

Green Procurement Guidelines

Annex

Ver.6.1

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| 0 | 2013.4.1 | New publication |
| 0.1 | 2013.7.9 | Change of Appendix 7 SVHC(9th addition), Authorisation(3th addition) |
| 0.2 | 2014.1.22 | Change of Appendix 6 : Addition of conditions of entry.50(PAHs) Change of Appendix 7 : SVHC(10th addition) |
| 0.3 | 2014.7.11 | Change of Appendix 3-1 : Addition of No.1(g) Change of Appendix 3-2 : - Change of No.12, - Addition of No.21-No.34 Change of Appendix 6 : - Addition of conditions of entry.47 (Chromium VI compounds) - Addition of entry.64 (1,4-dichlorobenzenes) Change of Appendix 7 : SVHC(11th addition) |
| 0.4 | 2015.2.2 | Change of Appendix 2 : Addition of subject substance in No.8 Change of Appendix 3-1 : Addition of No.4(g) and No.41 Change of Appendix 3-2 : Addition of No.35-No.40 Change of Appendix 7 : Authorisation(4th addition), SVHC(12th addition) |
| 0.5 | 2015.7.22 | Change of Appendix 3-2 : Addition of No.41 and 42 Change of Appendix 7 : SVHC(13th addition) |
| 1.0 | 2015.10.01 | Change of Appendix 1 : Addition of No.8 Change of Appendix 2 : Addition of No.1-No.4 and No.21-No.23 addition/revision of subject substance in No.12 Renumbering each substance group Addition of Appendix 9 and Appendix 10 |
| 1.1 | 2016.1.15 | Change of Appendix 7 : SVHC(14th addition) |
| 1.2 | 2016.9.12 | Change of Appendix 1 : Change of number of chlorine of Polychlorinated naphthalenes (with 3 or more chlorines → with 2 or more chlorines) Change of Appendix 3-1 : Add information of exemption expired on 21 July 2016 Change of Appendix 3-2 : Addition of No.31a and No.43. Change of No.26 Delete of No.31 Change of Appendix 6 : Addition of No.65 Change of Appendix 7 : SVHC(15th addition) |
| 1.3 | 2017.3.31 | Change of Appendix 7 : SVHC(16th addition) |

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| 1.4 | 2017.9.21 | Change of Appendix 3-1 : Change of 9(b),9(b)(1),13(a),13(b),13(b)-(I)(II)(III),39 Change of Appendix 3-2 : Change of No.41 Change of Appendix 6 : Addition of No.46a, No.66, No.67,No.3,No.31(e)(g)(h)(i),No.6,No.2,No.46,No.63 Change of Appendix 7 : SVHC(17th addition) |
| 1.5 | 2018.3.26 | Change of Appendix 2 : Addition of Reference laws and regulations or Industrial standards (No.22) Addition of "chemSHERPA"(No.27) Change of Appendix 3-1 :Addition of 6(a)- I ,6(b)- I ,6(b)- II ,8(b)- I ,15(a),18(b)- I ,21(a),21(b),21(c),39(a) Change of scope and dates of applicability : 6(a)、6(b)、6(c)、7(a)、7(c)- I 、7(c)- II 、7(c)-IV、8(b)、15、18(b)、21、24、29、32、34、37 Change of Appendix 4 : Corrected errors in general Change of Appendix 6 : Addition of No.68 Change of Appendix 7 : Addition of No.174-181(18th addition) Addition of Subject to authorization (No.18, 28, 47, 51, 65, 90, 96, 97, 98, 138, 141, 142) |
| 1.6 | 2018.5.25 | Change of Appendix 6 : Addition of No.69-71 |
| 1.7 | 2018.9.25 | Change of Appendix 3-1 : Change of 6(a),6(a)- I ,6(b),6(b)- I ,6(b)- II ,18(b),18(b)- I Change of Appendix 7 : Addition of No.182-191(19th addition) |
| 2.0 | 2019.1.25 | Change of Appendix 1 : Addition of No.19-22, Change of number of chlorine of Polychlorinated naphthalenes (with 2 or more chlorines --> with 1 or more chlorines) Change of Appendix 2 : Delete of DEHP,BBP,DBP,DIBP,BNST Change of Appendix 3-1 : Delete of No. 8(b)-I,15(a),21(a),21(b),21(c) Change of Appendix 3-2 : Chage of No. 1(g)&37&41 Change of Appendix 6 : Addition of No.72 |
| 2.1 | 2019.3.18 | Change of Appendix 3-1 : No. 7(c)-II,7(c)-IV,8(b),8(b)-I,15,15(a),18(b),18(b)-I,21,21(a),21(b),21(c),29,32,37,42 Change of Appendix 6 : Chage of No.51 Change of Appendix 7 : Addition of No.192-197(20th addition) |
| 2.2 | 2019.10.7 | Change of Appendix 7 : Addition of No.198-201(21st addition) |
| 3.0 | 2020.1.27 | Change of Appendix 1&2 (PFOA) Change of Appendix 6 : Addition of No.73 |
| 3.1 | 2020.3.9 | Change of Appendix 7 : Addition of No.202-205 (22nd addition), Addition of Subject to authorization (No.146, 151, 152, 154-157, 162, 163, 165, 166) |
| 3.2 | 2020.4.28 | Change of Appendix 3-1 : No. 9, 43, 44 |

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| 3.3 | 2020.11.1 | Change of Appendix 1: No.23 Change of Appendix 3-1 : No.1(a)-(g), 2(a)(1)-(5), 2(b)(3)(4), 3(a)-(c), 4(a), 4(b)-I-III, 4(e)(f), 5(b), 6(a), 6(a)-I, 6(b)-I-II, 6(c), 7(a), 7(c)-I-II, 8(b), 8(b)-I, 9, 9(a)-I-II, 13(a)(b), 13(b)-I-III, 15, 15(a), 17, 18(b), 18(b)-I, 24, 25, 29, 30, 31, 32, 33, 34, 38, 39(a), 41 Change of Appendix 3-2 : No. 27, 37, 41, 42, 44 Change of Appendix 6 : No.73, 74 Change of Appendix 7 : Addition of No.206-209 (23rd addition) |
| 4.0 | 2021.4.1 | Change of Appendix 1: No.6 Change of Appendix 2: Addition of No.17-20 Change of Appendix 3-1: No.9(a)-I Change of Appendix 3-2: No.1d, 4, 6, 7, 8, 9, 10, 12, 16, 18, 19, 20, 26, 29, 31a, 36, 39, 40 Change of Appendix 6: No. 22, 46, 67, 68, 75 Change of Appendix 7: Addition of No.210, 211 (24th addition) |
| 4.1 | 2021.9.20 | Change of Appendix 3-1: No.4(e), 5(a), 5(b), 7(b), 7(c)-IV, 9, 9(a)-II, 9(b), 17, 18(b)-I, 21, 21(a), 21(b), 21(c), 25, 29, 30, 31, 33, 37, 38 Change of Appendix 3-2: No. 18, 20, 22, 23, 25, 34 Change of Appendix 7: Addition of No.212-219 (25th addition) |
| 4.2 | 2022.3.7 | Change of Appendix 6: No.68, 76 Change of Appendix 7: Addition of No.220-223 (26th addition) |
| 5.0 | 2022.9.5 | Change of Appendix 1: Addition of No.24, 25 Change of Appendix 3-1: No.1(a)-(g), 2(a)(b), 3(a)(b)(c), 4(a)(b)(c)(e)(f), addition of No.45 Change of Appendix 3-2: Addition of No. 45, 46, 47 Change of Appendix 7: Addition of No.224 (27th addition) |
| 5.1 | 2023.3.6 | Change of Appendix 3-1: No.1(a)-(e), 2(a)(1)(4)(5), 4(a), 4(b)I-III Change of Appendix 3-2: No. 41 Change of Appendix 7: Addition of No.225-233 (28th addition) |
| 6.0 | 2023.7.24 | Change of Appendix 1: No.6 and Addition of No.26, 27 Change of Appendix 2: Addition of No.21, 22 Change of Appendix 3-1: No.5(a)(b), 6(c), 7(b)(c)-II, IV, 8(b), 9, 9(b), 15, 17, 18(b), 21, 25, 29, 30, 31, 32, 33, 34, 37, 38, 41 Change of Appendix 6: No. 63 Change of Appendix 7: Addition of No.234, 235 (29th addition) |

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| 6.1 | 2024.11.15 | <p>Change of Appendix 1: No.8, 11</p> <p>Change of Appendix 3-1: No.1(g), 2(a)(2)(3), 2(b)(3)(4)-I, 4(f)-I, 5(a)(b), 6(a)(b)(c), 7(a)(b)(c)-I, II, IV, 9, 13(a)(b), 17, 18(b), 21, 24, 25, 29, 30-33, 37, 38, 39(a), 41-44, addition of No. 9(a)-III, 39(b), 46</p> <p>Change of Appendix 3-2: Full revision</p> <p>Change of Appendix 6: No.70, 77-79</p> <p>Change of Appendix 7: Addition of No.236-242 (30th, 31st addition)</p> |

Annex 1. Level 1(Prohibited substance group)

