

Environment Impact Chemical Substance Lists

Effective April 1, 2020 (2.0edition)

NIKON-TRIMBLE CO., LTD.

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I. Procurement Items

I-1. Prohibited Chemical Substances

Sections I-1-(1) list the chemical substances prohibited to be contained in procured items (finished products, parts and materials, packaging materials) and their maximum allowable concentration (threshold values). If multiple thresholds are written in a single threshold field, all of them must be satisfied.

I-1-(1) Prohibited Chemical Substances

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use														
1	Cadmium/cadmium Compounds	<ul style="list-style-type: none"> •RoHS Directive 2011/65/EU •ANNEX XVII No.23 of REACH Regulation (EC) No 1907/2006 	All except the below applications and batteries (refer to I -1-(2) for batteries)	0.01% by weight (100 ppm) of cadmium in homogeneous material	Pigment, anti-corrosion surface treatment, optical glass, stabilizer, plating, fluorescent, electrode, solder, electric contact, contact point, zinc plating plastic stabilizer														
		<ul style="list-style-type: none"> •EU Directive 94/62/EC on Packaging and Packaging Waste •US State Toxics in Packaging 	Packaging materials	<ul style="list-style-type: none"> •Intentionally added⁽¹⁾ •0.01% by weight (100 ppm) of the sum of Cadmium, Mercury, Lead & Chromium VI in homogeneous material 	Pigment, paint, plastic stabilizer														
		<ul style="list-style-type: none"> •ANNEX XVII No.72 of REACH Regulation (EC) No 1907/2006 	<ul style="list-style-type: none"> •Clothing or related accessories •Textiles •Footwear 	0.0001% by weight (1 ppm) of cadmium in homogeneous material	Pigment, dye														
<p>Restriction on above-mentioned "ANNEX XVII No.72 of REACH Regulation (EC) No 1907/2006" shall apply to the items supplied to Nikon-Trimble after November 1, 2019 and shall not apply to the following uses.</p> <p>(1) Clothing, related accessories or footwear, or parts of clothing, related accessories or footwear, made exclusively of natural leather, fur or hide (2) Non-textile fasteners and non-textile decorative attachments (3) Second-hand clothing, related accessories, textiles other than clothing or footwear (4) Wall-to-wall carpets and textile floor coverings for indoor use, rugs and runners (5) Personal protective equipment within the scope of Regulation (EU) 2016/425 and medical devices within the scope of Regulation (EU) 2017/745 (6) Disposable textiles. 'Disposable textiles' means textiles that are designed to be used only once or for a limited time and are not intended for subsequent use for the same or a similar purpose.</p> <p>Representative examples of relevant substance</p> <table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr> <td>Cadmium</td> <td>7440-43-9</td> </tr> <tr> <td>Cadmium oxide</td> <td>1306-19-0</td> </tr> <tr> <td>Cadmium sulfide</td> <td>1306-23-6</td> </tr> <tr> <td>Cadmium chloride</td> <td>10108-64-2</td> </tr> <tr> <td>Cadmium sulfate</td> <td>10124-36-4</td> </tr> <tr> <td>Cadmium fluoride</td> <td>7790-79-6</td> </tr> </tbody> </table>						Substance name	CAS No.	Cadmium	7440-43-9	Cadmium oxide	1306-19-0	Cadmium sulfide	1306-23-6	Cadmium chloride	10108-64-2	Cadmium sulfate	10124-36-4	Cadmium fluoride	7790-79-6
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Cadmium fluoride	7790-79-6																		

Prohibited Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use																																
2	Chromium VI Compounds	•RoHS Directive 2011/65/EU	All except the below applications	0.1% by weight (1,000 ppm) of chromium VI in homogeneous material	Pigment, paint, ink, catalyst, plating, anticorrosion surface treatment, dye																																
		•ANNEX XVII No.47 of REACH Regulation (EC) No 1907/2006	Leather articles or articles containing leather parts coming into contact with the skin	0.0003 % by weight (3ppm) of the total dry weight of the leather	Tanning agent for leather goods																																
		•ANNEX XVII No.72 of REACH Regulation (EC) No 1907/2006	•Clothing or related accessories •Textiles •Footwear	0.0001% by weight (1 ppm) of cadmium in homogeneous material	Pigment, dye																																
		•EU Directive 94/62/EC on Packaging and Packaging Waste •US State Toxics in Packaging	Packaging materials	•Intentionally added ⁽¹⁾ •0.01% by weight (100 ppm) of the sum of Cadmium, Mercury, Lead & Chromium VI in homogeneous material	Pigment, paint, plastic stabilizer																																
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Prohibited Chemical Substances (continued)

No.	Substance/ Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use
3	Lead/lead compounds	•RoHS Directive 2011/65/EU	All except the below applications	0.1% by weight (1,000 ppm) of lead in homogeneous material	Rubber hardener, pigment, paint, lubricant, plastic stabilizer, freemachining alloy,
		•ANNEX XVII No.63 of REACH Regulation (EC) No 1907/2006	Articles or accessible parts thereof which may be placed in the mouth by children	0.05% by weight (500 ppm) of lead in article or accessible part thereof	freecutting steel, optical material, X-ray shielding in CRT glass, solder material, curing agent, vulcanizing agent, ferroelectrics, plating, metal alloy
				0.05 µg/cm ² /h (equivalent to 0.05 µg/g/h) in the rate of lead release from an article or any accessible part thereof	
		•ANNEX XVII No.72 of REACH Regulation (EC) No 1907/2006	•Clothing or related accessories •Textiles •Footwear	0.0001% by weight (1 ppm) of cadmium in homogeneous material	Pigment, dye
		•U.S. Consumer Product Safety Improvement Act (CPSIA)	Consumer products designed or intended primarily for children 12 years of age or younger	0.01% by weight (100 ppm) of lead in the children's product	Pigment, paint, stabilizer, colorant
		•U.S. Consumer Product Safety Improvement Act (CPSIA)	Paint and similar surface coatings of toys and other articles intended for use by children	0.009% by weight (90 ppm) of lead in surface coating	Pigment, paint, stabilizer, colorant
		•US/CA Proposition 65 Case law	Cables/cords with thermoset or thermoplastic coatings	•Intentionally added ⁽¹⁾ •0.03% by weight (300 ppm) of lead in surface coating	Pigment, paint, stabilizer, colorant
		•EU Directive 94/62/EC on Packaging and Packaging Waste •US State Toxics in Packaging	packaging materials	•Intentionally added ⁽¹⁾ •0.01% by weight (100 ppm) of the sum of Cadmium, Mercury, Lead & Chromium VI in homogeneous material	Pigment, paint, plastic stabilizer
<p>1. Above-mentioned "ANNEX XVII No.63 of REACH Regulation (EC) No 1907/2006" does not apply to the following articles. (Refer to the Official Journal of the European Union / COMMISSION REGULATION (EU) 2015/628 for more information.)</p> <p>(1) Articles placed on the market for the first time before 1 June 2016 (2) Articles within the scope of Directive 2011/65/EU of the European Parliament and of the Council</p> <p>2. Restriction on above-mentioned "ANNEX XVII No.72 of REACH Regulation (EC) No 1907/2006" shall apply to the items supplied to Nikon-Trimble after November 1, 2019 and shall not apply to the following uses.</p>					

Lead/lead compounds (continued)

- (1) Clothing, related accessories or footwear, or parts of clothing, related accessories or footwear, made exclusively of natural leather, fur or hide
- (2) Non-textile fasteners and non-textile decorative attachments
- (3) Second-hand clothing, related accessories, textiles other than clothing or footwear
- (4) Wall-to-wall carpets and textile floor coverings for indoor use, rugs and runners
- (5) Personal protective equipment within the scope of Regulation (EU) 2016/425 and medical devices within the scope of Regulation (EU) 2017/745
- (6) Disposable textiles. 'Disposable textiles' means textiles that are designed to be used only once or for a limited time and are not intended for subsequent use for the same or a similar purpose.

·Refer to I -1-(2) for content regulation of lead and lead compounds on the batteries

Representative examples of relevant substance

Substance name	CAS No.
Lead	7439-92-1
Lead (II) sulfate	7446-14-2
Lead (II) carbonate	598-63-0
Lead (II) chromate	7758-97-6
Lead chromate molybdate sulphate red	12656-85-8
Lead hydrocarbonate	1319-46-6
Lead acetate	301-04-2
Lead (II) acetate, trihydrate	6080-56-4
Lead phosphate	7446-27-7
Lead selenide	12069-00-0
Lead (IV) oxide	1309-60-0
Lead (II,IV) oxide	1314-41-6
Lead (II) sulfide	1314-87-0
Lead (II) oxide	1317-36-8
Lead (II) carbonate basic	1319-46-6
Lead hydroxidcarbonate	1344-36-1
Lead (II) phosphate	7446-27-7
Lead sulfochromate yellow	1344-37-2
Lead (II) titanate	12060-00-3
Lead sulfate, sulphuric acid, lead salt	15739-80-7
Lead sulphate, tribasic	12202-17-4
Lead stearate	1072-35-1

Prohibited Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use															
4	Mercury/mercury compounds	<ul style="list-style-type: none"> •RoHS Directive 2011/65/EU •ANNEX XVII No.18, 18a of REACH Regulation (EC) No 1907/2006 	All except batteries and packaging materials (refer to I -1-(2) for batteries)	<ul style="list-style-type: none"> •Intentionally added⁽¹⁾ •0.1% by weight (1,000 ppm) of mercury in homogeneous material 	Fluorescent bulb, contact point material, pigment, anti-corrosion, switches, antibacterial treatment															
		<ul style="list-style-type: none"> •EU Directive 94/62/EC on Packaging and Packaging Waste •US State Toxics in Packaging 	Packaging materials	<ul style="list-style-type: none"> •Intentionally added⁽¹⁾ •0.01% by weight (100 ppm) of the sum of Cadmium, Mercury, Lead & Chromium VI in homogeneous material 	Pigment, paint, plastic stabilizer															
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Mercuric sulfide	1344-48-5																			

