBP	88-85-7	201-861-7	
	129	4,4'-Methylenedi-o-toluidine 3,3'-Dimethyl-4,4'-diaminodiphenylmethane	C ₁₅ H ₁₈ N ₂ MBOT	838-88-0	212-658-8	
	130	4,4'-Oxydianiline and its salts 4,4'-Diaminodiphenyl ether	C ₁₂ H ₁₂ N ₂ O DADPE	101-80-4	202-977-0	
	131	4-Aminoazobenzene; 4-Phenylazoaniline	C ₁₂ H ₁₁ N ₃	60-09-3	200-453-6	
	132	4-Methyl-m-phenylenediamine 2,4-Toluenediamine	C ₇ H ₁₀ N ₂	95-80-7	202-453-1	
	133	6-Methoxy-m-toluidine 2-Methoxy-5-methylaniline p-Cresidine	C ₈ H ₁₁ NO	120-71-8	204-419-1	
	134	4-Aminobiphenyl Xenylamine Biphenyl-4-ylamine	C ₁₂ H ₁₁ N 4-ABP	92-67-1	202-177-1	
	135	o-Aminoazotoluene 4-Amino-2',3-dimethylazobenzene 4-o-Tolylazo-o-toluidine	C ₁₄ H ₁₅ N ₃	97-56-3	202-591-2	
	136	o-Toluidine; 2-Aminotoluene	C ₇ H ₉ N	95-53-4	202-429-0	
	137	N-Methylacetamide	C ₃ H ₇ NO	79-16-3	201-182-6	
	138	1-Bromopropane; n-Propyl bromide	C ₃ H ₇ Br	106-94-5	203-445-0	● (20/7)
9th	139	Cadmium	Cd	7440-43-9	231-152-8	
	140	Cadmium oxide	CdO	1306-19-0	215-146-2	
	141	Dipentyl phthalate (DPP)	C ₁₈ H ₂₆ O ₄	131-18-0	205-017-9	● (20/7)
	142	4-Nonylphenol, branched and linear, ethoxylated [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, ethoxylated covering UVCB- and well-defined substances, polymers and homologues, which include any of the individual isomers and/or combinations thereof]	(C ₂ H ₄ O) _n C ₁₅ H ₂₄ O, with n≥1	-	-	● (21/1)
	143	Ammonium pentadecafluorooctanoate (APFO)	C ₈ H ₄ F ₁₅ NO ₂	3825-26-1	223-320-4	
	144	Pentadecafluorooctanoic acid (PFOA)	C ₈ HF ₁₅ O ₂	335-67-1	206-397-9	
10th	145	Cadmium sulphide	CdS	1306-23-6	215-147-8	
	146	Dihexyl phthalate (DnHP)	C ₂₀ H ₃₀ O ₄	84-75-3	201-559-5	● (23/2)
	147	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	C ₃₂ H ₂₄ N ₆ O ₆ S ₂ .2 Na	573-58-0	209-358-4	
	148	Disodium 4-amino-3-[[4'-[(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo] -5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate (C.I. Direct Black 38)	C ₃₄ H ₂₅ N ₉ Na ₂ O ₇ S ₂	1937-37-7	217-710-3	
	149	Imidazolidine-2-thione; 2-imidazoline-2-thiol	C ₃ H ₆ N ₂ S	96-45-7	202-506-9	
	150	Lead di(acetate)	C ₄ H ₆ O ₄ Pb	301-04-2	206-104-4	
	151	Trixylyl phosphate	C ₂₄ H ₂₇ O ₄ P	25155-23-1	246-677-8	● (23/5)
11th	152	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear (DIHP)	C ₂₀ H ₃₀ O ₄	68515-50-4	271-093-5	
	153	Cadmium chloride	CdCl ₂	10108-64-2	233-296-7	● (23/2)
	154	Sodium perborate Perboric acid, sodium salt	BH ₃ O ₄ .Na etc.	15120-21-5 11138-47-9	239-172-9 234-390-0	● (23/5)
	155	Sodium peroxometaborate	BO ₃ .Na	7632-04-4	231-556-4	● (23/5)
	156	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	C ₂₂ H ₂₉ N ₃ O	25973-55-1	247-384-8	● (23/11)
	157	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	C ₂₀ H ₂₅ N ₃ O	3846-71-7	223-346-6	● (23/11)
	158	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	C ₃₆ H ₇₂ O ₄ S ₂ Sn	15571-58-1	239-622-4	● (25/5)
	159	Cadmium fluoride	CdF ₂	7790-79-6	232-222-0	