Ver.6.1/2024.5.xx

| NO | Substance group (English) | Scope of regulation concerning use and handling | Control value of Hitachi group * | Main 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 | | |
| | 7-2 Tributyltin (TBT) compounds | Articles | | EU REACH Regulation/Restriction No.20 JPN Chemical Examination Law /Type 2 specified chemical substances | | |
| | 7-3 Triphenyltin (TPT) compounds | | | | | |
| | 7-4 Other tri-substituted organostannic compounds | | | EU REACH Regulation/Restriction No.20 | | |
| Polychlorinated biphenyls (PCBs) | | | | | | |
| 8 | - | Common | Intentional use prohibited and 50 ppm or less | 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 EU POPs | Apply from 1st Oct, 2016 | |
| Alkanes, C10 -C13 , chloro (short-chain chlorinated paraffins) (SCCPs) | | | | | | |
| 11 | - | Common | Intentional use prohibited and less than 1500 ppm | POPs | | |

| NO | | Substance group (English) | Scope of regulation concerning use and handling | Control value of Hitachi group * | Main reference laws and regulations | remarks | |
|--|------|---|--|--|--|---|----------------------------|
| 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 (UV-320) | Common | Intentional use prohibited | JPN Chemical Examination Law/Type 1 Specified Chemical Substances | | |
| 16 | - | Hexachlorobenzene | Common | Intentional use prohibited and 10ppm or less | POPs JPN Chemical Examination Law/Type 1 Specified Chemical Substances EU Regulation/Restriction Annex of CLP Regulation | | |
| 17 | - | Dimethylfumarate (DMF) | Articles | No more than 0.1ppm | EU REACH Regulation/Restriction No.61 | | |
| Hexabromocyclododecane (HBCD or HBCDD, See Appendix 9 for the applicable substances) | | | | | | | Apply from 1st April, 2016 |
| 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) | | |
| 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 (See Appendix 6 for the applicable substances) | Translation to Level 1 at following date: Products or parts correspond to EU RoHS/Cat8&9: 18th January, 2021 | |
| 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 (See Appendix 6 for the applicable substances) | Products or parts other than above: 14th January, 2019 | |
| 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 (See Appendix 6 for the applicable substances) | | |
| 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) EU REACH Regulation/Restriction No.51 (See Appendix 6 for the applicable substances) | | |
| 23 | - | Perfluorooctanoic acid (PFOA) and its salts and PFOA-related compounds | Common | Intentional use prohibited and 0.025ppm or less of PFOA including its salts or 1ppm 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 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 PFCA-related 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 PFHxS-related compounds | Common | Intentional use prohibited | POPs EU REACH Regulation/SVHC Domestic law in Switzerland | | |

| NO | | Substance group (English) | Scope of regulation concerning use and handling | Control value of Hitachi group * | Main reference laws and regulations | remarks |
|----|---|--|---|----------------------------------|-------------------------------------|---------|
| 26 | - | Dechlorane Plus (DP) | Common | Intentional use prohibited | POPs EU REACH Regulation/SVHC | |
| 27 | - | 2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328) | Common | Intentional use prohibited | POPs EU REACH Regulation/SVHC | |

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

Annex 2. Level 2 (Controlled substance group)

Ver.6.0/2023.7.24

| No | Substance group (English) | Main 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 pentaoxide 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.19 - No.22 of Annex1 List | | |
| 8-1 | Bis(2-methoxyethyl) phthalate | | |
| 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) | EU REACH Regulation/SVHC (See Appendix 7 for the applicable substances) | |
| 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) | | |
| 8-10 | Di-"isodecyl" phthalate (DIDP) | EU REACH Regulation/Restriction (See Appendix 6 for the applicable substances) | |
| 8-11 | Di-n-octyl phthalate (DNOP) | | |
| 8-12 | Other phthalate 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 | |

| No | | Substance group (English) | Main reference laws and regulations or industrial standards | Remarks | | |
|------|---|--|--|---------|---------------------|---|
| 11 | Di-substituted organostannic compounds | | | | | |
| | 11-1 | Dibutyltin compounds (DBT) | EU REACH Regulation/Restriction (See Appendix 6 for the applicable substances) | | | |
| | 11-2 | Dioctyltin compounds (DOT) | | | | |
| | 11-3 | Other di-substituted organostannic compounds | - | | | |
| 12 | Cobalt and its compounds (which include alloys) | | | | | |
| | 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 Substances) | | | |
| | 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) | | | |
| 16 | Fluorine based greenhouse gasses (HFC, PFC, SF6) | | | | | |
| | | - | 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) | | REACH Regulation | |
| | 22 | - | Decabromodiphenylethane (DBDPE) | | Canada CTSR | |
| | 23 | Polycyclic-aromatic hydrocarbons (PAHs) corresponding to REACH/restriction substance | | | | |
| | | | See Appendix 6 for the applicable substances | | | EU REACH Regulation/Restriction (See Appendix 6 for the applicable substances) |
| 24 | REACH/Restriction substances | | | | | |
| | | See Appendix 6 for the applicable substances | EU REACH Regulation/Restriction (See Appendix 6 for the applicable substances) | | | |

| No | Substance group (English) | Main reference laws and regulations or industrial standards | Remarks |
|----|--|---|---------|
| 25 | REACH/Authorization substances | | |
| | See Appendix 7 for the applicable substances | EU REACH Regulation/Authorization (See Appendix 7 for the applicable substances) | |
| 26 | REACH/SVHC | | |
| | See Appendix 7 for the applicable substances | EU REACH Regulation/SVHC (See Appendix 7 for the applicable substances) | |
| 27 | JAMP declarable substances (Including chemSHERPA) | | |
| | - | 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 substance, and to determine whether the regulation should be applied or not.

Appendix 3-1. The exemptions of RoHS II Annex3

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

Ver.6.1/2024.11.15

| No | Subs- tance | 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 / burner | Expired on 31 December 2011 |
| | | | 3.5 mg / burner | Expired on 31 December 2012 |
| | | | 2.5 mg / burner | Expired on 24 February 2023 |
| 1(b) | | For general lighting purposes ≥ 30 W and < 50 W: 5 mg | 5 mg / burner | Expired on 31 December 2011 |
| | | | 3.5 mg / burner | Expired on 24 February 2023 |
| 1(c) | | For general lighting purposes ≥ 50 W and < 150 W: 5 mg | 5 mg / burner | Expired on 24 February 2023 |
| 1(d) | | For general lighting purposes ≥ 150 W: 15 mg | 15 mg / burner | Expired 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 |
| | | | 5 mg / burner | Expired on 24 February 2023 |
| 1(f)-I | | For lamps designed to emit mainly light in the ultraviolet spectrum | 5 mg / burner | Expires on 24 February 2027 |
| 1(f)-II | | For special purposes | 5 mg / burner | 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 / burner | Expired on 24 August 2023 |
| 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 / lamp | Expired on 31 December 2011 |
| | | | 4mg / lamp | Expired 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 / lamp | Expired on 31 December 2011 |
| | | | 4mg / lamp | Expired on 24 August 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 / lamp | Expired on 31 December 2011 |
| | | | 3.5mg / lamp | Expired on 24 August 2023 |
| 2(a)(4) | | Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 5 mg | 5.0mg / lamp | Expired on 31 December 2012 |
| | | | 3.5mg / lamp | Expired on 24 February 2023 |
| 2(a)(5) | | Tri-band phosphor with long lifetime (≥ 25000h): 8 mg | 8.0mg / lamp | Expired on 31 December 2011 |
| | | | 5.0mg / lamp | Expired 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 / lamp | Expired on 13 April 2012 |
| 2(b)(2) | | Non-linear halophosphate lamps (all diameters): 15 mg | 15 mg / lamp | Expired 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 31 December 2011 |
| | | | 15 mg / lamp | Expired on 24 February 2023 |
| | | | 10 mg / lamp | Expired on 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 / lamp | Remain in force until the decision on extension application continuously |
| 2(b)(4)-II | | Lamps emitting mainly light in the ultraviolet spectrum | 15 mg / lamp | Expires on 24 February 2027 |
| 2(b)(4)-III | | Emergency lamps | 15 mg / lamp | Expires on 24 February 2027 |
| 3 | | Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp): | | |
| 3(a) | | Short length (≤500 mm) | No limitation of use | Expired on 31December 2011 |
| | | | 3.5mg / lamp | Expires on 24 February 2025 |
| 3(b) | | Medium length (>500mm and ≤ 1500 mm) | No limitation of use | Expired on 31December 2011 |
| | | | 5mg / lamp | Expires on 24 February 2025 |
| 3(c) | | Long length (> 1500 mm) | No limitation of use | Expired on 31December 2011 |
| | | | 13mg / lamp | Expires on 24 February 2025 |

| No | Substance | Exemption | | Scope and dates of applicability |
|----------|-----------|--|----------------------|--|
| 4(a) | | Mercury in other low pressure discharge lamps (per lamp) | No limitation of use | Expired on 31 December 2011 |
| | | | 15 mg / lamp | Expired 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 | 15 mg / lamp | Expires on 24 February 2027 |
| 4(b) | | High Pressure Sodium (vapour) lamps for general lighting purposes with improved colour rendering index Ra > 80: P 105 =< W | 16 mg / burner | Expires on 24 February 2027 |
| 4(b)-I | | High Pressure Sodium (vapour) lamps for general lighting purposes with improved colour rendering index Ra > 60: P =< 155 W | No limitation of use | Expired on 31 December 2011 |
| | | | 30mg | Expired on 24 February 2023 |
| 4(b)- II | | High Pressure Sodium (vapour) lamps for general lighting purposes with improved colour rendering index Ra > 60: 155 W < P =< 405 W | No limitation of use | Expired on 31 December 2011 |
| | | | 40mg | Expired on 24 February 2023 |
| 4(b)-III | | Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60: P > 405 W: 40 mg may be used per burner | No limitation of use | Expired on 31 December 2011 |
| | | | 40mg | Expired 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) | | Expired on 13 April 2015 (exclusion abolition) |
| 4(e) | | 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 | | Remain in force until the decision on extension application continuously |
| 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. | | Expired 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 Cat. 8 In vitro diagnostic medical devices: Expired on 21 July 2023 Cat. 9 Industrial monitoring and control instruments, and Cat. 11: Expired on 21 July 2024 (exclusion abolition) |
| 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; Expired on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expired on 21 July 2024 (exclusion abolition) Categories 1- 7,10; Remain in force until the decision on extension application continuously |
| 6(a) | | Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35% lead by weight | | Categories 1- 7 and 10; Expired on 30 June 2019 (exclusion abolition) Categories 8, 9 and 11; Remain in force until the decision on extension application continuously |

| No | Substance | Exemption | Scope and dates of applicability |
|----------|-----------|--|---|
| 6(a)-I | Pb | 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 | Categories 1-7 and 10; Remain in force until the decision on extension application continuously |
| 6(b) | | Lead as an alloying element in aluminium containing up to 0,4% lead by weight | Categories 1- 7 and 10; Expired on 30 June 2019 (exclusion abolition) Categories 8, 9 and 11; Remain in force until the decision on extension application continuously |
| 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 | 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 | 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 | Categories 1-11; Remain in force until the decision on extension application continuously |
| 7(a) | | Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead) | Categories 1-11 (Except applications covered by point 24); Remain in force until the decision on extension application continuously |
| 7(b) | | Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications | Cat.1-7 and 10 : Expired on 21 July 2016 Cat. 8 and 9 except for the following: Expired on 21 July 2021 Cat. 8 In vitro diagnostic medical devices: Expired on 21 July 2023 Cat. 9 Industrial monitoring and control instruments, and Cat. 11: Expired on 21 July 2024 (exclusion abolition) |
| 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 1-11 (Except applications covered by point 34); Remain in force until the decision on extension application continuously |
| 7(c)-II | | Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher | Categories 1-11; Remain in force until the decision on extension application continuously |
| 7(c)-III | | Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC | Expired on 1 January 2013 (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 - 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11 (exclusion abolition) |
| 8(a) | Cd | Cadmium and its compounds in one shot pellet type thermal cut-offs | Expired on 1 January 2012 (exclusion abolition) |
| 8(b) | | Cadmium and its compounds in electrical contacts | Expired on: — 29 Feb. 2020 for categories 1-7 and 10 (exclusion abolition) Categories 1-7,10 and Categories 8, 9 except for the following: Category 8 in vitro diagnostic medical devices; Category 9 industrial monitoring and control instruments and Category 11; Remain in force until the decision on extension application continuously |