Prohibited Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use					
5	Polybrominated biphenyls (PBBs)	•RoHS Directive 2011/65/EU	All	0.1% by weight (1,000 ppm) in homogeneous material	Flame retardant					
						Representative examples of relevant substance				
						Substance name		CAS No.		
						Polybrominated Biphenyls		59536-65-1		
						Dibromobiphenyl		92-86-4		
						2-Bromobiphenyl		2052-07-5		
						3-Bromobiphenyl		2113-57-7		
						4-Bromobiphenyl		92-66-0		
						Tribromobiphenyl		59080-34-1		
						Tetrabromobiphenyl		40088-45-7		
						Pentabromobiphenyl		56307-79-0		
						Hexabromobiphenyl		59080-40-9		
						Hexabromo-1,1-biphenyl		36355-01-8		
						Firemaster FF-1		67774-32-7		
Heptabromobiphenyl		35194-78-6								
Octabromobiphenyl		61288-13-9								
Nonabromobiphenyl		27753-52-2								
Decabromobiphenyl		13654-09-6								
6	Polybrominated diphenyl ethers (PBDEs)	•RoHS Directive 2011/65/EU •Japan Law concerning the evaluation of chemical substances	All	•Intentionally added ⁽¹⁾ •0.1% by weight (1,000 ppm) in homogeneous material	Flame retardant					
						Representative examples of relevant substance				
						Substance name		CAS No.		
						Bromodiphenyl ether		101-55-3		
						Dibromodiphenyl ether		2050-47-7		
						Tribromodiphenyl ether		49690-94-0		
						Tetrabromodiphenyl ether		40088-47-9		
						Pentabromodiphenyl ether (note: Commercially available PeBDPO is a complex reaction mixture containing a variety of brominated diphenyloxides)		32534-81-9 (CAS number used for commercial grades of PeBDPO)		
						Hexabromodiphenyl ether		36483-60-0		
						Heptabromodiphenyl ether		68928-80-3		
						Octabromodiphenyl ether		32536-52-0		
						Nonabromodiphenyl ether		63936-56-1		
						Decabromodiphenyl ether		1163-19-5		

Prohibited Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use						
7	Polychlorinated biphenyls (PCBs) and specific substitutes	<ul style="list-style-type: none"> • Japan Law concerning the evaluation of chemical substances • ANNEX XVII No.24-26 of REACH Regulation (EC) No 1907/2006 • US TSCA 	All	Intentionally added ⁽¹⁾	Insulation oil, lubricant oil, electrical insulation medium, solvent, electrolytic solution, plasticizer, flame retardant, dielectric sealant, printing ink, carbonless copying paper						
						Representative examples of relevant substance					
						Substance name					CAS No.
						Polychlorinated Biphenyls (all isomers and congeners)					1336-36-3
						Monomethyl-tetrachloro-diphenyl methane (Ugilec 141)					76253-60-6
Monomethyl-dichloro-diphenyl methane (Ugilec 121, Ugilec 21)					81161-70-8						
Monomethyl-dibromo-diphenyl methane (DBBT)					99688-47-8						
8	Polychlorinated terphenyls (PCTs)	<ul style="list-style-type: none"> • ANNEX XVII No.1 of REACH Regulation (EC) No 1907/2006 	All	0.005% by weight (50 ppm) in material	Insulation oil, lubricant oil, electrical insulation medium, solvent, electrolytic solution, plasticizer, flame retardant, coatings for electrical wire and cable, dielectric sealant printing ink, carbonless copying paper						
						Representative examples of relevant substance					
						Substance name					CAS No.
						Polychlorinated Terphenyls (all isomers and congeners)					61788-33-8
9	Polychlorinated naphthalenes (PCNs)	<ul style="list-style-type: none"> • Japan Law concerning the evaluation of chemical substances • EU Revised POPs regulation (EU) 2019/1021 	All	Intentionally added ⁽¹⁾	Lubricant, paint, stabilizer (electric haracteristic, flame-resistant, waterresistant) insulator, flame retardant, antiseptics, mildew repellent						
						Representative examples of relevant substance					
						Substance name					CAS No.
						Polychlorinated naphthalenes					70776-03-3

Prohibited Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use		
10	Shortchain chlorinated paraffins (C10 –13) (SCCPs)	<ul style="list-style-type: none"> •EU Revised POPs regulation (EU) 2019/1021 •Japan Law concerning the evaluation of chemical substances 	All	<ul style="list-style-type: none"> •Intentionally added⁽¹⁾ •0.15% by weight (1,500 ppm) in article 	Plasticizer for PVC, flame retardant		
						Representative examples of relevant substance	
						Substance name	CAS No.
						Alkanes, C10-13, chloro	85535-84-8
Alkanes, C10-12, chloro	108171-26-2						
Alkanes, C12-13, chloro	71011-12-6						
11	Tri-substituted organostannic compounds	<ul style="list-style-type: none"> •ANNEX XVII No.20 of REACH Regulation (EC) No 1907/2006 •Japan Law concerning the evaluation of chemical substances 	All	<ul style="list-style-type: none"> •Intentionally added⁽¹⁾ •0.1% by weight (1,000 ppm) of tin in a part 	Stabilizer, antioxidant, antibacterial and antifungal agent, antifoulant, antiseptic, paint, pigment, antistaining		
						Representative examples of relevant substance	
						Substance name	CAS No.
						Triphenyltin-N, N-dimethyldithiocarbamate	1803-12-9
						Triphenyltinfluoride	379-52-2
						Triphenyltinacetate	900-95-8
						Triphenyltinchloride	639-58-7
						Triphenyltinhydroxide	76-87-9
						Triphenyltin fattyacid((9-11)salt)	18380-71-7 18380-72-8 47672-31-1 94850-90-5
						Triphenyltinchloroacetate	7094-94-2
						Tributyltinmethacrylate	2155-70-6
						Bis(tributyltin)fumalate	6454-35-9
						Tributyltinfluoride	1983-10-4
						Bis(tributyltin)2,3-dibromosuccinate	31732-71-5
						Tributyltinacetate	56-36-0
						Tributyltinlaurate	3090-36-6
						Bis(tributyltin)phthalate	4782-29-0
						Copolymer of alkyl (c=8) acrylate, methyl methacrylate and tributyltin methacrylate	67772-01-4
						Tributyltinsulfamate	6517-25-5
						Bis(tributyltin)maleate	14275-57-1
						Tributyltinchloride	1461-22-9 7342-38-3
						Tributyltin cyclopentane carbonate = mixture	85409-17-2
						Tributyltin-1,2,3,4,4a,4b,5,6,10,10a-decahydro-7-isopropyl-1,4a-dimethyl-1-phenanthrenecarboxylatemix	26239-64-5

Prohibited Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use							
12	Tributyl tin oxide (TBTO)	• Japan Law concerning the evaluation of chemical substances	All	• Intentionally added ⁽¹⁾	Antiseptic, antifungal agent, paint, pigment, antistaining, refrigerant, foaming agent, extinguishant, solvent cleaner, stabilizer for PVC, curing catalyst for silicone resin and urethane resin							
						<table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr> <td>Tributyl tin oxide (TBTO)</td> <td>56-35-9</td> </tr> </tbody> </table>	Substance name	CAS No.	Tributyl tin oxide (TBTO)	56-35-9		
Substance name	CAS No.											
Tributyl tin oxide (TBTO)	56-35-9											
13	Dibutyltin (DBT) compounds	• ANNEX XVII No.20 of REACH Regulation (EC) No 1907/2006	All	• 0.1% by weight (1,000 ppm) of tin in a part	Plasticizer, ink, stabilizer for PVC, curing catalyst for silicone resin and urethane resin							
						<p>Representative examples of relevant substance</p> <table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr> <td>Dibutyltin oxide</td> <td>818-08-6</td> </tr> <tr> <td>Dibutyltin diacetate</td> <td>1067-33-0</td> </tr> <tr> <td>Dibutyltin dilaurate</td> <td>77-58-7</td> </tr> <tr> <td>Dibutyltin maleate</td> <td>78-04-6</td> </tr> <tr> <td>Dibutyltin dichloride</td> <td>683-18-1</td> </tr> </tbody> </table>	Substance name	CAS No.	Dibutyltin oxide	818-08-6	Dibutyltin diacetate	1067-33-0
Substance name	CAS No.											
Dibutyltin oxide	818-08-6											
Dibutyltin diacetate	1067-33-0											
Dibutyltin dilaurate	77-58-7											
Dibutyltin maleate	78-04-6											
Dibutyltin dichloride	683-18-1											
14	Diocetyl tin (DOT) compounds	• ANNEX XVII No.20 of REACH Regulation (EC) No 1907/2006	(a) textile and leather articles intended to come into contact with the skin, (b) childcare articles (c) wocomponent room temperature vulcanisation moulding kits (RTV-2 moulding kits)	• 0.1% by weight (1,000 ppm) of tin in a part	Stabilizer for PVC, curing catalyst for silicone resin and urethane resin							
						<p>Representative examples of relevant substance</p> <table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr> <td>Diocetyl Tin Oxide</td> <td>870-08-6</td> </tr> <tr> <td>Diocetyl tin dilaurate</td> <td>3648-18-8</td> </tr> </tbody> </table>	Substance name	CAS No.	Diocetyl Tin Oxide	870-08-6	Diocetyl tin dilaurate	3648-18-8
Substance name	CAS No.											
Diocetyl Tin Oxide	870-08-6											
Diocetyl tin dilaurate	3648-18-8											