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12th	160	Cadmium sulphate	Cd.H ₂ O ₄ S	10124-36-4 31119-53-6	233-331-6	
	161	Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE and MOTE) (*As the identification and naming of substances by ECHA, "Reaction mass" means the multi-	C ₃₆ H ₇₂ O ₄ S ₂ Sn C ₃₈ H ₇₄ O ₆ S ₃ Sn	-	-	● (25/5)
13th	162	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate (EC No. 201-559-5)	-	68515-51-5 68648-93-1	271-094-0 272-013-1	● (23/2)
	163	5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2] [covering any of the individual isomers of [1] and [2] or any combination thereof]	C ₁₇ H ₃₀ O ₂	-	-	● (23/8)
14th	164	1,3-propanesultone	C ₃ H ₆ O ₃ S	1120-71-4	214-317-9	
	165	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	C ₂₀ H ₂₄ ClN ₃ O	3864-99-1	223-383-8	● (23/11)
	166	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	C ₂₀ H ₂₅ N ₃ O	36437-37-3	253-037-1	● (23/11)
	167	Nitrobenzene	C ₆ H ₅ NO ₂	98-95-3	202-716-0	
	168	Perfluorononane-1-oic-acid and its sodium and ammonium salts	C ₉ HF ₁₇ O ₂	375-95-1 21049-39-8 4149-60-4	206-801-3	
15th	169	Benzo[def]chrysene (Benzo[a]pyrene)	C ₂₀ H ₁₂	50-32-8	200-028-5	
16th	170	4,4'-isopropylidenediphenol	C ₁₅ H ₁₆ O ₂	80-05-7	201-245-8	
	171	4-heptylphenol, branched and linear [substances with a linear and/or branched alkyl chain with a carbon number of 7 covalently bound predominantly in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]	-	-	-	
	172	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts	C ₁₀ H ₄ F ₁₉ NO ₂ C ₁₀ HF ₁₉ NO ₂ C ₁₀ F ₁₉ NaO ₂	3108-42-7 335-76-2 3830-45-3	221-470-5 206-400-3 —	
	173	p-(1,1-dimethylpropyl)phenol	C ₁₁ H ₁₆ O	80-46-6	201-280-9	
17th	174	Perfluorohexane-1-sulphonic acid and its salts	C ₆ HF ₁₃ O ₃ S	355-46-4	206-587-1	
18th	175	1,6,7,8,9,14,15,16,17,17,18,18Dodecachloropentacyclo[12.2.1.1.6,9.0.2,13.0.5,10]octadeca-7,15-diene ("Dechlorane Plus"™) [covering any of its individual anti- and syn-isomers or any combination thereof]	-	-	-	
	176	Benzo[a]anthracene	C ₁₈ H ₁₂	56-55-3 1718-53-2	200-280-6	
	177	Cadmium nitrate	Cd(NO ₃) ₂	10325-94-7 10022-68-1	233-710-6	
	178	Cadmium carbonate	CCdO ₃	513-78-0	208-168-9	
	179	Cadmium hydroxide (Cd(OH) ₂)	Cd(OH) ₂	21041-95-2	244-168-5	
	180	Chrysene	C ₃ H ₈ O ₃	218-01-9 1719-03-5	205-923-4	
19th	181	Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP) [with ≥0.1% w/w 4-heptylphenol, branched and linear]	-	-	-	● (25/5)
	182	Octamethylcyclotetrasiloxane (D4)	C ₈ H ₂₄ O ₄ Si ₄	556-67-2	209-136-7	
	183	Decamethylcyclopentasiloxane (D5)	C ₁₀ H ₃₀ O ₅ Si ₅	541-02-6	208-764-9	
	184	Dodecamethylcyclohexasiloxane (D6)	C ₁₂ H ₃₆ O ₆ Si ₆	540-97-6	208-762-8	
	185	Lead	Pb	7439-92-1	231-100-4	
	186	Disodium octaborate	B ₈ H ₈ Na ₂ O ₁₇	12008-41-2	234-541-0	
	187	Benzo[ghi]perylene	C ₂₂ H ₁₂	191-24-2	205-883-8	
	188	Terphenyl, hydrogenated	C ₁₈ H ₂₂	61788-32-7	262-967-7	
	189	Ethylenediamine (EDA)	C ₂ H ₈ N ₂	107-15-3	203-468-6	
	190	Benzene-1,2,4-tricarboxylic acid 1,2 anhydride (Trimellitic Anhydride (TMA))	C ₉ H ₄ O ₅	552-30-7	209-008-0	