| No | Substance | Exemption | Scope and dates of applicability |
|-------------|-----------|---|---|
| 8(b)-I | | Cadmium and its compounds in electrical contacts used in: <ul style="list-style-type: none"> — circuit breakers, — thermal sensing controls, — thermal motor protectors (excluding hermetic thermal motor protectors), — AC switches rated at: <ul style="list-style-type: none"> — 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 | | 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; - 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11 (exclusion abolition) |
| 9(a)-I | Cr(VI) | 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 < 75 W at constant running conditions | Applies to categories 1-7 and 10 and expired on 5 March 2021. (exclusion abolition) |
| 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(a)-III | | Up to 0,7 % hexavalent chromium by weight, used as an anticorrosion agent in the working fluid of the carbon steel sealed circuit of gas absorption heat pumps for space and water heating | Category 1: Expires on 31 December 2026 |
| 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; — 21 July 2023 for category 8 in vitro diagnostic medical devices, (exclusion abolition) Applies to categories 9 industrial monitoring control instruments and 11; expires on: —21 July 2024 |
| 9(b)(I) | | 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; expired on 21 July 2019 (exclusion abolition) |
| 11(a) | Pb | Lead used in C-press compliant pin connector systems | Expired on 24 September 2010 (exclusion abolition) |
| 11(b) | | Lead used in other than C-press compliant pin connector systems | Expired on 1 January 2013 (exclusion abolition) |
| 12 | | Lead as a coating material for the thermal conduction module C-ring | Expired on 24 September 2010 (exclusion abolition) |
| 13(a) | | Lead in white glasses used for optical applications | Categories 1-11; Remain in force until the decision on extension application continuously |
| 13(b) | Cd Pb | Cadmium and lead in filter glasses and glasses used for reflectance standards | Categories 8, 9, and 11; Remain in force until the decision on extension application continuously |
| 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 | Expired on 1 January 2011 (exclusion abolition) |

| No | Substance | Exemption | Scope and dates of applicability |
|---------|-----------|---|--|
| 15 | Pb | Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages | Expired on — 29 Feb 2020 for categories 1-7 and 10 (exclusion abolition) Categories 8, 9 except for the following; Category 8 in vitro diagnostic medical devices; Category 9 industrial monitoring and control instruments and Category 11; Remain in force until the decision on extension application continuously |
| 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 (exclusion abolition) |
| 17 | | Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications | Cat. 1,7 and 10 : Expired on 21 July 2016 Categories 8, 9 except for the following Expired on 21 July 2021 Category 8 in vitro diagnostic medical devices; Expired on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024 (exclusion abolition) |
| 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 | Expired 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) | Category 8 in vitro diagnostic medical devices; Expired on 21 July 2023 Category 9 industrial monitoring and control instruments: Expired on 21 July 2024 (exclusion abolition) Categories 1-7,10, 11 and Categories 8, 9 except for the above; Remain in force until the decision on extension application continuously |
| 18(b)-I | | Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps containing phosphors such as BSP (BaSi ₂ O ₅ :Pb) when used in medical phototherapy equipment | Category 8 in vitro diagnostic medical devices; Expired on 21 July 2021 (exclusion abolition) Categories 5 and 8 (except applications covered by entry 34 of Annex IV); Remain in force until the decision on extension application continuously |
| 19 | Cd | 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 | | Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses | Expired 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 - 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11 (exclusion abolition) |
| 21(a) | Cd | 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 | Expired on 21 July 2021 for Categories 1 to 7 and 10 except applications covered by entry 21(b) or entry 39 (exclusion abolition) Apply from March 20, 2020 |
| 21(b) | | Cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses | Expired on 21 July 2021 for Categories 1 to 7 and 10 except applications covered by entry 21(a) or 39 (exclusion abolition) Applies from March 20, 2020 |
| 21(c) | Pb | Lead in printing inks for the application of enamels on other than borosilicate glasses | Expired on 21 July 2021 for categories 1 to 7 and 10 (exclusion abolition) Applies from March 20, 2020 |

| No | Substance | Exemption | Scope and dates of applicability |
|----|-----------|--|---|
| 23 | Pb | Lead in finishes of fine pitch components other than connectors with a pitch of 0,65 mm and less | Expired on 24 September 2010 (exclusion abolition) |
| 24 | | Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors | Categories 1-11; Remain in force until the decision on extension application continuously |
| 25 | | Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring | 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; Expired on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expired on 21 July 2024 (exclusion abolition) |
| 26 | | Lead oxide in the glass envelope of black light blue lamps | Expired on 1 June 2011 (exclusion abolition) |
| 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 (exclusion abolition) |
| 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; Expired on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expired on 21 July 2024 (exclusion abolition) |
| | | | Categories 1- 7,10; Remain in force until the decision on extension application continuously |
| 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; Expired on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expired on 21 July 2024 (exclusion abolition) |
| 31 | Pb | 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; Expired on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expired on 21 July 2024 (exclusion abolition) |
| 32 | | 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 Category 11; Expired on 21 July 2024 (exclusion abolition) |
| | | | Categories 1-7,8 (except in vitro diagnostic medical devices), 9, 10; Remain in force until the decision on extension application continuously |
| 33 | | Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers | 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; Expired on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expired on 21 July 2024 (exclusion abolition) |
| 34 | | Lead in cermet-based trimmer potentiometer elements | Categories 1-7,10 and Categories 8, 9 except for the following; Category 8 in vitro diagnostic medical devices; Category 9 industrial monitoring and control instruments and Category 11; Remain in force until the decision on extension application continuously |

| No | Substance | Exemption | Scope and dates of applicability |
|-------|-----------|--|--|
| 36 | Hg | Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display | Expired 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 Category 8 in vitro diagnostic medical devices Expired on 21 July 2023 Category 9 industrial monitoring and control instruments, and for category 11 Expired on 21 July 2024 (exclusion abolition) |
| 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; Expired on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expired on 21 July 2024 (exclusion abolition) |
| 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 | Expired on 1 July 2014 (exclusion abolition) |
| 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) | Expires on 21 November 2025 |
| 39(b) | | Cadmium in downshifting semiconductor nanocrystal quantum dots directly deposited on LED semiconductor chips for use in display and projection applications (< 5 µg Cd per mm ² of LED chip surface) with a maximum amount per device of 1 mg | Expires on 31 December 2027 |
| 40 | | Cadmium in photoresistors for analogue optocouplers applied in professional audio equipment | Expired on 31 December 2013 (exclusion abolition) |
| 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) | Applied to all categories and expired 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 - 21 July 2024 for category 9 industrial monitoring and control instrument; (exclusion abolition) |
| 42 | Pb | 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 Category 11, excluding applications covered by entry 6(c) Remain in force until the decision on extension application continuously |
| 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. | Applied to category 11 and expired on 21 July 2024 (exclusion abolition) |
| 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 Remain in force until the decision on extension application continuously |
| 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 |
| 46 | Cd Pb | Cadmium and lead in plastic profiles containing mixtures produced from polyvinyl chloride waste (hereinafter referred to as "recovered rigid PVC"), used for electrical and electronic windows and doors, where the concentration in the recovered rigid PVC material does not exceed 0,1 % cadmium by weight and 1,5 % lead by weight. etc. | Applies to Category 11; Expires on 28 May 2028 |

(Disclaimers)

**Hitachi 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)**

Ver.6.1/2024.11.15

ver.6.1/2024.11.1

| No. | Exemption | Expire date* | | |
|---|---|-------------------------------------|--|-------------------------------|
| | | In vitro diagnostic medical devices | Industrial monitoring and control instrument | Others |
| Equipment utilising or detecting ionising radiation | | | | |
| 1 | Lead, cadmium and mercury in detectors for ionising radiation. | July 21, 2023 | Under application for renewal | Under application for renewal |
| 2 | Lead bearings in X-ray tubes. | July 21, 2023 | July 21, 2024 | Under application for renewal |
| 3 | Lead in electromagnetic radiation amplification devices: micro-channel plate and capillary plate. | Under application for renewal | Under application for renewal | Under application for renewal |
| 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. | July 21, 2023 | Under application for renewal | July 21, 2021 |
| 5 | Lead in shielding for ionising radiation. | July 21, 2023 | Under application for renewal | Under application for renewal |
| 6 | Lead in X-ray test objects. | July 21, 2023 | July 21, 2024 | July 21, 2021 |
| 7 | Lead stearate X-ray diffraction crystals. | July 21, 2023 | July 21, 2024 | July 21, 2021 |
| 8 | Radioactive cadmium isotope source for portable X-ray fluorecence spectrometers. | July 21, 2023 | July 21, 2024 | July 21, 2021 |
| Sensors, detectors and electrodes | | | | |
| 1a | Lead and cadmium in ion selective electrodes including glass of pH electrodes. | Under application for renewal | Under application for renewal | Under application for renewal |
| 1b | Lead anodes in electrochemical oxygen sensors. | July 21, 2023 | Under application for renewal | Under application for renewal |
| 1c | Lead, cadmium and mercury in infra-red light detectors. | Under application for renewal | Under application for renewal | Under application for renewal |
| 1d | Mercury in reference electrodes: low chloride mercury chloride, mercury sulphate and mercury oxide. | July 21, 2023 | July 21, 2024 | July 21, 2021 |
| Others | | | | |
| 9 | Cadmium in helium-cadmium lasers. | July 21, 2023 | Under application for renewal | July 21, 2021 |
| 10 | Lead and cadmium in atomic absorption spectroscopy lamps. | July 21, 2023 | Under application for renewal | July 21, 2021 |
| 11 | Lead in alloys as a superconductor and thermal conductor in MRI. | July 21, 2023 | July 21, 2024 | Under application for renewal |
| 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. | June 30, 2021 | Under application for renewal | Under application for renewal |
| 13 | Lead in counterweights. | July 21, 2023 | July 21, 2024 | Under application for renewal |
| 14 | Lead in single crystal piezoelectric materials for ultrasonic transducers. | July 21, 2023 | July 21, 2024 | Under application for renewal |
| 15 | Lead in solders for bonding to ultrasonic transducers. | July 21, 2023 | July 21, 2024 | Under application for renewal |
| 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. | July 21, 2023 | July 21, 2024 | July 21, 2021 |
| 17 | Lead in solders in portable emergency defibrillators. | July 21, 2023 | July 21, 2024 | Under application for renewal |
| 18 | Lead in solders of high performance infrared imaging modules to detect in the range 8-14 µm. | July 21, 2023 | July 21, 2024 | Under application for renewal |
| 19 | Lead in Liquid crystal on silicon (LCoS) displays. | July 21, 2023 | July 21, 2024 | July 21, 2021 |
| 20 | Cadmium in X-ray measurement filters. | July 21, 2023 | July 21, 2024 | Under application for renewal |
| 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. | December 31, 2019 | December 31, 2019 | December 31, 2019 |
| 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. | June 30, 2021 | June 30, 2021 | June 30, 2021 |
| 23 | Lead as an alloying element for bearings and wear surfaces in medical equipment exposed to ionising radiation. | June 30, 2021 | - | June 30, 2021 |