Prohibited Chemical Substances (continued)

No.	Substance/ Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use																																																																																																																
15	Ozone depleting substances	<ul style="list-style-type: none"> • Montreal Protocol • EU EC No. 2037/2000 • EC 1005/2009 • US Clean Air Act 	All	Intentionally added ⁽¹⁾	Refrigerant, foaming agent, extinguishant, solvent cleaner																																																																																																																
Representative examples of relevant substance																																																																																																																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th data-bbox="496 450 1230 479">Substance name</th> <th data-bbox="1235 450 1449 479">CAS No.</th> </tr> </thead> <tbody> <tr> <td data-bbox="496 479 1230 508">Trichlorofluoromethane (CFC-11)</td> <td data-bbox="1235 479 1449 508">75-69-4</td> </tr> <tr> <td data-bbox="496 508 1230 537">Dichlorodifluoromethane (CFC-12)</td> <td data-bbox="1235 508 1449 537">75-71-8</td> </tr> <tr> <td data-bbox="496 537 1230 566">Chlorotrifluoromethane (CFC-13)</td> <td data-bbox="1235 537 1449 566">75-72-9</td> </tr> <tr> <td data-bbox="496 566 1230 595">Pentachlorofluoroethane (CFC-111)</td> <td data-bbox="1235 566 1449 595">354-56-3</td> </tr> <tr> <td data-bbox="496 595 1230 624">Tetrachlorodifluoroethane (CFC-112)</td> <td data-bbox="1235 595 1449 624">76-12-0</td> </tr> <tr> <td data-bbox="496 624 1230 654">1,1,1,2-Tetrachloro-2,2-difluoroethane (CFC-112a)</td> <td data-bbox="1235 624 1449 654">28605-74-5</td> </tr> 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1120">1,1,1,3-Tetrachloro-2,2,3,3-tetrafluoropropane (CFC-214cb)</td> <td data-bbox="1235 1090 1449 1120">2268-46-4</td> </tr> <tr> <td data-bbox="496 1120 1230 1149">Trichloropentafluoropropane (CFC-215)</td> <td data-bbox="1235 1120 1449 1149">1599-41-3</td> </tr> <tr> <td data-bbox="496 1149 1230 1178">1,2,2-Trichloropentafluoropropane (CFC-215aa)</td> <td data-bbox="1235 1149 1449 1178">1599-41-3</td> </tr> <tr> <td data-bbox="496 1178 1230 1207">1,2,3-Trichloropentafluoropropane (CFC-215ba)</td> <td data-bbox="1235 1178 1449 1207">76-17-5</td> </tr> <tr> <td data-bbox="496 1207 1230 1236">1,1,2-Trichloropentafluoropropane (CFC-215bb)</td> <td data-bbox="1235 1207 1449 1236">—</td> </tr> <tr> <td data-bbox="496 1236 1230 1265">1,1,3-Trichloropentafluoropropane (CFC-215ca)</td> <td data-bbox="1235 1236 1449 1265">—</td> </tr> <tr> <td data-bbox="496 1265 1230 1294">1,1,1-Trichloropentafluoropropane (CFC-215cb)</td> <td data-bbox="1235 1265 1449 1294">4259-43-2</td> </tr> <tr> <td data-bbox="496 1294 1230 1323">Dichlorohexafluoropropane (CFC-216)</td> <td data-bbox="1235 1294 1449 1323">661-97-2</td> </tr> <tr> <td data-bbox="496 1323 1230 1352">Chloroheptafluoropropane (CFC-217)</td> <td data-bbox="1235 1323 1449 1352">422-86-6</td> </tr> <tr> <td data-bbox="496 1352 1230 1382">Bromochloromethane (Halon-1011)</td> <td data-bbox="1235 1352 1449 1382">74-97-5</td> </tr> <tr> <td data-bbox="496 1382 1230 1411">Dibromodifluoromethane (Halon-1202)</td> <td data-bbox="1235 1382 1449 1411">75-61-6</td> </tr> <tr> <td data-bbox="496 1411 1230 1440">Bromochlorodifluoromethane (Halon-1211)</td> <td data-bbox="1235 1411 1449 1440">353-59-3</td> </tr> <tr> <td data-bbox="496 1440 1230 1469">Bromotrifluoromethane (Halon-1301)</td> <td data-bbox="1235 1440 1449 1469">75-63-8</td> </tr> <tr> <td data-bbox="496 1469 1230 1498">Dibromotetrafluoroethane (Halon-2402)</td> <td data-bbox="1235 1469 1449 1498">124-73-2</td> </tr> <tr> <td data-bbox="496 1498 1230 1527">Tetrachloromethane (carbon tetrachloride)</td> <td data-bbox="1235 1498 1449 1527">56-23-5</td> </tr> <tr> <td data-bbox="496 1527 1230 1556">1,1,1-Trichloroethane (methylchloroform)</td> <td data-bbox="1235 1527 1449 1556">71-55-6</td> </tr> <tr> <td data-bbox="496 1556 1230 1585">Bromomethane (methyl bromide)</td> <td data-bbox="1235 1556 1449 1585">74-83-9</td> </tr> <tr> <td data-bbox="496 1585 1230 1615">Bromoethane (ethyl bromide)</td> <td data-bbox="1235 1585 1449 1615">74-96-4</td> </tr> <tr> <td data-bbox="496 1615 1230 1644">1-Bromopropane (n-propyl bromide)</td> <td data-bbox="1235 1615 1449 1644">106-94-5</td> </tr> <tr> <td data-bbox="496 1644 1230 1673">Trifluoroiodomethane (trifluoromethyl iodide)</td> <td data-bbox="1235 1644 1449 1673">2314-97-8</td> </tr> <tr> <td data-bbox="496 1673 1230 1702">Chloromethane (methyl chloride)</td> <td data-bbox="1235 1673 1449 1702">74-87-3</td> </tr> <tr> <td data-bbox="496 1702 1230 1731">Dibromofluoromethane (HBFC-21 B2)</td> <td data-bbox="1235 1702 1449 1731">1868-53-7</td> </tr> <tr> <td data-bbox="496 1731 1230 1760">Bromodifluoromethane (HBFC-22 B1)</td> <td data-bbox="1235 1731 1449 1760">1511-62-2</td> </tr> <tr> <td data-bbox="496 1760 1230 1789">Bromofluoromethane (HBFC-31 B1)</td> <td data-bbox="1235 1760 1449 1789">373-52-4</td> </tr> <tr> <td data-bbox="496 1789 1230 1818">Tetrabromofluoroethane (HBFC-121 B4)</td> <td data-bbox="1235 1789 1449 1818">306-80-9</td> </tr> <tr> <td data-bbox="496 1818 1230 1848">Tribromodifluoroethane (HBFC-122 B3)</td> <td data-bbox="1235 1818 1449 1848">—</td> </tr> <tr> <td data-bbox="496 1848 1230 1877">Dibromotrifluoroethane (HBFC-123 B2)</td> <td data-bbox="1235 1848 1449 1877">354-04-1</td> </tr> <tr> <td data-bbox="496 1877 1230 1906">Bromotetrafluoroethane (HBFC-124 B1)</td> <td data-bbox="1235 1877 1449 1906">124-72-1</td> </tr> <tr> <td data-bbox="496 1906 1230 1935">Tribromofluoroethane (HBFC-131 B3)</td> <td data-bbox="1235 1906 1449 1935">—</td> </tr> 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(CFC-112a)	28605-74-5		76-11-9	Trichlorotrifluoroethane (CFC-113)	76-13-1	1,1,1-Trichloro-2,2,2 trifluoroethane (CFC-113a)	26523-64-8		354-58-5	Dichlorotetrafluoroethane (CFC-114)	76-14-2	Monochloropentafluoroethane (CFC-115)	76-15-3	Heptachlorofluoropropane (CFC-211)	422-78-6		135401-87-5	1,1,1,2,2,3,3-Heptachloro-3-fluoropropane (CFC-211aa)	422-78-6	1,1,1,2,3,3,3-Heptachloro-2-fluoropropane (CFC-211ba)	422-81-1	Hexachlorodifluoropropane (CFC-212)	3182-26-1		2354-06-5	Pentachlorotrifluoropropane (CFC-213)	134237-31-3	Tetrachlorotetrafluoropropane (CFC-214)	29255-31-0	1,2,2,3-Tetrachloro-1,1,3,3-tetrafluoropropane (CFC-214aa)	677-68-9	1,1,1,3-Tetrachloro-2,2,3,3-tetrafluoropropane (CFC-214cb)	2268-46-4	Trichloropentafluoropropane (CFC-215)	1599-41-3	1,2,2-Trichloropentafluoropropane (CFC-215aa)	1599-41-3	1,2,3-Trichloropentafluoropropane (CFC-215ba)	76-17-5	1,1,2-Trichloropentafluoropropane (CFC-215bb)	—	1,1,3-Trichloropentafluoropropane (CFC-215ca)	—	1,1,1-Trichloropentafluoropropane (CFC-215cb)	4259-43-2	Dichlorohexafluoropropane (CFC-216)	661-97-2	Chloroheptafluoropropane (CFC-217)	422-86-6	Bromochloromethane (Halon-1011)	74-97-5	Dibromodifluoromethane (Halon-1202)	75-61-6	Bromochlorodifluoromethane (Halon-1211)	353-59-3	Bromotrifluoromethane (Halon-1301)	75-63-8	Dibromotetrafluoroethane (Halon-2402)	124-73-2	Tetrachloromethane (carbon tetrachloride)	56-23-5	1,1,1-Trichloroethane (methylchloroform)	71-55-6	Bromomethane (methyl bromide)	74-83-9	Bromoethane (ethyl bromide)	74-96-4	1-Bromopropane (n-propyl bromide)	106-94-5	Trifluoroiodomethane (trifluoromethyl iodide)	2314-97-8	Chloromethane (methyl chloride)	74-87-3	Dibromofluoromethane (HBFC-21 B2)	1868-53-7	Bromodifluoromethane (HBFC-22 B1)	1511-62-2	Bromofluoromethane (HBFC-31 B1)	373-52-4	Tetrabromofluoroethane (HBFC-121 B4)	306-80-9	Tribromodifluoroethane (HBFC-122 B3)	—	Dibromotrifluoroethane (HBFC-123 B2)	354-04-1	Bromotetrafluoroethane (HBFC-124 B1)	124-72-1	Tribromofluoroethane (HBFC-131 B3)	—	Dibromodifluoroethane (HBFC-132 B2)	75-82-1	Bromotrifluoroethane (HBFC-133 B1)	421-06-7	Dibromofluoroethane (HBFC-141 B2)	358-97-4	Bromodifluoroethane (HBFC-142 B1)	420-47-3	Bromofluoroethane (HBFC-151 B1)	762-49-2
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Bromofluoroethane (HBFC-151 B1)	762-49-2																																																																																																																				