List	No.	Chemical Name	Abbreviation or Chemical formula	Sample CAS No.	EC No.	Subject to the authorization (Sunset date)
	191	dicyclohexyl phthalates (DCHP)	C ₂₀ H ₂₆ O ₄	84-61-7	201-545-9	
20th	192	1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1]heptan-2-one	C ₁₇ H ₂₀ O	15087-24-8	239-139-9	
	193	2,2-bis(4'-hydroxyphenyl)-4-methylpentane	C ₁₈ H ₂₂ O ₂	6807-17-6	401-720-1	
	194	Benzo[k]fluoranthene	C ₂₀ H ₁₂	207-08-9	205-916-6	
	195	Fluoranthene	C ₁₆ H ₁₀	206-44-0 93951-69-0	205-912-4	
	196	Phenanthrene	C ₁₄ H ₁₀	85-01-8	201-581-5	
	197	Pyrene	C ₁₆ H ₁₀	129-00-0 1718-52-1	204-927-3	
21th	198	Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with ≥ 0.1% w/w of 4-nonylphenol, branched and linear (4-NP)	-	-	-	
	199	4-tert-butylphenol	C ₁₀ H ₁₄ O	98-54-4	202-679-0	
	200	2-methoxyethyl acetate	C ₅ H ₁₀ O ₃	110-49-6	203-772-9	
	201	4-tert-butylphenol	-	-	-	
22nd	202	Diisohexyl phthalate	C ₂₃ H ₃₀ N ₂ O ₂	71850-09-4	276-090-2	
	203	2-benzyl-2-dimethylamino-4'-	C ₁₅ H ₂₁ NO ₂ S	119313-12-1	404-360-3	
	204	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	C ₂₀ H ₃₀ O ₄	71868-10-5	400-600-6	
	205	Perfluorobutane sulfonic acid (PFBS) and its salts	-	-	-	
23rd	206	1-vinylimidazole	C ₅ H ₆ N ₂	1072-63-5	214-012-0	
	207	2-methylimidazole	C ₄ H ₆ N ₂	693-98-1	211-765-7	
	208	Dibutylbis(pentane-2,4-dionato-O,O')tin	C ₁₈ H ₃₂ O ₄ Sn	22673-19-4	245-152-0	
	209	Butyl 4-hydroxybenzoate (Butylparaben)	C ₁₁ H ₁₄ O ₃	94-26-8	202-318-7	
24th	210	Bis(2-(2-methoxyethoxy)ethyl)ether	C ₁₀ H ₂₂ O ₅	143-24-8	205-594-7	
	211	Diocetyl tin dilaurate, stannane, dioctyl-, bis(coco acyloxy) derivs., and any other stannane, dioctyl-, bis(fatty acyloxy) derivs. wherein C12 is the predominant carbon number of the fatty acyloxy	-	-	-	
25th	212	1,4-dioxane	C ₄ H ₈ O ₂	123-91-1	204-661-8	
	213	2,2-bis(bromomethyl)propane-1,3-diol (BMP); 2,2-dimethylpropan-1-ol, tribromo derivative/3-bromo-2,2-bis(bromomethyl)-1-propanol (TBNPA); 2,3-dibromo-1-propanol (2,3-DBPA)	-	-	-	
	214	2-(4-tert-butylbenzyl)propionaldehyde and its individual stereoisomers	-	-	-	
	215	4,4'-(1-methylpropylidene)bisphenol	C ₁₆ H ₁₈ O ₂	77-40-7	201-025-1	
	216	glutaral	C ₅ H ₈ O ₂	111-30-8	203-856-5	
	217	Medium-chain chlorinated paraffins (MCCP) [UVCB substances consisting of more than or equal to 80% linear chloroalkanes with carbon chain lengths within the range from C14 to C17]	-	-	-	
	218	orthoboric acid, sodium salt	-	-	-	