| No. | Exemption | Expire date* | | |
|-----|---|-------------------------------------|--|-------------------------------|
| | | In vitro diagnostic medical devices | Industrial monitoring and control instrument | Others |
| 24 | Lead enabling vacuum tight connections between aluminium and steel in X-ray image intensifiers. | December 31, 2019 | December 31, 2019 | December 31, 2019 |
| 25 | Lead in the surface coatings of pin connector systems requiring nonmagnetic connectors which are used durably at a temperature below – 20 ° C under normal operating and storage conditions. | June 30, 2021 | June 30, 2021 | June 30, 2021 |
| 26 | Lead in — solders on printed circuit boards, — termination coatings of electrical and electronic components and coatings of printed circuit boards, — solders for connecting wires and cables, — solders connecting transducers and sensors, that are used durably at a temperature below – 20 ° C under normal operating and storage conditions. Lead in solders of electrical connections to temperature measurement sensors in devices which are designed to be used periodically at temperatures below – 150 °C. | June 30, 2021 | Under application for renewal | Under application for renewal |
| 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, or (c) MRI non-integrated coils, for which the Declaration of Conformity of this model is issued for the first time before 23 September 2022, or (d) MRI devices including integrated coils, which are used in magnetic fields within the sphere of 1 m radius around the isocentre of the magnet in medical magnetic resonance imaging equipment, for which the Declaration of Conformity is issued for the first time before 30 June 2024. | June 30, 2027 | June 30, 2027 | June 30, 2027 |
| 28 | Lead in solders for mounting cadmium telluride and cadmium zinc telluride digital array detectors to printed circuit boards. | December 31, 2017 | December 31, 2017 | December 31, 2017 |
| 29 | Lead in alloys, as a superconductor or thermal conductor, used in cryo-cooler cold heads and/or in cryo-cooled cold probes and/or in cryo-cooled equipotential bonding systems, in medical devices (category 8) and/or in industrial monitoring and control instruments. | June 30, 2021 | June 30, 2021 | Under application for renewal |
| 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. | December 31, 2019 | December 31, 2019 | December 31, 2019 |
| 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. | Under application for renewal | July 21, 2024 | Under application for renewal |
| 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. | December 31, 2019 | December 31, 2019 | December 31, 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 | | | |
| | For class IIa | - | - | June 30, 2016 |
| 34 | For class IIb. | - | - | December 31, 2020 |
| | 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. | July 21, 2021 | - | July 21, 2021 |
| 35 | Mercury in cold cathode fluorescent lamps for back-lighting liquid crystal displays, not exceeding 5 mg per lamp, used in industrial monitoring and control instruments placed on the market before 22 July 2017 | - | July 21, 2024 | - |
| 36 | Lead used in other than C-press compliant pin connector systems for industrial monitoring and control instruments. May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021. | - | December 31, 2020 | - |

| No. | Exemption | Expire date* | | |
|-----|--|-------------------------------------|--|---|
| | | In vitro diagnostic medical devices | Industrial monitoring and control instrument | Others |
| 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. | December 31, 2025 | December 31, 2025 | December 31, 2025 |
| 38 | Lead in solder in one interface of large area stacked die elements with more than 500 interconnects per interface which are used in X-ray detectors of computed tomography and X-ray systems. May be used after that date in spare parts for CT and X-ray systems placed on the market before 1 January 2020. | December 31, 2019 | December 31, 2019 | December 31, 2019 |
| 39 | Lead in micro-channel plates (MCPs) used in equipment where at least one of the following properties is present: (a) a compact size of the detector for electrons or ions, where the space for the detector is limited to a maximum of 3 mm/MCP (detector thickness + space for installation of the MCP), a maximum of 6 mm in total, and an alternative design yielding more space for the detector is scientifically and technically impracticable; (b) a two-dimensional spatial resolution for detecting electrons or ions, where at least one of the following applies: (i) a response time shorter than 25 ns; (ii) a sample detection area larger than 149 mm ² ; (iii) a multiplication factor larger than $1,3 \times 10^3$. (c) a response time shorter than 5 ns for detecting electrons or ions; (d) a sample detection area larger than 314 mm ² for detecting electrons or ions; (e) a multiplication factor larger than $4,0 \times 10^7$. | Under application for renewal | Under application for renewal | Under application for renewal |
| 40 | Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC for industrial monitoring and control instruments. May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021. | - | December 31, 2020 | - |
| 41 | Lead as a thermal stabiliser in polyvinyl chloride (PVC) used as base material in amperometric, potentiometric and conductometric electrochemical sensors which are used in in-vitro diagnostic medical devices for the analysis of blood and other body fluids and body gases. | March 21, 2022 | - | - |
| 41a | Lead as thermal stabilizer in 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 creatinine and blood urea nitrogen in whole blood. | December 31, 2023 | - | - |
| 42 | Mercury in electric rotating connectors used in intravascular ultrasound imaging systems capable of high operating frequency (> 50 MHz) modes of operation. | - | - | June 30, 2026 |
| 43 | Cadmium anodes in Hersch cells for oxygen sensors used in industrial monitoring and control instruments, where sensitivity below 10 ppm is required. | - | July 15, 2023 | - |
| 44 | 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. | - | March 31, 2027 | March 31, 2027 |
| 45 | 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 | July 21, 2028 | - | 2028/7/21 (For medical instruments only) |
| 46 | Bis(2-ethylhexyl) phthalate (DEHP) in plastic components in MRI detector coils. | Under application for renewal | - | Under application for renewal (For medical instruments only) |
| 47 | 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. | July 21, 2028 | - | 2028/7/21 (For medical instruments only) |
| 48 | Lead in bismuth strontium calcium copper oxide (BSCCO) superconductor cables and wires and lead in electrical connections to these wires | June 30, 2027 | June 30, 2027 | June 30, 2027 |
| 49 | Mercury in melt pressure transducers for capillary rheometers at temperatures over 300 °C and pressures over 1000 bar | - | - | Under application for renewal (For Category 9 only) |

*: "Under xxx" means that it is under consideration by the European Commission and remains valid until a decision is made on the application for extension.

(Disclaimers)

Each exemptions of RoHS II placed in this list does not guarantee contents

Appendix 4. Ozone depleting substances

Ver. 1.5/2018.3.26

| Montreal Protocol | | | | | | | |
|-------------------|-------|-------|----------------------------------|---|---|--|--|
| Class | Annex | Group | Sample substances | | | Chemical formula | Sample CAS No |
| 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, 374-07-2) 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 FC1 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 FC1 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-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 ₅ | 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 677-68-9) 1,1,1,3-Tetrachloro-2,2,3,3-tetrafluoropropane (CFC-214cb) (CAS No 2268-46-4) Tetrachlorotetrafluoropropane (CFC-214) (CAS No 29255-31-0, Mixed isomers) | | 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 1599-41-3) 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 1652-81-9) 1,1,1-Trichloro-2,2,3,3,3-pentafluoropropane (CFC-215cb) (CAS No 4259-43-2) | | 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 | Dibromofluoromethane (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 HFB 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-124B1) 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-131B3) 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-133B1) 1-Bromo-2,2,2-trifluoroethane (HBFC-133a B1)(CAS No 421-06-7) 2-Bromo-1,1,1-trifluoroethane (HBFC-133a B1)(CAS No 421-06-7) | | C 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 |

| Montreal Protocol | | | | | | |
|-------------------|-------|-------|--------------------------------|---|--|--|
| Class | Annex | Group | Sample substances | | Chemical formula | Sample CAS No |
| | | | Halon-2201 | Bromodifluoroethane (HBFC-142 B1) 2-Bromo-1,1-difluoroethane | C ₂ H ₅ 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 HFBr ₆ | |
| | | | Halon-3205 | Pentabromodifluoropropane (HBFC-222 B5) | C ₃ HF ₂ Br ₅ | |
| | | | Halon-3304 | Tetrabromotrifluoropropane (HBFC-223 B4) | C ₃ HF ₃ Br ₄ | |
| | | | Halon-3403 | Tribromotetrafluoropropane (HBFC-224 B3) | C ₃ HF ₄ 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 | Dichlorofluoromethane | CHCl 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, 134237-32-4) 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, 134237-33-5) 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, 134237-33-5) | 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 | 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 | 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 |

| Montreal Protocol | | | | | | |
|-------------------|-------|-------|-------------------|--|------------------|--|
| Class | Annex | Group | Sample substances | | Chemical formula | Sample CAS No |
| | | | 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) | $C_2H_2F_2Cl_2$ | 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) | $C_2H_2F_3Cl$ | 1330-45-6 421-04-5 431-07-2 75-88-7 |
| | | | 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) | $C_2H_3FCl_2$ | 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) | $C_2H_3F_2Cl$ | 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_4FCl | 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 128903-21-9) 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 422-56-0) 1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb) (CAS No 507-55-1) 1,1-Dichloro-1,2,2,3,3-pentafluoropropane (HCFC-225cc) (CAS No 13474-88-9) 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 136013-79-1) 1,1-Dichloro-1,2,3,3,3-pentafluoropropane (HCFC-225eb) (CAS No 111512-56-2) Dichloropentafluoropropane (HCFC-225) (CAS No 127564-92-5) | $C_3HF_5Cl_2$ | 111512-56-2 127564-92-5 128903-21-9 13474-88-9 136013-79-1 422-44-6 422-48-0 422-56-0 431-86-7 507-55-1 |
| | | | HCFC-226 | Chlorohexafluoropropane (HCFC-226) 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, 422-55-9) 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-Dichloro-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) | $C_3H_4FCl_3$ | 134190-51-5 421-41-0 818-99-5 |

| Montreal Protocol | | | | |
|-------------------|-------|-------|--|--|
| Class | Annex | Group | Sample substances | |
| | | | | |
| | | | HCFC-252 Trichlorofluoropropane (HCFC-251) (CAS No 134190-51-5) 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 ₃ H ₄ F ₂ Cl 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 ₃ H ₄ F ₃ Cl 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 ₃ H ₅ FCl 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) Chlorodifluoropropane (HCFC-262) (CAS No 134190-53-7) | C ₃ H ₅ F ₂ Cl 102738-79-4 134190-53-7 421-02-3 |
| | | | HCFC-271 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 ₅ FCl 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〉