Ozone depleting substances (continued)		
	Hexabromofluoropropane (HBFC-221 B6)	—
	Pentabromodifluoropropane (HBFC-222 B5)	—
	Tetrabromotrifluoropropane (HBFC-223 B4)	—
	Tribromotetrafluoropropane (HBFC-224 B3)	—
	Dibromopentafluoropropane (HBFC-225 B2)	431-78-7
	Bromohexafluoropropane (HBFC-226 B1)	2252-78-0
	Pentabromofluoropropane (HBFC-231 B5)	—
	Tetrabromodifluoropropane (HBFC-232 B4)	—
	Tribromotrifluoropropane (HBFC-233 B3)	—
	Dibromotetrafluoropropane (HBFC-234 B2)	—
	Bromopentafluoropropane (HBFC-235 B1)	460-88-8
	Tetrabromofluoropropane (HBFC-241 B4)	—
	Tribromodifluoropropane (HBFC-242 B3)	70192-80-2
	Dibromotrifluoropropane (HBFC-243 B2)	431-21-0
	Bromotetrafluoropropane (HBFC-244 B1)	679-84-5
	Tribromofluoropropane (HBFC-251 B3)	75372-14-4
	Dibromodifluoropropane (HBFC-252 B2)	460-25-3
	Bromotrifluoropropane (HBFC-253 B1)	421-46-5
	Dibromofluoropropane (HBFC-261 B2)	51584-26-0
	Bromodifluoropropane (HBFC-262 B1)	—
	Bromofluoropropane (HBFC-271 B1)	1871-72-3
	Dichlorofluoromethane (HCFC-21)	75-43-4
	Chlorodifluoromethane (HCFC-22)	75-45-6
	Chlorofluoromethane (HCFC-31)	593-70-4
	Tetrachlorofluoroethane (HCFC-121)	134237-32-4
	1,1,1,2-Tetrachloro-2-fluoroethane (HCFC-121a)	354-14-3 354-11-0
	Trichlorodifluoroethane (HCFC-122)	41834-16-6
	1,1,2-Trichloro-1,2-difluoroethane (HCFC-122a)	354-21-2
	1,1,1-Trichloro-2,2-difluoroethane (HCFC-122b)	354-15-4 354-12-1
	Dichlorotrifluoroethane(HCFC-123)	34077-87-7
	1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)	306-83-2
	1,1-Dichloro-1,2,2-trifluoroethane (HCFC-123b)	354-23-4 812-04-4
	Chlorotetrafluoroethane (HCFC-124)	63938-10-3
	1-chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)	2837-89-0 354-25-6
	Trichlorofluoroethane (HCFC-131)	27154-33-2; 134237-34-6
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	1,1,1-Trichloro-2-fluoroethane (HCFC-131b)	2366-36-1
	Dichlorodifluoroethane (HCFC-132)	25915-78-0
	1,1-Dichloro-2,2-difluoroethane (HCFC-132a)	431-06-1
	1,2-Dichloro-1,1-difluoroethane (HCFC-132b)	471-43-2
	1,1-Dichloro-1,2-difluoroethane (HCFC-132c)	1649-08-7 1842-05-3
	Chlorotrifluoroethane (HCFC-133)	1330-45-6
	2-Chloro-1,1,1-trifluoroethane (HCFC-133a)	431-07-2
	1-Chloro-1,1,2-trifluoroethane (HCFC-133b)	75-88-7 421-04-5
	Dichlorofluoroethane(HCFC-141)	25167-88-8
	1,1-Dichloro-2-fluoroethane (HCFC-141a)	430-57-9
	1,1-Dichloro-1-fluoroethane (HCFC-141b)	430-53-5 1717-00-6
	Chlorodifluoroethane (HCFC-142)	25497-29-4
	1-Chloro-1,1-difluoroethane (HCFC-142b)	338-65-8
	1-Chloro-1,2-difluoroethane (HCFC-142a)	75-68-3 338-64-7
	Chlorofluoroethane (HCFC-151)	110587-14-9
	1-Chloro-1-fluoroethane (HCFC-151a)	762-50-5 1615-75-4
	Hexachlorofluoropropane (HCFC-221)	134237-35-7
	1,1,1,2,2,3-Hexachloro-3-fluoropropane (HCFC-221ab)	29470-94-8 422-26-4

Ozone depleting substances (continued)	Pentachlorodifluoropropane (HCFC-222)	
	1,1,1,3,3-pentachloro-2,2-difluoropropane (HCFC-222ca)	134237-36-8
1,2,2,3,3-pentachloro-1,1-difluoropropane (HCFC-222aa)	422-30-0	
Tetrachlorotrifluoropropane (HCFC-223)		
1,1,3,3-Tetrachloro-1,2,2-trifluoropropane (HCFC-223ca)	134237-37-9	422-52-6
1,1,1,3-Tetrachloro-2,2,3-trifluoropropane (HCFC-223cb)	422-50-4	
Trichlorotetrafluoropropane (HCFC-224)		
1,3,3-Trichloro-1,1,2,2-tetrafluoropropane (HCFC-224ca)	134237-38-0	422-54-8
1,1,3-Trichloro-1,2,2,3-tetrafluoropropane (HCFC-224cb)	422-53-7	
1,1,1-Trichloro-2,2,3,3-tetrafluoropropane (HCFC-224cc)	422-51-7	
Dichloropentafluoropropane (HCFC-225)		
2,2-Dichloro-1,1,1,3,3-pentafluoropropane(HCFC-225aa)	127564-92-5	128903-21-9
2,3-Dichloro-1,1,1,2,3-pentafluoropropane (HCFC-225ba)	422-48-0	
1,2-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225bb)	422-44-6	
3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	422-56-0	
1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	507-55-1	
1,1-Dichloro-1,2,2,3,3-pentafluoropropane(HCFC-225cc)	13474-88-9	
1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC-225da)	431-86-7	
1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225ea)	136013-79-1	
1,1-Dichloro-1,2,3,3,3-pentafluoropropane(HCFC-225eb)	111512-56-2	
Chlorohexafluoropropane (HCFC-226)		
2-Chloro-1,1,1,3,3,3-hexafluoro-propane (HCFC-226da)	134308-72-8	431-87-8
Pentachlorofluoropropane (HCFC-231)		
1,1,1,2,3-pentachloro-2-fluoro-propane (HCFC-231bb)	134190-48-0	421-94-3
Tetrachlorodifluoropropane (HCFC-232)		
1,1,1,3-Tetrachloro-3,3-difluoropropane (HCFC-232fc)	134237-39-1	460-89-9
Trichlorotrifluoropropane (HCFC-233)		
1,1,1-Trichloro-3,3,3-trifluoropropane (HCFC-233fb)	134237-40-4	7125-83-9
Dichlorotetrafluoropropane (HCFC-234)		
1,2-Dichloro-1,2,3,3-tetrafluoropropane (HCFC-234db)	127564-83-4	425-94-5
Chloropentafluoropropane (HCFC-235)		
1-Chloro-1,1,3,3,3-pentafluoropropane (HCFC-235fa)	134237-41-5	460-92-4
Tetrachlorofluoropropane (HCFC-241)		
1,1,2,3-Tetrachloro-1-fluoropropane (HCFC-241db)	134190-49-1	666-27-3
Trichlorodifluoropropane (HCFC-242)		
1,3,3,Trichloro-1,1-difluoropropane (HCFC-242fa)	134237-42-6	460-63-9
Dichlorotrifluoropropane (HCFC-243)		
1,1-Dichloro-1,2,2-trifluoropropane (HCFC-243cc)	134237-43-7	7125-99-7
2,3-Dichloro-1,1,1-trifluoropropane (HCFC-243db)	338-75-0	
3,3-Dichloro-1,1,1-trifluoropropane (HCFC-243fa)	460-69-5	
Chlorotetrafluoropropane (HCFC-244)		
3-Chloro-1,1,2,2-tetrafluoropropane (HCFC-244ca)	134190-50-4	679-85-6
1-Chloro-1,1,2,2-tetrafluoropropane (HCFC-244cc)	421-75-0	
Trichlorofluoropropane (HCFC-251)		
1,1,3-Trichloro-1-fluoropropane (HCFC-251fb)	134190-51-5	818-99-5
1,1,2-Trichloro-1-fluoropropane (HCFC-251dc)	421-41-0	
Dichlorodifluoropropane (HCFC-252)		
1,3-Dichloro-1,1-difluoropropane (HCFC-252fb)	134190-52-6	819-00-1
Chlorotrifluoropropane (HCFC-253)		
3-Chloro-1,1,1-trifluoropropane (HCFC-253fb)	134237-44-8	460-35-5
Dichlorofluoropropane (HCFC-261)		
1,1-Dichloro-1-fluoropropane (HCFC-261fc)	134237-45-9	7799-56-6
1,2-Dichloro-2-fluoro-propane (HCFC-261ba)	420-97-3	
Chlorodifluoropropane (HCFC-262)		
1-Chloro-2,2-difluoropropane (HCFC-262ca)	134190-53-7	420-99-5
2-Chloro-1,3-difluoropropane (HCFC-262da)	102738-79-4	
1-Chloro-1,1-difluoropropane (HCFC-262fc)	421-02-3	
Chlorofluoropropane (HCFC-271)		
2-Chloro-2-fluoropropane (HCFC-271ba)	134190-54-8	420-44-0
1-Chloro-1-fluoropropane (HCFC-271fb)	430-55-7	
Note: These substances may contain further isomers that are not listed here. Isomers with CAS numbers have been included when available.		