	219	Phenol, alkylation products (mainly in para position) with C12-rich branched alkyl chains from oligomerisation, covering any individual isomers and/or combinations thereof (PDDP)	-	-	-	
26th	220	6,6'-di-tert-butyl-2,2'-methylene-di-p-cresol (DBMC)	-	119-47-1	204-327-1	
	221	tris(2-methoxyethoxy)vinylsilane	-	1067-53-4	213-934-0	
	222	(±)-1,7,7-trimethyl-3-[(4-methylphenyl)methylene]bicyclo[2.2.1]heptan-2-one covering any of the individual isomers and/or combinations thereof (4-MBC)	-	-	-	
	223	S-(tricyclo[5.2.1.0' ^{2,6}]deca-3-en-8(or 9)-yl) O-(isopropyl or isobutyl or 2-ethylhexyl) O-(isopropyl or isobutyl or 2-ethylhexyl) phosphorodithioate	-	255881-94-8	401-850-9	
27th	224	N-(hydroxymethyl)acrylamide	-	924-42-5	213-103-2	
28th	225	1,1'-[ethane-1,2-diylbis(oxy)]bis[2,4,6-tribromobenzene]	C ₄ H ₈ O ₂	37853-59-1	253-692-3	
	226	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol [Tetrabromobisphenol A]	C ₁₅ H ₁₂ Br ₄ O ₂	79-94-7	201-236-9	
	227	4,4'-sulphonyldiphenol [bisphenol S]	C ₁₂ H ₁₀ O ₄ S	80-09-1	201-250-5	
	228	Barium diboron tetraoxide	B ₂ BaO ₄	13701-59-2	237-222-4	
	229	Bis(2-ethylhexyl) tetrabromophthalate covering any of the individual isomers and/or combinations thereof	TBPH	-	-	
	230	Isobutyl 4-hydroxybenzoate	-	4247-02-3	224-208-8	
	231	Melamine	C ₃ H ₆ N ₆	108-78-1	203-615-4	
	232	Perfluoroheptanoic acid and its salts	PFHpA	-	-	
9th	233	reaction mass of 2,2,3,3,5,5,6,6-octafluoro-4-(1,1,1,2,3,3,3-heptafluoropropan-2-yl)morpholine and 2,2,3,3,5,5,6,6-octafluoro-4-(heptafluoropropyl)morpholine	-	-	473-390-7	
	234	Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	C ₂₂ H ₂₁ O ₂ P	75980-60-8	278-355-8	

List	No.	Chemical Name	Abbreviation or Chemical formula	Sample CAS No.	EC No.	Subject to the authorization (Sunset date)
235	235	Bis(4-chlorophenyl) sulphone	C12H8Cl2O2S	80-07-9	201-247-9	

* The date in the () is the sunset date.

The deadline of application for authorisation is 18 months before

*UVCB

Substances of Unknown or Variable composition, Complex reaction products or Biological materials

Appendix 8. 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'-diaminodiphenylmethane	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 9. List of Hexabromocyclododecane (HBCD or HBCDD)

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No.	物質名	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 10. List of Perfluorooctanoic acid (PFOA)
and its salts and its esters**

rev..0 2021.11.01

No.	物質名	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