Ver.0/2013.02.28

| No | EC No | Substance name | Exemplary 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) | 129813-71-4 |
| 3 | 236-513-3 | 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 | 238-699-1 | 2-Propenoic acid, 2-methyl-, 2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl ester(PFOS) | 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 | 500-462-8 | Sulphonamides, C4-8-alkane, perfluoro, N-ethyl-N-(hydroxyethyl), reaction products with 2-ethyl-1-hexanol and polymethylenepolyphenylene isocyanate(PFOS) | 160901-25-7 |
| 8 | 216-716-3 | 1-Propanaminium, 3-[[[(heptadecafluorooctyl)sulphonyl]amino]-N,N,N-trimethyl-, iodide(PFOS) | 1652-63-7 |
| 9 | 216-887-4 | 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 | 217-179-8 | 1-Octanesulphonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-(PFOS); Perfluorooctane sulfonate acid | 1763-23-1 |
| 11 | | 1-Octanesulphonamide, N-[3-(dimethyloxidoamino)propyl]-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, potassium salt(PFOS) | 178094-69-4 |
| 12 | | Sulphonamides, C4-8-alkane, perfluoro, N-ethyl-N-(hydroxyethyl)-, polymers with 1,1'-methylenebis[4-isocyanatobenzene] and polymethylenepolyphenylene isocyanate, 2-ethylhexyl esters, Me Et ketone oxime-blocked(PFOS) | 178535-22-3 |
| 13 | | 1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-methyl-, reaction products with benzene-chlorine-sulphur chloride (S2Cl2) reaction(PFOS) | 182700-90-9 |
| 14 | 217-486-7 | 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 | 218-841-9 | 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 | 218-864-4 | 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 | 246-262-1 | 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 | 246-533-4 | 1-Octanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-2-propenyl-(PFOS) | 24924-36-5 |
| 20 | | 1-Decanaminium, N-decyl-N,N-dimethyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulphonic acid (1:1)(PFOS) | 251099-16-8 |
| 21 | 246-779-2 | 2-Propenoic acid, 2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl ester(PFOS) | 25268-77-3 |
| 22 | 220-527-1 | 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 | 249-415-0 | 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 |

| No | EC No | Substance name | Exemplary CAS No |
|----|-----------|---|------------------|
| 24 | 608-317-1 | Poly(oxy-1,2-ethanediyl), alpha-[2-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl]-omega-hydroxy-(PFOS) | 29117-08-6 |
| 25 | 249-644-6 | 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 | 221-061-1 | Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulphonyl]-(PFOS) | 2991-50-6 |
| 27 | 221-062-7 | 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 | 250-166-5 | 1-Octanesulphonamide, N,N'-[phosphinobis(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 |
| 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-isocyanatoethyl)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 Nethyl-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 sulphonamidesblocked(PFOS) | 306975-84-8 |
| 40 | | 2-Propenoic acid, 2-methyl-, dodecyl ester, polymers with N-(hydroxymethyl)-2-propenamide, 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 |

| No | EC No | Substance name | Exemplary CAS No |
|----|-----------|--|------------------|
| 44 | | 2-Propenoic acid, butyl ester, polymers with acrylamide, 2-[methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl acrylate and vinylidene chloride(PFOS) | 306978-04-1 |
| 45 | | Hexane, 1,6-diisocyanato-, homopolymer, N-(hydroxyethyl)-N-methyl perfluoro-C4-8-alkane sulphonamides-and stearyl alc.-blocked(PFOS) | 306978-65-4 |
| 46 | | Poly(oxy-1,2-ethanediyl), alpha-[2-(methylamino)ethyl]-omega-[(1,1,3,3-tetramethylbutyl)phenoxy]-, N-[(perfluoro-C4-8-alkyl)sulphonyl](PFOS) | 306979-40-8 |
| 47 | | Sulphonamides, C4-8-alkane, perfluoro, N,N'-[1,6-hexanediy]bis[(2-oxo-3,5-oxazolidinediyl)methylene]]bis[N-methyl-(PFOS) | 306980-27-8 |
| 48 | 206-200-6 | 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 | 250-665-8 | 1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-methyl-(PFOS) | 31506-32-8 |
| 50 | 206-805-5 | 2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl ester(PFOS) | 376-14-7 |
| 51 | 253-745-0 | 1-Propanaminium, 3-[[[(heptadecafluorooctyl)sulphonyl]amino]-N,N',N"-trimethyl-, chloride(PFOS) | 38006-74-5 |
| 52 | 223-317-8 | 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 | 206-846-9 | 2-Propenoic acid, 2-[butyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl ester(PFOS) | 383-07-3 |
| 54 | 223-391-1 | Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulphonyl]-, sodium salt(PFOS) | 3871-50-9 |
| 55 | | Sodium perfluorooctanesulfonate | 4021-47-0 |
| 56 | 223-980-3 | 1-Octanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-(PFOS) | 4151-50-2 |
| 57 | 207-031-0 | 2-Propenoic acid, 2-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl ester(PFOS) | 423-82-5 |
| 58 | 207-032-6 | 1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-2-propenyl-(PFOS) | 423-86-9 |
| 59 | | Perfluorooctane sulfonate anion(PFOS) | 45298-90-6 |
| 60 | 256-640-8 | 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 | 260-375-3 | 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); Tetraethylammoniumheptadecafluorooctansulfonate | 56773-42-3 |
| 63 | 260-837-4 | Benzoic acid, 2,3,4,5-tetrachloro-6-[[[3- [[[(heptadecafluorooctyl)sulphonyl]oxy]phenyl]amino]carbonyl]-, monopotassium salt(PFOS) | 57589-85-2 |
| 64 | 261-496-4 | 2-Propenoic acid, 4-[[[(heptadecafluorooctyl)sulphonyl]methylamino]butyl ester(PFOS) | 58920-31-3 |
| 65 | 262-856-3 | 2-Propenoic acid, 2-methyl-, 4-[[[(heptadecafluorooctyl)sulphonyl]methylamino]butyl ester(PFOS) | 61577-14-8 |
| 66 | 262-884-6 | 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 | 267-836-8 | 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 |

| No | EC No | Substance name | Exemplary CAS No |
|----|-----------|---|------------------|
| 86 | 274-460-8 | 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 ester(PFOS) | 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] (PFOS) | 71487-20-2 |
| 92 | 212-046-0 | 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 | 293-708-6 | Sulphonamides, C4-8-alkane, perfluoro, N-(hydroxyethyl)-N-methyl, reaction products with epichlorohydrin, adipates (esters)(PFOS) | 91081-99-1 |
| 95 | | Ethanaminium, N,N,N-trimethyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]-, chloride, polymer with 2-ethoxyethyl 2-propenoate, 2-[[[(heptadecafluorooctyl)sulphonyl] methylamino]ethyl 2-propenoate and oxiranylmethyl 2-methyl-2-(PFOS) | 92265-81-1 |
| 96 | 302-754-9 | 1-Propanesulphonic acid, 3-[[3-(dimethylamino)propyl] [(heptadecafluorooctyl) sulphonyl]amino]-2-hydroxy-, monosodium salt(PFOS) | 94133-90-1 |
| 97 | 304-984-5 | Carbamic acid, [5-[[[2-[[[(heptadecafluorooctyl)sulphonyl]methylamino]ethoxy]carbonyl]amino]-2-methylphenyl]-, 9-octadecenyl ester, (Z)-(PFOS) | 94313-84-5 |
| 98 | | Sulphonamides, C7-8-alkane, perfluoro, N-methyl-N-[2-[(1-oxo-2-propenyl)oxy]ethyl], polymers with 2-ethoxyethyl acrylate, glycidyl methacrylate and N,N,trimethyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]ethanaminium chloride(PFOS) | 98999-57-6 |
| 99 | | Perfluorooctane sulfonates(PFOS) C ₈ F ₁₇ SO ₂ X (X = OH, Metal salt (O-M+), halide, amide, and other derivatives including polymers) [group] | JAMP-SN0035 |

Appendix 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

Ver.6.1/2024.11.15

| 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 skin. | Banning the use |
| 5 | Benzene | 71-43-2 | Substances or mixtures | 1000ppm |
| | | | Toys | 5ppm |
| 6 | Asbestos | | The manufacture, placing on the market and use of these fibres and of articles and mixtures containing these fibres added intentionally is prohibited. | Banning the manufactured or placing on the market or 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 132207-32-0 | | |
| 7 | Tris-aziridinyl-phosphin oxide | 545-55-1 | Textile articles, come into contact with the skin. | Banning the use |
| 8 | Polybromobiphenyls (PBB) | 59536-65-1 | Textile articles, come into contact with the skin. | Banning the use |
| 9 | (a) Soap bark powder (Quillaja saponaria) and its derivatives containing saponines | 68990-67-0 | Mixtures or articles in amenity goods like sneezing powder and stink bombs | Banning the use (stink bombs : under 1.5ml) |
| | (b) Powder of the roots of Helleborus viridis and Helleborus niger | — | | |
| | (c) Powder of the roots of Veratrum album and Veratrum nigrum | — | | |
| | (d) benzidine and/or its derivatives | 92-87-5 | | |
| | (e) o-nitrobenzaldehyde | 552-89-6 | | |
| | (f) Wood powder | — | | |
| 10 | (a) Ammonium sulphide | 12135-76-1 | | |
| | (b) Ammonium hydrogen sulphide | 12124-99-1 | | |
| | (c) Ammonium polysulphide | 9080-17-5 | | |
| 11 | Volatile esters of bromoacetic acids | | | |
| | (a) Methyl bromoacetate | 96-32-2 | | |
| | (b) Ethyl bromoacetate | 105-36-2 | | |
| | (c) Propyl bromoacetate | 35223-80-4 | | |
| | (d) Butyl bromoacetate | 18991-98-5 | | |
| 12 | 2-naphthylamine and its salts | 91-59-8 | Substances or mixtures | 1000ppm |
| 13 | Benzidine and its salts | 92-87-5 | | |
| 14 | 4-nitrobiphenyl | 92-93-3 | | |
| 15 | 4-aminobiphenyl and its salts | 92-67-1 | | |
| 16 | Lead carbons | | Substances or mixtures, where the substance or mixture is intended for use as paint | Banning the use |
| | (a) Neutral anhydrous carbonate (PbCO ₃) | 598-63-0 | | |
| | (b) Trilead-bis(carbonate)-dihydroxide 2PbCO ₃ ·Pb(OH) ₂ | 1319-46-6 | | |
| 17 | Lead sulphates | | | |
| | (a) Lead sulphates(PbSO ₄) | 7446-14-2 | | |
| | (b) Lead sulphates(Pb ₃ SO ₄) | 15739-80-7 | | |