Prohibited Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use															
16	Radioactive substances	<ul style="list-style-type: none"> • EU-D 96/29/Euratom • Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material, and Reactors • Japan Law oncerning Prevention from Radiation Hazards 	All	Intentionally added ⁽¹⁾	Optical properties (thorium), measuring device, gauges, detector															
		Representative examples of relevant substance <table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr> <td>Uranium-238</td> <td>7440-61-1</td> </tr> <tr> <td>Radon</td> <td>10043-92-2</td> </tr> <tr> <td>Americium-241</td> <td>14596-10-2</td> </tr> <tr> <td>Thorium-232</td> <td>7440-29-1</td> </tr> <tr> <td>Cesium-137</td> <td>10045-97-3</td> </tr> <tr> <td>Strontium-90</td> <td>10098-97-2</td> </tr> </tbody> </table>					Substance name	CAS No.	Uranium-238	7440-61-1	Radon	10043-92-2	Americium-241	14596-10-2	Thorium-232	7440-29-1	Cesium-137	10045-97-3	Strontium-90	10098-97-2
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17	Asbestos	<ul style="list-style-type: none"> • ANNEX XVII No.6 of REACH Regulation (EC) No 1907/2006 • US TSCA 	All	Intentionally added ⁽¹⁾	Insulator, filler, pigment, paint, talc, heat insulating material															
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Prohibited Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use																																													
18	Azocolourants and azodyes which form certain aromatic amines ⁽³⁾	• ANNEX XVII No.43 of REACH Regulation (EC) No 1907/2006	Textiles and leather	0.003% by weight (30 ppm) ⁽³⁾ of the finished textile/leather product	Pigment, dye, colorant																																													
		<p>Relevant aromatic amines</p> <table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr><td>Biphenyl-4-ylamine</td><td>92-67-1</td></tr> <tr><td>Benzidine</td><td>92-87-5</td></tr> <tr><td>4-chloro-o-toluidine</td><td>95-69-2</td></tr> <tr><td>2-naphthylamine</td><td>91-59-8</td></tr> <tr><td>o-aminoazotoluene</td><td>97-56-3</td></tr> <tr><td>5-nitro-o-toluidine</td><td>99-55-8</td></tr> <tr><td>4-chloroaniline</td><td>106-47-8</td></tr> <tr><td>4-methoxy-m-phenylenediamine</td><td>615-05-4</td></tr> <tr><td>4,4'-methylenedianiline</td><td>101-77-9</td></tr> <tr><td>3,3'-dichlorobenzidine</td><td>91-94-1</td></tr> <tr><td>3,3'-dimethoxybenzidine</td><td>119-90-4</td></tr> <tr><td>3,3'-dimethylbenzidine</td><td>119-93-7</td></tr> <tr><td>4,4'-methylenedi-o-toluidine</td><td>838-88-0</td></tr> <tr><td>6-methoxy-m-toluidine</td><td>120-71-8</td></tr> <tr><td>4,4'-methylene-bis(2-chloroaniline)</td><td>101-14-4</td></tr> <tr><td>4,4'-oxydianiline</td><td>101-80-4</td></tr> <tr><td>4,4'-thiodianiline</td><td>139-65-1</td></tr> <tr><td>o-toluidine</td><td>95-53-4</td></tr> <tr><td>4-methyl-m-phenylenediamine</td><td>95-80-7</td></tr> <tr><td>2,4,5-trimethylaniline</td><td>137-17-7</td></tr> <tr><td>o-anisidine</td><td>90-04-0</td></tr> <tr><td>4-amino azobenzene</td><td>60-09-3</td></tr> </tbody> </table> <p>Note: The European Community's ban applies to azocolourants and azodyes that by reductive cleavage of azo groups may release one of the above 22 aromatic amines.</p>					Substance name	CAS No.	Biphenyl-4-ylamine	92-67-1	Benzidine	92-87-5	4-chloro-o-toluidine	95-69-2	2-naphthylamine	91-59-8	o-aminoazotoluene	97-56-3	5-nitro-o-toluidine	99-55-8	4-chloroaniline	106-47-8	4-methoxy-m-phenylenediamine	615-05-4	4,4'-methylenedianiline	101-77-9	3,3'-dichlorobenzidine	91-94-1	3,3'-dimethoxybenzidine	119-90-4	3,3'-dimethylbenzidine	119-93-7	4,4'-methylenedi-o-toluidine	838-88-0	6-methoxy-m-toluidine	120-71-8	4,4'-methylene-bis(2-chloroaniline)	101-14-4	4,4'-oxydianiline	101-80-4	4,4'-thiodianiline	139-65-1	o-toluidine	95-53-4	4-methyl-m-phenylenediamine	95-80-7	2,4,5-trimethylaniline	137-17-7	o-anisidine	90-04-0
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19	Polyvinyl chloride (PVC) / PVC compounds	• JS709	• Packaging materials • carrying bag, pouch	0.1% total chlorine content by weight (1,000 ppm) in plastic material	Insulator, cable coating, film, tube, tamperproof labels, clam-shell packs																																													
		<p>If customers specify use of PVC packaging materials, above prohibitions shall not apply. Applications other than the above shall apply to controlled chemical substances.</p> <p>Representative examples of relevant substance</p> <table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr><td>Polyvinyl chloride (PVC)</td><td>9002-86-2</td></tr> </tbody> </table>					Substance name	CAS No.	Polyvinyl chloride (PVC)	9002-86-2																																								
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Prohibited Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use		
20	Perfluorooctane sulfonate (PFOS) and its salts	<ul style="list-style-type: none"> • EU Revised POPs Regulation (EU)2019/1021 • Canadian Environmental Protection Act 1999 • Japan Law concerning the evaluation of chemical substances 	All	<ul style="list-style-type: none"> • Intentionally added⁽¹⁾ • 0.1% by weight (1,000 ppm) in a part • 1 µg/m² in textiles or coated material 	Photoresist, anti-reflection coating agent, film, paper, photos coating, plating mist inhibitor, lubricating oil used in the electroplating process		
						Representative examples of relevant substance	
						Substance name	CAS No.
						Perfluorooctane Sulfonate (PFOS)	1763-23-1
						Ammonium heptadecafluoro-1-octanesulfonate	29081-56-9
						Potassium heptadecafluoro-1-octanesulfonate	2795-39-3
						Lithium heptadecafluoro-1-octanesulfonate	29457-72-5
						Bis(2-hydroxyethyl)ammonium perfluorooctanesulfonate	70225-14-8
						Perfluorooctane-1-sulfonyl fluoride (PFOSF)	307-35-7
						2-(N-Ethylperfluorooctanesulfonamido)ethyl methacrylate	376-14-7
						N-Ethyl-N-(2-hydroxyethyl)perfluorooctylsulphonamide	1691-99-2
						N-(2-Hydroxyethyl)-N-methylperfluorooctanesulphonamide	24448-09-7
						N-Ethyl perfluoro octansulfonamide	4151-50-2
N-Methyl perfluorooctanesulfonamide	31506-32-8						
21	Dimethyl fumarate (DMF)	• ANNEX XVII No.61 of REACH Regulation (EC) No 1907/2006	All	0.00001% by weight (0.1 ppm) ⁽²⁾ in a part	Biocide, mold treatment of electronic leather seat including recliner, massage chair		
						Substance name	CAS No.
						Dimethyl fumarate (DMF)	624-49-7
22	Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylethyl)	• Japan Law concerning the evaluation of chemical substances	All	Intentionally added ⁽¹⁾	Adhesive, paint, printing ink, plastics, inked ribbon, putty, caulking or sealing filler		
						Substance name	CAS No.
						Phenol,2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylethyl)	3846-71-7