| No. | Chemical Name | Sample CAS No. | Main use of restriction | Maximum acceptable value |
|-----|--|----------------|---|--|
| 18a | Mercury | 7439-97-6 | Fever thermometers, measuring devices including mercury (*) | Banning the use (*) from 2014/4/10 |
| 18 | Mercury compounds | — | boats and ships, equipment used for fish or shellfish farming, preservation of wood, the treatment of industrial waters, etc. | Banning the use |
| 19 | Arsenic compounds | — | | |
| 20 | Organostannic compounds | — | Biocide ,the treatment of industrial waters | Banning the use |
| | Trisubstituted organostannic compounds Tributyltin (TBT) compounds, Triphenyltin (TPT) compounds etc. | — | Articles | 1000ppm of Sn |
| | Dibutyltin (DBT) compounds | — | Mixtures or articles | |
| | Diocetyl tin (DOT) compounds | — | Articles intended to come into contact with the skin | |
| 21 | Di-μ-oxo-di-n-butylstanniohydroxyborane (DBB) | 75113-37-0 | Substances or mixtures | 1000ppm |
| 22 | (Missing number) | — | | |
| 23 | Cadmium and its compounds | 7440-43-9 etc. | Plastic, brazing fillers, jewelry goods, cadmium plating except special use | 100ppm |
| | | | Paint | 1000ppm |
| 24 | Monomethyl-tetrachlorodiphenyl methane | 76253-60-6 | Substances, mixtures or articles containing the substance | Banning the use |
| 25 | Monomethyl-dichlorodiphenyl methane | — | | |
| 26 | Monomethyl-dibromo-diphenyl methane | 99688-47-8 | | |
| 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/cm2/week) | Banning the use (0.2μg/cm2/week) |
| 28 | Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as carcinogen category 1A or 1B (Table 3.1) or carcinogen category 1 or 2 (Table 3.2) and listed as follows: | — | Supplies to the general public (As substances or in mixtures) | The concentration limit specified in Regulation (EC) No 1272/2008(CLP) |
| 29 | Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as germ cell mutagen category 1A or 1B (Table 3.1) or mutagen category 1 or 2 (Table 3.2) and listed as follows: | — | | |
| 30 | Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as toxic to reproduction category 1A or 1B (Table 3.1) or toxic to reproduction category 1 or 2 (Table 3.2) and listed as follows: | — | | |
| 31 | (a) Creosote ; 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 tar alkaline | 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 1272/2008 or not. | — | Substances or mixtures in aerosol dispensers for the general public for entertainment and decorative purposes | Banning the use |
| 41 | Hexachloroethane | 67-72-1 | substance or mixtures where the substance or mixture is intended for the manufacturing or processing of non-ferrous metals | Banning the use |
| 42 | (Missing number) | — | | |

| No. | Chemical Name | Sample CAS No. | Main use of restriction | Maximum acceptable value |
|-----|--|----------------|--|---|
| 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; 2-methoxyaniline | 90-04-0 | | |
| | 2-naphthylamine | 91-59-8 | | |
| | 3,3'-dichlorobenzidine; 3,3'-dichlorobiphenyl-4,4'-ylenediamine | 91-94-1 | | |
| | 4-aminobiphenyl | 92-67-1 | | |
| | benzidine | 92-87-5 | | |
| | o-toluidine; 2-aminotoluene | 95-53-4 | | |
| | 4-chloro-o-toluidine | 95-69-2 | | |
| | 4-methyl-m-phenylenediamine | 95-80-7 | | |
| | o-aminoazotoluene; 4-amino-2',3'-dimethylazobenzene; 4-o-tolylazo-o-toluidine | 97-56-3 | | |
| | 5-nitro-o-toluidine | 99-55-8 | | |
| | 2,2'-dichloro-4,4'-methylenedianiline; 4,4'-methylene bis(2-chloroaniline) | 101-14-4 | | |
| | 4,4'-diaminodiphenylmethane; 4,4'-methylenedianiline | 101-77-9 | | |
| | 4,4'-oxydianiline | 101-80-4 | | |
| | 4-chloroaniline | 106-47-8 | | |
| | o-dianisidine; 3,3'-dimethoxybenzidine | 119-90-4 | | |
| | 4,4'-bi-o-toluidine; 3,3'-dimethylbenzidine | 119-93-7 | | |
| | p-cresidine; 6-methoxy-m-toluidine | 120-71-8 | | |
| | 2,4,5-trimethylaniline | 137-17-7 | | |
| | 4,4'-thiodianiline | 139-65-1 | | |
| | 4-methoxy-m-phenylenediamine | 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 | — | Cleaner, etc. | 1000ppm |
| | (b) Nonylphenol ethoxylates / ニルフェノールエトキシレート (C ₂ H ₄ O) _n C ₁₅ H ₂₄ O | — | | |
| 46a | Nonylphenol ethoxylates (NPE) | — | Textile articles after 2021/Feb/3 | 100ppm |
| 47 | Chromium VI compounds | | Cement | 2ppm of the total dry weight |
| | | | - Leather articles coming into contact with the skin - Articles containing leather parts coming into contact with the skin | 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 | 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 |
| | (b) Benzo(e)pyrene (BeP) | 192-97-2 | | |
| | (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 | | |
| | (g) Benzo(k)fluoranthene (BkFA) | 207-08-9 | | |
| | (h) Dibenzo(a, h)anthracene (DBA _h A) | 53-70-3 | Toys, including activity toys, and childcare article if any of their rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity (Apply after 27 December 2015) | 0.5ppm |

| No. | Chemical Name | Sample CAS No. | Main use of restriction | Maximum acceptable value |
|-----|--|--------------------------|--|---|
| 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. | 1000ppm |
| | (a) Bis(2-ethylhexyl) phthalate (DEHP) | 117-81-7 | | |
| | (b) Dibutyl phthalate (DBP) | 84-74-2 | • 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). | |
| | (c) Benzyl butyl phthalate (BBP) | 85-68-7 | | |
| | (d) Diisobutyl phthalate (DIBP) | 84-69-5 | • Shall not be placed on the market after 7 July 2020 in articles, individually or in any combination of the phthalates listed in this entry, in the plasticised material in the article. | |
| 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 public, etc | 30000ppm |
| 56 | Methylenediphenyl diisocyanate (MDI) | 26447-40-5 | Mixtures for supply to the general public | 1000ppm |
| | including the following specific isomers | | | |
| | (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 fertilizer | Banning the use |
| | | | Substances or in mixtures that contain more than 16 % by weight of nitrogen in relation to AN | Banning the use except agriculture or licensed user |
| 59 | Dichloromethane | 75-09-2 | Paint strippers | 1000ppm |
| 60 | Acrylamide | 79-06-1 | Grouting applications | 1000ppm |
| 61 | Dimethylfumarate (DMF) | 624-49-7 | Articles | 0.1ppm |
| 62 | Phenylmercury compounds(*) | | | |
| | (a) Phenylmercury acetate | 62-38-4 | Articles | 100ppm of mercury |
| | (b) Phenylmercury propionate | 103-27-5 | Mixtures | 100ppm of mercury |
| | (c) Phenylmercury 2-ethylhexanoate | 13302-00-6 | Substances | Banning the use |
| | (d) Phenylmercury octanoate | 13864-38-5 | (*)After 10 October 2017 | |
| | (e) Phenylmercury neodecanoate | 26545-49-3 | | |
| 63 | Lead and its compounds | 7439-92-1 | Jewelry articles | 500ppm |
| | | | 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 than 0,1 % by weight of the PVC material. | 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 |
| 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 less than 3 ppm by volume (2,12 mg/m ³) |
| 66 | Bisphenol A | 80-05-7 | thermal paper After 2 January 2020 | 200ppm |
| 67 | (Missing number) | — | | |

| No. | Chemical Name | Sample CAS No. | Main use of restriction | Maximum acceptable value |
|-----|---|---|---|--|
| 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 | Windscreen washing or defrosting fluids After 9 May 2019 | Banning the placing on the market Concentration equal to or greater than 0,6 % by weight. |
| 70 | Octamethylcyclotetrasiloxane (D4) Decamethylcyclopentasiloxane (D5) Dodecamethylcyclotetrasiloxane (D6) | 556-67-2 541-02-6 540-97-6 | Substance on its own, constituent of other substances, or in mixtures After 6 June 2026. Except placing on the market of D4, D5 and D6 for the following industrial uses: -as a monomer in the production of silicone polymer, -as an intermediate in the production of other silicon substances, -as a monomer in polymerisation, -in the formulation or (re)packing of mixtures, -in the production of articles, -in non-metal surface treatment; etc. | Banning the placing on the market Concentration equal to or greater than 0,1 % by weight of either substance |
| 71 | 1-methyl-2-pyrrolidone (NMP) | 872-50-4 | Substance on its own or in mixtures After 9 May 2020 | Banning the placing on the market or manufactured, or used Concentration equal to or greater than 0,3 % |
| 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. After 1 November 2020 | 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 combination |
| 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 of the columns g, h and i of the table in that Annex (4) substances listed in Appendix 13 | — | Tattooing 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 operational conditions are provided.) | Banning the placing on the market and the use Concentration of diisocyanates individually and in combination equal to or greater than 0.3% |
| 77 | Formaldehyde and formaldehyde-releasing substances | 50-00-0 | Articles, if, under the test conditions specified in Appendix 14, the concentration of formaldehyde released from those articles exceeds: after 6 August 2026 (a) furniture and wood-based articles; (b) articles other than furniture and wood-based articles. etc. | Banning the placing on the market 0.062 mg/m ³ 0.080 mg/m ³ |
| 78 | Synthetic polymer microparticles polymers that are solid and which fulfil both of the following conditions: (a) are contained in particles and constitute at least 1 wt% of those particles; or build a continuous surface coating on particles; (b) at least 1 wt% of the particles referred to in point (a) fulfil either of the following conditions: (i) all dimensions of the particles are equal to or less than 5 mm; (ii) the length of the particles is equal to or less than 15 mm and their length to diameter ratio is greater than 3. etc. | - | Substances on their own or, where the synthetic polymer microparticles are present to confer a sought-after characteristic, in mixtures etc. | Banning the placing on the market Concentration of mixture equal to or greater than: 0.01 wt% |
| 79 | Undecafluorohexanoic acid (PFHxA), its salts and PFHxA-related substances | - | Substance measured in homogeneous material, in textiles, leather, furs and hides in clothing and related accessories for the general public sum of PFHxA and its salts sum of PFHxA-related substances etc. | Banning the placing on the market Concentration equal to or greater than: 25 ppb 1000 ppb |

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

Appendix 7:

REACH-Annex XIV Authorization and Candidate (SVHC) List

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

SVHC Candidate List → <https://echa.europa.eu/candidate-list-table>

Annex XIV authorisation List → <https://echa.europa.eu/authorisation-list>

Ver.6.1/2024.11.15

| List | No. | Chemical Name | Abbreviation and/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 | C ₁₃ H ₁₄ N ₂ | 101-77-9 | 202-974-4 | ● (14/8) |
| | 3 | 4,4'-Methylenedianiline | MDA | | | |
| | 3 | Dibutylphthalate (DBP) | C ₁₆ H ₂₂ O ₄ | 84-74-2 | 201-557-4 | ● (15/2) |
| | 4 | Cobalt Dichloride | CoCl ₂ | 7646-79-9 | 231-589-4 | |
| | 5 | Diarsenic pentoxide | 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 | 7789-12-0 | 234-190-3 | ● (17/9) |
| | 8 | 5-tert-Butyl-2,4,6-trinitro-m-xylene (Musk xylene) | Cr ₂ H ₄ Na ₂ O ₃ | 10588-01-9 | | |
| | 8 | | C ₁₂ H ₁₅ N ₃ O ₆ | 81-15-2 | 201-329-4 | ● (14/8) |
| | 8 | | Musk xylene | | | |
| | 9 | Bis(2-ethylhexyl)phthalate | C ₂₄ H ₃₈ O ₄ | 117-81-7 | 204-211-0 | ● (15/2) |
| | 9 | Phthalic acid bis(2-ethylhexyl) | DEHP | | | |
| | 9 | Diethyl phthalate | DOP | | | |
| | 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) |
| 2nd | 11 | Alkanes, C10-13, chloro | SCCPs | 85535-84-8 | 287-476-5 | |
| | 12 | Short Chain Chlorinated Paraffins | | | | |
| | 12 | Bis(tributyltin)oxide (TBTO) | C ₂₄ H ₅₄ OSn ₂ | 56-35-9 | 200-268-0 | |
| | 12 | | TBTO | | | |
| | 13 | Lead hydrogen arsenate | AsHO ₄ Pb | 7784-40-9 | 232-064-2 | |
| | 14 | Benzyl butyl phthalate (BBP) | C ₁₉ H ₂₀ O ₄ | 85-68-7 | 201-622-7 | ● (15/2) |
| | 14 | | BBP | | | |
| | 15 | Triethyl arsenate | CaH ₂ AsO ₄ | 15606-95-8 | 427-700-2 | |
| | 16 | 2,4-Dinitrotoluene | C ₇ H ₅ N ₂ O ₄ | 121-14-2 | 204-450-0 | ● (15/8) |
| | 16 | | 2,4-DNT | | | |
| | 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 fraction | | 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 | 84-69-5 | 201-553-2 | ● (15/2) |
| | 23 | | DIBP | | | |
| | 24 | Lead chromate | CrO ₄ Pb | 7758-97-6 | 231-846-0 | ● (15/5) |
| | 25 | Lead chromate molybdate sulfate red | | | | |
| | 25 | Molybdate Red | C.I. Pigment Red 104 | 12656-85-8 | 235-759-9 | ● (15/5) |
| | 25 | (C.I. Pigment Red 104) | | | | |
| | 26 | Lead sulfochromate yellow | | | | |
| | 26 | Chrome yellow | C.I. Pigment Yellow 34 | 1344-37-2 | 215-693-7 | ● (15/5) |
| | 26 | (C.I. Pigment Yellow 34) | | | | |
| | 27 | Tris(2-chloroethyl)phosphate | C ₆ H ₁₂ Cl ₃ O ₄ P | 115-96-8 | 204-118-5 | ● (15/8) |
| | 27 | | TCEP | | | |
| | 28 | Coal tar pitch, high temperature | | 65996-93-2 | 266-028-2 | ● (20/10) |
| 3rd | 29 | Trichloroethylene | C ₂ HCl ₃ | 79-01-6 | 201-167-4 | ● (16/4) |
| | 29 | | TCE | | | |
| | 30 | Boric acid | BH ₃ O ₃ | 10043-35-3 | 233-139-2 | |
| | 30 | | | 11113-50-1 | 234-343-4 | |
| | 31 | Disodium tetraborate, anhydrous | B ₄ Na ₂ O ₇ | 12179-04-3 | 215-540-4 | |
| | 31 | | | 1303-96-4 | | |
| | 31 | | | 1330-43-4 | | |
| | 32 | Tetraboron disodium heptaoxide, hydrate | B ₄ Na ₂ O ₇ ·xH ₂ O | 12267-73-1 | 235-541-3 | |
| 4th | 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) |
| | 37 | Cobalt(II) sulphate | CoO ₂ 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 | |
| 5th | 41 | 2-Methoxyethanol | C ₃ H ₈ O ₂ | 109-86-4 | 203-713-7 | |
| | 41 | Ethylene glycol monomethyl ether | | | | |
| | 42 | 2-Ethoxyethanol | C ₄ H ₁₀ O ₂ | 110-80-5 | 203-804-1 | |
| | 42 | Ethylene glycol monoethyl ether | | | | |
| | 43 | Chromium trioxide | CrO ₃ | 1333-82-0 | 215-607-8 | ● (17/9) |
| | 43 | Chromic anhydride | | | | |
| | 44 | Acids generated from chromium trioxide and their oligomers: | CrH ₂ O ₄ | 13530-68-2 | 231-801-5 | ● (17/9) |
| | 44 | -Chromic acid | Cr ₂ H ₂ O ₇ | 7738-94-5 | 236-881-5 | |
| | 44 | -Dichromic acid | | | | |
| 5th | 4 | Cobalt dichloride | Cl ₂ Co | 7646-79-9 | 231-589-4 | |
| | 45 | 2-Ethoxyethyl acetate | C ₆ H ₁₂ O ₃ | 111-15-9 | 203-839-2 | |
| | 45 | Ethylene glycol monoethyl ether acetate | | | | |
| | 46 | Strontium chromate | CrO ₄ Sr | 7789-06-2 | 232-142-6 | ● (19/1) |
| | 46 | (C.I. Pigment yellow 32) | | | | |
| | 47 | 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters | DHNUP | 68515-42-4 | 271-084-6 | ● (20/7) |
| | 47 | Di(heptyl, nonyl, undecyl) phthalate (DHNUP) | | | | |
| | 48 | Hydrazine | H ₄ N ₂ | 302-01-2 | 206-114-9 | |
| | 48 | | | 7803-57-8 | | |
| | 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 | DIHP | 71888-89-6 | 276-158-1 | ● (20/7) |
| | 51 | Diisooheptyl phthalate (DIHP) | | | | |

| List | No. | Chemical Name | Abbreviation and/or Chemical formula | Sample CAS No. | EC No. | Subject to the authorization (Sunset date) |
|------|-----|---|---|-------------------------------|------------------|--|
| 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 H ₃ N 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-chlorobenzenamine) | 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 ₃ 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 ₄ | 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-Octyl)phenol | 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 6 μm (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 6 μm (Na ₂ O+K ₂ O+CaO+MgO+BaO) less or equal to 18% | RCF | — | (650-017-00-8*) | |
| | 69 | Pentazinc chromate octahydroxide (C. I. Pigment Yellow 36) | CrH ₆ O ₁₂ Zn ₅ | 49663-84-5 | 256-418-0 | ● (*19/1) |
| | 70 | Potassium hydroxyoctaoxidizincatedichromate Potassium zinc chromate hydroxide | Cr ₂ HKO ₈ Zn ₂ | 11103-86-9 | 234-329-8 | ● (*19/1) |
| | 71 | Dichromium tris(chromate) Chromic acid,chromium(3+)salt(3:2) | Cr ₆ O ₁₂ | 24613-89-6 | 246-356-2 | ● (*19/1) |
| 7th | 72 | 1,2-Bis(2-methoxyethoxy)ethane Triethylene glycol dimethyl ether [TEGDME, triglyme] | C ₈ H ₁₈ O ₄ TEGME (triglyme) | 112-49-2 | 203-977-3 | |
| | 73 | 1,2-Dimethoxyethane Ethylene glycol dimethyl ether [EGDME] | C ₄ H ₁₀ O ₂ EGDME | 110-71-4 | 203-794-9 | |
| | 74 | Diboron trioxide | B ₂ O ₃ | 1303-86-2 | 215-125-8 | |
| | 75 | Formamide | CH ₃ NO | 75-12-7 | 200-842-0 | |
| | 76 | Lead(II) bis(methanesulfonate) | C ₂ H ₆ O ₆ 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] | C ₁₂ H ₁₅ N ₃ 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] | C ₁₂ H ₁₅ N ₃ O ₆ β-TGIC | 59653-74-6 | 423-400-0 | |
| | 79 | 4,4'-Bis(dimethylamino)benzophenone [Michler's ketone] Bis[4-(dimethylamino)phenyl] ketone | C ₁₇ H ₂₀ N ₂ 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] | C ₁₇ H ₂₂ 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] | C ₂₅ H ₃₀ N ₃ 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] | ClC ₂₃ H ₃₂ 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] | C ₃₃ H ₃₃ N ₃ 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 | C ₂₄ H ₂₉ N ₃ O C.I. Solvent Violet 8 | 561-41-1 | 209-218-2 | ● (*25/5) |
| | 85 | Bis(pentabromophenyl) ether Decabromodiphenylether | C ₁₂ Br ₁₀ O DecaBDE | 1163-19-5 | 214-604-9 | |
| | 86 | Pentacosafuorotridecanoic acid Perfluorotridecanoic acid | C ₁₃ HF ₂₅ O ₂ | 72629-94-8 | 276-745-2 | |
| | 87 | Tricosafuorododecanoic acid Perfluorododecanoic acid | C ₁₂ HF ₂₃ O ₂ PFUA | 307-55-1 | 206-203-2 | |
| | 88 | Henicosafuoroundecanoic acid | C ₁₁ HF ₂₁ O ₂ | 2058-94-8 | 218-165-4 | |
| | 89 | Heptacosafuorotetradecanoic acid Perfluorotetradecanoic acid | C ₁₄ HF ₂₇ 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] | (C ₁₄ H ₂₂ O etc.) | (140-66-9 etc.) | (205-426-2 etc.) | ● (*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] | C ₁₅ H ₂₄ O | 104-40-5 (84852-15-3 etc.) | (284-325-5 etc.) | |