Prohibited Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use																																	
23	Hexabromocyclododecane (HBCD⁽⁴⁾) and all major diastereoisomers	<ul style="list-style-type: none"> • Japan Law concerning the evaluation of chemical substances • EU Revised POPs regulation (EU) 2019/1021 	All	<ul style="list-style-type: none"> • Intentionally added⁽¹⁾ • 0.01% by weight (100 ppm) in an article 	Flame retardant mainly used for expanded polystyrene and some types of fiber																																	
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						(1R,2S,5S,6R,9S,10S)-1,2,5,6,9,10-Hexabromocyclododecane	138257-19-9																															
						(1R,2S,5S,6S,9S,10R)-1,2,5,6,9,10-Hexabromocyclododecane	169102-57-2																															
(1R,2R,5S,6R,9R,10S)-1,2,5,6,9,10-Hexabromocyclododecane	678970-15-5																																					
(1R,2S,5R,6S,9S,10S)-1,2,5,6,9,10-Hexabromocyclododecane	678970-16-6																																					
(1R,2R,5R,6S,9S,10R)-1,2,5,6,9,10-Hexabromocyclododecane	678970-17-7																																					
24	Perfluorooctanoic acid (PFOA), its salts and PFOA-related substances⁽⁷⁾	<ul style="list-style-type: none"> • ANNEX XVII No.68 of REACH Regulation (EC) No 1907/2006 	All	<ul style="list-style-type: none"> • 0.000025% by weight (25 ppb) of PFOA including its salts in a mixture or an article • 0.0001% by weight (1000ppb) of one or a combination of PFOA-related substances in a mixture or an article 	Extinguishing agent, water repellent, surface-active agent, etching solution, antireflection coating, photoresist, plating solution, activator, coating, solder, lubricant, adhesive, paint, ink surface treating, agent for paper, resin modifier																																	
						The above standards shall apply to the items supplied to Nikon-Trimble after January 4, 2020.																																
						Applications exempted																																
						(1) A substance, constituent of another substance or mixture that is to be used, or is used:																																
						(i) in the production of implantable medical devices within the scope of Directive 93/42/EEC.																																
						(ii) in photographic coatings applied to films, papers or printing plates.																																
						(iii) in photo-lithography processes for semiconductors or in etching processes for compound semiconductors.																																
						(2) Concentrated fire-fighting foam mixtures that were placed before 4 July 2020 and are to be used, or are used in the production of other fire-fighting foam mixtures.																																
						(3) The following articles:																																
						(i) Implantable medical devices within the scope of Directive 93/42/EEC																																
						(ii) Articles coated with photographic coatings																																
						(iii) Semiconductors or compound semiconductors																																

Perfluorooctanoic acid (PFOA), its salts and PFOA-related substances⁽⁷⁾ (continued)

Representative examples of relevant substance

	CAS No.
PFOA and its salts	
Perfluorooctanoic acid ;PFOA	335-67-1
Ammonium pentadecafluorooctanoate ;APFO3825-26-1 Sodium perfluorooctanoate 335-95-5 Potassium perfluorooctanoate 2395-00-8 Silver perfluorooctanoate	335-93-3
Tris(pentadecafluorooctanoic acid)chromium(III) salt	68141-02-6
Ethanaminium, N,N,N-triethyl-, salt with pentadecafluorooctanoic acid (1:1)	98241-25-9
Hexanoic acid, 2,3,3,4,4,5,5,6,6,6-decafluoro-2-(1,1,2,2,2-pentafluoroethyl)-, ammonium salt (1:1)	13058-06-5
PFOA-related substances	CAS No.
Pentadecafluorooctyl fluoride	335-66-0
Methyl perfluorooctanoate	376-27-2
Ethyl perfluorooctanoate	3108-24-5
Triethoxy-1H,1H,2H,2H-perfluorodecylsilane	101947-16-4
1,3-Propanediol, 2,2-bis(.gamma.-.omega.-perfluoro-C4-10-alkyl) thiomethyl derivs., phosphates, ammonium salts	148240-85-1
1,3-Propanediol, 2,2-bis(.gamma.-.omega.-perfluoro-C6-12-alkyl) thiomethyl derivs., phosphates, ammonium salts	148240-87-3
2-Propenoic acid, C16-18-alkyl esters, polymers with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl acrylate	160336-09-4
2-(Perfluorooctyl)ethyl methacrylate	1996-88-9
1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8-Heptadecafluoro-10-iododecane	2043-53-0
Cyclotetrasiloxane, 2-(4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,11-heptadecafluoroundecyl)-2,4,6,8-tetramethyl-, Si-[3-(oxiranylethoxy)propyl] derivs	206886-57-9
1H,1H,2H-Perfluoro-1-decene	21652-58-4
3,4-bis[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluoro-1-oxooctyl)amino]benzenesulphonyl chloride	24216-05-5
2H,2H-Perfluorodecanoic acid	27854-31-5
1H,1H,2H,2H-Heptadecafluorodecyl acrylate	27905-45-9
1H,1H,2H,2H-Perfluorodecylmethyldichlorosilane	3102-79-2
Tris[4-(1H,1H,2H,2H-perfluorodecyl)phenyl]phosphine	325459-92-5
Bis[tris(4-(1H,1H,2H,2H-perfluorodecyl)phenyl)phosphine]palladium(II) dichloride	326475-46-1
Perfluorooctanoic anhydride	33496-48-9
2-carboxyethylbis(2-hydroxyethyl)-3-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluoro-1-oxooctyl)amino]propylammonium hydroxide	39186-68-0
Perfluorooctyl phosphonic acid ;C8-PFPA	40143-78-0
Bis(heptadecafluorooctyl)phosphinic acid,C8/C8-PFPIA	40143-79-1
N-[3-[bis(2-hydroxyethyl)amino]propyl]-2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctanamide	41358-63-8
Perfluorooctyl iodide	507-63-1
2-Propenoic acid, 2-methyl-, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctyl ester, polymer with 2-propenoic acid	53515-73-4
1-Propanaminium, N,N,N-trimethyl-3-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluoro-1-oxooctyl)amino]-, chloride	53517-98-9
Mono[2-(perfluorooctyl)ethyl] phosphate	57678-03-2
Bis(perfluorooctyl) phosphinic acid ;C6/C8-PFPIA	610800-34-5
Poly(difluoromethylene), α -fluoro- ω -[2-[[2-(trimethylammonio)ethyl]thio]ethyl]-, methyl sulfate	65530-57-6
Poly(difluoromethylene), .alpha.-fluoro-.omega.-2-(phosphonooxy)ethyl-	65530-61-2
Poly(difluoromethylene), .alpha.,.alpha.-phosphinobis(oxy-2,1-ethanediyl)bis.omega.-fluoro-	65530-62-3
1H,1H,2H,2H-Perfluoro-1-decanol	678-39-7
Bis[2-(perfluorooctyl)ethyl] phosphate	678-41-1
Fatty acids, C7-13, perfluoro	68333-92-6

Perfluorooctanoic acid (PFOA), its salts and PFOA-related substances⁽⁷⁾ (continued)	Fatty acids, C7-13, perfluoro, compds. with ethylamine	69278-80-4
	2-Decenoic acid,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-hexadecafluoro-	70887-84-2
	Pentanoic acid, 4,4-bis((gamma-omega-perfluoro-C8-20-alkyl)thio) derivs., compds. with diethanolamine	71608-61-2
	Fatty acids, C6-18, perfluoro, ammonium salts	72623-77-9
	Carboxylic acids, C7-13, perfluoro, ammonium salts	72968-38-8
	1H,1H,2H,2H-Perfluorodecyldimethylchlorosilane	74612-30-9
	1H,1H,2H,2H-Perfluorodecyltrichlorosilane	78560-44-8
	Poly(difluoromethylene), alpha.-fluoro-.omega.-(2-sulfoethyl)-	80010-37-3
	Trimethoxy(1H,1H,2H,2H-heptadecafluorodecyl) silane	83048-65-1
	Heptadecafluoro-1-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluoro octyl)oxy]nonene	84029-60-7
	N-(3-aminopropyl)-2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctanamide	85938-56-3
	1-Propanesulfonic acid, 3-[ethyl(2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluoro-1-oxooctyl)amino] -, sodium salt	89685-61-0
	Octanoic acid, pentadecafluoro-, mixed esters with 2,2'-[1,4-butanediylbis(oxymethylene)]bis[oxirane] and 2,2'-[1,6-hexanediylbis(oxymethylene)]bis[oxirane]	90480-57-2
	Amides, C7-19,alpha-omega-perfluoro-N,N- bis(hydroxyethyl)	90622-99-4
	Fatty acids, C7-19, perfluoro	91032-01-8
	Poly(oxy-1,2-ethanediyl),a-[2-[(2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluoro-1-oxooctyl)amino]ethyl]-w-hydroxy-	93480-00-3
	Diammonium 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl phosphate	93857-44-4
	Diammonium 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,11-heptadecafluoro-2-hydroxyundecyl phosphate	94200-45-0
	Carbamic acid, [2-(sulfothio)ethyl]-, C-(gamma-omega-perfluoro-C6-9-alkyl) esters, monosodium salts	95370-51-7

Prohibited Chemical Substances (continued)

No.	Substance/ Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use																		
25	Polycyclic-aromatic hydrocarbons (PAH)	• ANNEX XVII No.50 of REACH Regulation (EC) No 1907/2006	Rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity	0.0001% by weight (1 ppm) of any one of following PAHs in rubber or plastic component	Rubber, plasticizer, colored pigment for plastic																		
			Rubber or plastic components in toys, including activity toys, and childcare articles, that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity	0.00005% by weight (0.5 ppm) In rubber or plastic component																			
<p>Relevant substance</p> <table border="1"> <thead> <tr> <th data-bbox="496 846 1211 875">Substance name</th> <th data-bbox="1216 846 1436 875">CAS No.</th> </tr> </thead> <tbody> <tr> <td data-bbox="496 882 1211 911">Benzo[a]pyrene (BaP)</td> <td data-bbox="1216 882 1436 911">50-32-8</td> </tr> <tr> <td data-bbox="496 911 1211 940">Benzo[e]pyrene (BeP)</td> <td data-bbox="1216 911 1436 940">192-97-2</td> </tr> <tr> <td data-bbox="496 940 1211 969">Benzo[a]anthracene (BaA)</td> <td data-bbox="1216 940 1436 969">56-55-3</td> </tr> <tr> <td data-bbox="496 969 1211 999">Chrysen (CHR)</td> <td data-bbox="1216 969 1436 999">218-01-9</td> </tr> <tr> <td data-bbox="496 999 1211 1028">Benzo[b]fluoranthene (BbFA)</td> <td data-bbox="1216 999 1436 1028">205-99-2</td> </tr> <tr> <td data-bbox="496 1028 1211 1057">Benzo[j]fluoranthene (BjFA)</td> <td data-bbox="1216 1028 1436 1057">205-82-3</td> </tr> <tr> <td data-bbox="496 1057 1211 1086">Benzo[k]fluoranthene (BkFA)</td> <td data-bbox="1216 1057 1436 1086">207-08-9</td> </tr> <tr> <td data-bbox="496 1086 1211 1115">Dibenzo[a,h]anthracene (DBAhA)</td> <td data-bbox="1216 1086 1436 1115">53-70-3</td> </tr> </tbody> </table>						Substance name	CAS No.	Benzo[a]pyrene (BaP)	50-32-8	Benzo[e]pyrene (BeP)	192-97-2	Benzo[a]anthracene (BaA)	56-55-3	Chrysen (CHR)	218-01-9	Benzo[b]fluoranthene (BbFA)	205-99-2	Benzo[j]fluoranthene (BjFA)	205-82-3	Benzo[k]fluoranthene (BkFA)	207-08-9	Dibenzo[a,h]anthracene (DBAhA)	53-70-3
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Prohibited Chemical Substances (continued)

No.	Substance/ Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use										
26	Selected four Phthalates • Bis (2-ethylhexyl) phthalate (DEHP) • Dibutyl phthalate (DBP) • Benzyl butyl phthalate (BBP) • Diisobutyl phthalate (DIBP)	• Commission Delegated Directive (EU) 2015/863 amending Annex II to RoHS Directive 2011/65/EU • ANNEX XVII No.51 of REACH Regulation (EC) No 1907/2006	Electrical and electronic products (Including accessories) All except the exemption of item 2 below	0.1% by weight (1,000 ppm) of each phthalate in homogeneous material 0.1% by weight (1,000 ppm) for the sum of each phthalate in plasticised material	Plasticizer, dye, pigment, paint, ink, adhesive, lubricant										
<p>1. Prohibitions on above-mentioned "Commission Delegated Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU" shall apply to the products supplied to Nikon-Trimble from April 1, 2019.</p> <p>2. Above-mentioned "ANNEX XVII No.51 of REACH Regulation (EC) No 1907/2006" shall apply to the items supplied to Nikon-Trimble after July 7, 2019, and the following articles shall not apply.</p> <ol style="list-style-type: none"> (1) Articles exclusively for industrial or agricultural use, or for use exclusively in the open air, provided that no plasticised material comes into contact with human mucous membranes or into prolonged contact with human skin (2) Aircraft, placed on the market before 7 January 2024, or articles, whenever placed on the market, for use exclusively in the maintenance or repair of those aircraft, where those articles are essential for the safety and airworthiness of the aircraft (3) Motor vehicles within the scope of Directive 2007/46/EC, placed on the market before 7 January 2024, or articles, whenever placed on the market, for use exclusively in the maintenance or repair of those vehicles, where the vehicles cannot function as intended without those articles (4) Measuring devices for laboratory use, or parts thereof (5) Materials and articles intended to come into contact with food within the scope of Regulation (EC) No 1935/2004 or Commission Regulation (EU) No 10/2011 (6) Medical devices within the scope of Directives 90/385/EEC, 93/42/EEC or 98/79/EC, or parts thereof (7) Electrical and electronic equipment within the scope of Directive 2011/65/EU (8) The immediate packaging of medicinal products within the scope of Regulation (EC) No 726/2004, Directive 2001/82/EC or Directive 2001/83/EC <p>Relevant substance</p> <table border="1" data-bbox="497 1496 1449 1641"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr> <td>Bis (2-ethylhexyl) phthalate (DEHP)</td> <td>117-81-7</td> </tr> <tr> <td>Dibutyl phthalate (DBP)</td> <td>84-74-2</td> </tr> <tr> <td>Benzyl butyl phthalate (BBP)</td> <td>85-68-7</td> </tr> <tr> <td>Diisobutyl phthalate (DIBP)</td> <td>84-69-5</td> </tr> </tbody> </table>						Substance name	CAS No.	Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7	Dibutyl phthalate (DBP)	84-74-2	Benzyl butyl phthalate (BBP)	85-68-7	Diisobutyl phthalate (DIBP)	84-69-5
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Prohibited Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use															
27	Formaldehyde	• US Federal Law 40 CFR Part 770	Wood products or parts using plywood, particle board, medium density fiber board or the like	Intentionally added ^{(1),(5)}	Speaker box, rack															
		• ANNEX XVII No.72 of REACH Regulation (EC) No 1907/2006	Textiles	0.0075% by weight (75 ppm) In textile product	Adhesive, paint															
		Relevant substance <table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr> <td>Formaldehyde</td> <td>50-00-0</td> </tr> </tbody> </table>					Substance name	CAS No.	Formaldehyde	50-00-0										
Substance name	CAS No.																			
Formaldehyde	50-00-0																			
28	Arsenic/Arsenic compounds	• ANNEX XVII No.19 of REACH Regulation (EC) No 1907/2006	Wood	Intentionally added ⁽¹⁾	Preservative for wood															
		• ANNEX XVII No.72 of REACH Regulation (EC) No 1907/2006	• Clothing or related accessories • Textiles • Footwear	0.0001% by weight (1 ppm) of arsenic in homogeneous material																
			Optical glass, filter glass	Intentionally added ^{(1),(6)}	Antifoaming agent, decolorizer															
		Restriction on above-mentioned "ANNEX XVII No.72 of REACH Regulation (EC) No 1907/2006" shall apply to the items supplied to Nikon-Trimble after November 1, 2019 and shall not apply to the following uses. (1) Clothing, related accessories or footwear, or parts of clothing, related accessories or footwear, made exclusively of natural leather, fur or hide (2) Non-textile fasteners and non-textile decorative attachments (3) Second-hand clothing, related accessories, textiles other than clothing or footwear (4) Wall-to-wall carpets and textile floor coverings for indoor use, rugs and runners (5) Personal protective equipment within the scope of Regulation (EU) 2016/425 and medical devices within the scope of Regulation (EU) 2017/745 (6) Disposable textiles. 'Disposable textiles' means textiles that are designed to be used only once or for a limited time and are not intended for subsequent use for the same or a similar purpose. Representative examples of relevant substance <table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr> <td>Arsenic</td> <td>7440-38-2</td> </tr> <tr> <td>Chromated copper arsenate (CCA)</td> <td>37337-13-6</td> </tr> <tr> <td>Diarsenic pentoxide</td> <td>1303-28-2</td> </tr> <tr> <td>Diarsenic trioxide</td> <td>1327-53-3</td> </tr> <tr> <td>Triethyl arsenate</td> <td>15606-95-8</td> </tr> <tr> <td>Trilead diarsenate</td> <td>3687-31-8</td> </tr> <tr> <td>Calcium arsenate</td> <td>7778-44-1</td> </tr> </tbody> </table>					Substance name	CAS No.	Arsenic	7440-38-2	Chromated copper arsenate (CCA)	37337-13-6	Diarsenic pentoxide	1303-28-2	Diarsenic trioxide	1327-53-3	Triethyl arsenate	15606-95-8	Trilead diarsenate	3687-31-8
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Prohibited Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use																																																																																																																				
29	Fluorinated greenhouse gases (HFC, PFC, SF ₆)	•EU Revised F-Gas Regulation (EU) No 517/2014	Refer to the followings as products, equipments and gases to be prohibited	Intentionally added ⁽¹⁾	Refrigerant, Blowing agent, extinguishing agent, cleaning agent, insulating material, caustic gas																																																																																																																				
						<p>Fluorinated greenhouse gases to be controlled</p> <table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> <th>GWP^(※1)</th> </tr> </thead> <tbody> <tr> <td colspan="3" style="text-align: center;">Hydrofluorocarbons (HFCs)</td> </tr> <tr> <td>Trifluoromethane (fluoroform) (HFC-23)</td> <td>75-46-7</td> <td>14,800</td> </tr> <tr> <td>Difluoromethane (HFC-32)</td> <td>75-10-5</td> <td>675</td> </tr> <tr> <td>Methyl fluoride (methyl fluoride) (HFC-41)</td> <td>593-53-3</td> <td>92</td> </tr> <tr> <td>Pentafluoroethane (HFC-125)</td> <td>354-33-6</td> <td>3,500</td> </tr> <tr> <td>1,1,2,2-Tetrafluoroethane (HFC-134)</td> <td>359-35-3</td> <td>1,100</td> </tr> <tr> <td>1,1,1,2-Tetrafluoroethane (HFC-134a)</td> <td>811-97-2</td> <td>1,430</td> </tr> <tr> <td>1,1,2-Trifluoroethane (HFC-143)</td> <td>430-66-0</td> <td>353</td> </tr> <tr> <td>1,1,1-Trifluoroethane (HFC-143a)</td> <td>420-46-2</td> <td>4,470</td> </tr> <tr> <td>1,2-Difluoroethane (HFC-152)</td> 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(HFCs)			Trifluoromethane (fluoroform) (HFC-23)	75-46-7	14,800	Difluoromethane (HFC-32)	75-10-5	675	Methyl fluoride (methyl fluoride) (HFC-41)	593-53-3	92	Pentafluoroethane (HFC-125)	354-33-6	3,500	1,1,2,2-Tetrafluoroethane (HFC-134)	359-35-3	1,100	1,1,1,2-Tetrafluoroethane (HFC-134a)	811-97-2	1,430	1,1,2-Trifluoroethane (HFC-143)	430-66-0	353	1,1,1-Trifluoroethane (HFC-143a)	420-46-2	4,470	1,2-Difluoroethane (HFC-152)	624-72-6	53	1,1-Difluoroethane (HFC-152a)	75-37-6	124	1,1,1,2,3,3,3-Heptafluoropropane (HFC-227ea)	431-89-0	3,220	1,1,1,2,2,3-Hexafluoro-propane (HFC-236cb)	677-56-5	1,340	1,1,1,2,3,3-Hexafluoropropane (HFC-236ea)	431-63-0	1,370	1,1,1,3,3,3-Hexafluoropropane (HFC-236fa)	690-39-1	9,810	1,1,2,2,3-Pentafluoropropane (HFC-245ca)	679-86-7	693	1,1,1,3,3-Pentafluoropropane (HFC-245fa)	460-73-1	1,030	1,1,1,3,3-Pentafluorobutane (HFC-365mfc)	406-58-6	794	1,1,1,2,2,3,4,5,5,5-Decafluoropentane (HFC-43-10mee)	138495-42-8	1,640	Perfluorocarbons (PFCs)			Tetrafluoromethane 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Fluorinated greenhouse gases (PFC, SF₆, HFC) (continued)	Footwear	HFCs, PFCs, SF ₆	–	already prohibited	
	Tyres	HFCs, PFCs, SF ₆	–	already prohibited	
	One-component foams, except when required to meet national safety standards	HFCs, PFCs, SF ₆	≥ 150	already prohibited	
	Aerosol generators marketed and intended for sale to the general public for entertainment and decorative purposes, as listed in point 40 of Annex XVII to Regulation (EC) No 1907/2006, and signal horns	HFCs	≥ 150	already prohibited	
	Domestic refrigerators and freezers	HFCs	≥ 150	already prohibited	
	Technical aerosols except when required to meet national safety standards or when used for medical applications	HFCs	≥ 150	already prohibited	
	Refrigerators and freezers for commercial use (hermetically sealed equipment)	HFCs	≥ 2,500	Jan.1, 2020	
			≥ 150	Jan.1, 2022	
	Stationary refrigeration equipment except equipment intended for application designed to cool products to temperatures below – 50°C	HFCs	≥ 2,500	Jan.1, 2020	
	Multipack centralised refrigeration systems for commercial use with a rated capacity of 40 kW or more except in the primary refrigerant circuit of cascade systems where fluorinated greenhouse gases with a GWP of less than 1,500 may be used	HFCs, PFCs, SF ₆	≥ 150	Jan.1, 2022	
	Movable room air-conditioning equipment (hermetically sealed equipment which is movable between rooms by the end user)	HFCs	≥ 150	Jan.1, 2020	
	Single split air-conditioning systems containing less than 3 kg of fluorinated greenhouse gases	HFCs, PFCs, SF ₆	≥ 750	Jan.1, 2025	
	Foams except when required to meet national safety standards	Extruded polystyrene (XPS)	HFCs	≥ 150	Jan.1, 2020
		Other foams			Jan.1, 2023