| List | No. | Chemical Name | Abbreviation and/or Chemical formula | Sample CAS No. | EC No. | Subject to the authorization (Sunset date) |
|------|-----|--|--|--|--|--|
| 8th | 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 ₃ O ₂ Pb | 51404-69-4 | 257-175-3 | |
| | 103 | Basic lead carbonate Trilead bis(carbonate)dihydroxide | C ₇ 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-)]dioxotrillead Dibasic lead phthalate | C ₈ H ₄ O ₆ Pb ₃ | 69011-06-9 | 273-688-5 | |
| | 106 | Dioxobis(stearato)trilead | C ₃₆ H ₇₀ O ₈ 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 cyanamate 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 ₃ Pb ₂ S | 62229-08-7 | 263-467-1 | |
| | 120 | Tetraethyllead | C ₈ H ₂₀ Pb | 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 ₃ 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 | |
| | 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) |
| | 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) |

| List | No. | Chemical Name | Abbreviation and/or Chemical formula | Sample CAS No. | EC No. | Subject to the authorization (Sunset date) |
|------|-----|--|---|-------------------------------------|-----------------------------|--|
| 9th | 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] | $(C_2H_4O)_n C_{15}H_{24}O$, with $n \geq 1$ | - | - | ● (21/1) |
| | 143 | Ammonium pentadecafluorooctanoate (APFO) | $C_8H_4F_{15}NO_2$ | 3825-26-1 | 223-320-4 | |
| | 144 | Pentadecafluorooctanoic acid (PFOA) | $C_8HF_{15}O_2$ | 335-67-1 | 206-397-9 | |
| | 145 | Cadmium sulphide | CdS | 1306-23-6 | 215-147-8 | |
| 10th | 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) | $C_{32}H_{24}N_6O_6S_2 \cdot 2Na$ | 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) | $C_{34}H_{25}N_9Na_2O_7S_2$ | 1937-37-7 | 217-710-3 | |
| | 149 | Imidazolidine-2-thione; 2-imidazoline-2-thiol | $C_3H_6N_2S$ | 96-45-7 | 202-506-9 | |
| | 150 | Lead di(acetate) | $C_4H_6O_4Pb$ | 301-04-2 | 206-104-4 | |
| | 151 | Trixylyl phosphate | $C_{24}H_{27}O_4P$ | 25155-23-1 | 246-677-8 | ● (23/5) |
| | 152 | 1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear (DIHP) | $C_{20}H_{30}O_4$ | 68515-50-4 | 271-093-5 | ● (23/2) |
| 11th | 153 | Cadmium chloride | $CdCl_2$ | 10108-64-2 | 233-296-7 | |
| | 154 | Sodium perborate Perboric acid, sodium salt | $BH_3O_4 \cdot Na$ etc. | 15120-21-5 11138-47-9 | 239-172-9 234-390-0 | ● (23/5) |
| | 155 | Sodium peroxometaborate | $BO_3 \cdot Na$ | 7632-04-4 | 231-556-4 | ● (23/5) |
| | 156 | 2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328) | $C_{22}H_{29}N_3O$ | 25973-55-1 | 247-384-8 | ● (23/11) |
| 12th | 157 | 2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320) | $C_{20}H_{25}N_3O$ | 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) | $C_{36}H_{72}O_4S_2Sn$ | 15571-58-1 | 239-622-4 | ● (25/5) |
| | 159 | Cadmium fluoride | CdF_2 | 7790-79-6 | 232-222-0 | |
| | 160 | Cadmium sulphate | $Cd \cdot H_2O_4S$ | 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-ethylhexyl]oxy]-2-oxoethylthio]-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-constituent substance (mixture) | $C_{36}H_{72}O_4S_2Sn$ $C_{38}H_{74}O_6S_3Sn$ | - | - | ● (25/5) |
| | 162 | 1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with $\geq 0.3\%$ of dihexyl phthalate (EC No. 201-559-5) | - | 68515-51-5 68648-93-1 | 271-094-0 272-013-1 | ● (23/2) |
| 13th | 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) |
| | 164 | 1,3-propanesultone | $C_3H_6O_3S$ | 1120-71-4 | 214-317-9 | |
| 14th | 165 | 2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327) | $C_{20}H_{24}ClN_3O$ | 3864-99-1 | 223-383-8 | ● (23/11) |
| | 166 | 2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350) | $C_{20}H_{25}N_3O$ | 36437-37-3 | 253-037-1 | ● (23/11) |
| | 167 | Nitrobenzene | $C_6H_5NO_2$ | 98-95-3 | 202-716-0 | |
| | 168 | Perfluorononan-1-oic acid and its sodium and ammonium salts | $C_9HF_{17}O_2$ | 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 (Bisphenol A; BPA) | $C_{15}H_{16}O_2$ | 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 | $C_{10}H_4F_{19}NO_2$ $C_{10}HF_{19}NO_2$ $C_{10}F_{19}NaO_2$ | 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 | $C_6HF_{13}O_3S$ | 355-46-4 | 206-587-1 | |

| List | No. | Chemical Name | Abbreviation and/or Chemical formula | Sample CAS No. | EC No. | Subject to the authorization (Sunset date) |
|------|-----|--|--|--|-----------|--|
| 18th | 175 | 1,6,7,8,9,14,15,16,17,17,18,18Dodecachloropentacyclo[12.2.1.16,9.02,13.05,10]octadeca-7,15-diene ("Dechlorane Plus TM) [covering any of its individual anti- and syn-isomers or any combination thereof] (Dechlorane Plus) | - | 13560-89-9 135821-74-8 135821-03-3 | — | |
| | 176 | Benz[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 ₂₈ H ₁₈ | 218-01-9 1719-03-5 | 205-923-4 | |
| | 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) |
| 19th | 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 | |
| | 191 | dicyclohexyl phtalates (DCHP) | C ₂₀ H ₂₆ O ₄ | 84-61-7 | 201-545-9 | |
| | 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 | |
| 20th | 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 | |
| | 198 | Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with ≥ 0.1% w/w of 4-nonylphenol, branched and linear (4-NP) | - | - | - | |

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|------|-----|--|---|----------------|-----------|--|
| 21st | 199 | 4-tert-butylphenol | C ₁₀ H ₁₄ O | 98-54-4 | 202-679-0 | |
| | 200 | 2-methoxyethyl acetate | C ₆ H ₁₀ O ₃ | 110-49-6 | 203-772-9 | |
| | 201 | 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides (covering any of their individual isomers and combinations thereof) | - | - | - | |
| 22nd | 202 | 2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone | C ₂₃ H ₃₀ N ₂ O ₂ | 119313-12-1 | 404-360-3 | |
| | 203 | 2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one | C ₁₅ H ₂₁ NO ₂ S | 71868-10-5 | 400-600-6 | |
| | 204 | Diisohexyl phthalate | C ₂₀ H ₃₀ O ₄ | 71850-09-4 | 276-090-2 | |
| | 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 | 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 moiety | - | - | - | |
| 25th | 212 | 1,4-dioxane | C ₆ 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) | - | - | - | |

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|------|-----|---|---|---|--------------------------|--|
| | 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 ₁₄ H ₈ Br ₆ O ₂ | 37853-59-1 | 253-692-3 | |
| | 226 | 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol | C ₁₅ H ₁₂ Br ₄ O ₂ TBBPA | 79-94-7 | 201-236-9 | |
| | 227 | 4,4'-sulphonyldiphenol (Bisphenol S) | C ₁₂ H ₁₀ O ₄ S BPS | 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 | C ₁₁ H ₁₄ O ₃ | 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 | - | 375-85-9 20109-59-5 6130-43-4 21049-36-5 | - | |
| | 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 | |
| 29th | 234 | Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide | C ₂₂ H ₂₁ O ₂ P | 75980-60-8 | 278-355-8 | |
| | 235 | Bis(4-chlorophenyl) sulphone | C ₁₂ H ₈ Cl ₂ O ₂ S | 80-07-9 | 201-247-9 | |
| 30th | 236 | 2,4,6-tri-tert-butylphenol (2,4,6-TTBP) | C ₁₈ H ₃₀ O | 732-26-3 | 211-989-5 | |
| | 237 | 2-(2H-benzotriazol-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol (UV-329) | C ₂₀ H ₂₅ N ₃ O | 3147-75-9 | 221-573-5 | |
| | 238 | 2-(dimethylamino)-2-[(4-methylphenyl)methyl]-1-[4-(morpholin-4-yl)phenyl]butan-1-one | C ₂₄ H ₃₂ N ₂ O ₂ | 119344-86-4 | 438-340-0 | |
| | 239 | Bumetizole (UV-326) | C ₁₇ H ₁₈ ClN ₃ O | 3896-11-5 | 223-445-4 | |
| | 240 | Oligomerisation and alkylation reaction products of 2-phenylpropene and phenol (Phenol, methylstyrenated) | C ₁₂ H ₈ Cl ₂ O ₂ S | - (68512-30-1) | 700-960-7 (270-966-8) | |
| 31st | 241 | Bis(α,α-dimethylbenzyl) peroxide | C ₁₈ H ₂₂ O ₂ | 80-43-3 | 201-279-3 | |
| | 242 | Triphenyl Phosphate | C ₁₈ H ₁₅ O ₄ P | 115-86-6 | 204-112-2 | |

* The date in the () is the sunset date. The deadline of application for authorisation is 18 months before the sunset date.

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

Appendix 8. List of aromatic amines

Ver.0/2013.02.28

| 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-Diaminoanisoole 4-Methoxy-m-phenylenediamine | 615-05-4 [1] 39156-41-7 [2] |

| No. | Substance Name | CAS No |
|-----|---|----------|
| 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)

Ver.1.0/2015.10.1

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

Appendix 10. List of Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds

Ver.1.0/2015.10.1

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

(*)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.