(※2) The GWP of mixtures containing fluorinated greenhouse gases shall be calculated in accordance with Annex IV of (EU) No 517/2014 .

Notes:

(1) Intentionally added:

Intentionally added means that the corresponding substance or compound including the corresponding substance is intentionally added during manufacturing process, etc., irrespective of quantity.

Ordinary impurities do not fall under this category.

The substance, for which “Intentionally added” is written in its threshold field, must not be intentionally added.

(2) Regulatory thresholds for substances in these applications are based on emission or exposure limits rather than the concentration in the product. The regulatory limit is:

Radioactive substances - a dose rate exceeding 1 μSv h⁻¹ at a distance of 0,1 m

Because emission and exposure levels cannot be derived from actual concentration, a threshold level of “intentionally added” is indicated for reporting. Suppliers may choose to report a default concentration of 0.1% by weight in the product for these substances, in lieu of determining the exact concentrations in their products, to indicate that the substance is known to be present in their product, as the actual concentration in the product is not informative for regulatory compliance assessment.

- (3) The European Community's ban applies to azocolourants and azodyes that by reductive cleavage of azo groups may release one of the 22 aromatic amines listed. The threshold level given applies to these amines, not to the azocolourants and azodyes.
- (4) HBCD is also referred to as HBCDD. HBCD and HBCDD are the same substance.
- (5) Regulatory thresholds for substances in these applications are based on emission limits.
 - Hardwood plywood (made with a veneer core or a composite core) – 0.05 ppm
 - Medium-density fiberboard (MDF) – 0.11ppm
 - Thin MDF – 0.13ppm
 - Particleboard – 0.09ppm
- (6) However, the use of arsenic is conditionally permitted when their substitutions are not available currently because of material technology and they are technically and scientifically essential to maintain the optical performance required in product designing.
- (7) PFOA related substances refer to substances (including its salts and polymers) having a linear or branched perfluoroheptyl group with the formula C7F15- or perfluorooctyl group with the formula C8F17- ,as one of the structural elements. The following substances are excluded.
 - C8F17-X, where X= F, Cl, Br.
 - C8F17-C(=O)OH, C8F17-C(=O)O-X' or C8F17-CF2-X' (where X'=any group, including salts).
- (8) When PFOAs are contained in mixtures applied to the article, we have determined that the denominator for calculating the concentration may be the total mass of articles and mixtures (after volatilization / after reaction) with reference to "Guidance on requirements for substances in articles" issued by ECHA. However, this interpretation may be changed due to revisions of laws and regulations.

Annex 1. Applications exempted from the RoHS Directive Annex III

The following table lists the applications exempted from the RoHS Directive as of January 10, 2020. As a principle, these applications are exempted from Section I-1, "Prohibited Chemical Substances".

However, the Annex to RoHS Directive is subject to continual revision, and suppliers should be responsible for ensuring that they refer to the latest version when necessary.

No.	Exemption	Expiration date ^{(1),(2)}		
		Category 1-7, 10	Category 8, 9,11	
1	Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):			
1(a)	For general lighting purposes < 30 W	2.5mg	Under discussion	July 21,2021
1(b)	For general lighting purposes ≥ 30 W and < 50 W	3.5mg	Under discussion	July 21, 2021
1(c)	For general lighting purposes ≥ 50 W and < 150 W	5mg	Under discussion	July 21, 2021
1(d)	For general lighting purposes ≥ 150 W	15mg	Under discussion	July 21, 2021
1(e)	For general lighting purposes with circular or square structural shape and tube diameter ≤ 17 mm	7mg	Under discussion	July 21, 2021
1(f)	For special purposes	5mg	Under discussion	July 21, 2021
1(g)	For general lighting purposes < 30 W with a lifetime equal or above 20,000 h	3.5mg	Under discussion	July 21, 2021
2(a)	Mercury in double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp):			
2(a)(1)	Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2)	4 mg	Under discussion	July 21, 2021
2(a)(2)	Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5)	3 mg	Under discussion	July 21, 2021
2(a)(3)	Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8)	3.5 mg	Under discussion	July 21, 2021
2(a)(4)	Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12)	3.5 mg	Under discussion	July 21, 2021
2(a)(5)	Tri-band phosphor with long lifetime (≥ 25,000 h)	5 mg	Under discussion	July 21, 2021
2(b)	Mercury in other fluorescent lamps not exceeding (per lamp):			
2(b)(3)	Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9)	15mg	Under discussion	July 21, 2021
2(b)(4)	Lamps for other general lighting and special purposes (e.g. induction lamps)	15mg	Under discussion	July 21, 2021
3	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp):			
3(a)	Short length (≤ 500 mm)	3.5mg	Under discussion	July 21, 2021
3(b)	Medium length (> 500 mm and ≤ 1,500 mm)	5mg	Under discussion	July 21, 2021
3(c)	Long length (> 1,500 mm)	13mg	Under discussion	July 21, 2021
4(a)	Mercury in other low pressure discharge lamps (per lamp)	15mg	Under discussion	July 21, 2021
4(b)	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60:			
4(b)- I	P ≤ 155 W	30mg	Under discussion	July 21, 2021
4(b)- II	155 W < P ≤ 405 W	40mg	Under discussion	July 21, 2021
4(b)- III	P > 405 W	40mg	Under discussion	July 21, 2021

Applications exempted from the RoHS Directive Annex III (continued)

No.	Exemption	Expiration date ^{(1),(2)}	
		Category 1-7, 10	Category 8, 9,11
4(c)	Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner):		
4(c)- I	P ≤ 155 W	25mg	Under discussion July 21, 2021
4(c)-II	155 W < P ≤ 405 W	30mg	Under discussion July 21, 2021
4(c)-III	P > 405 W	40mg	Under discussion July 21, 2021
4(e)	Mercury in metal halide lamps (MH)		Under discussion July 21, 2021
4(f)	Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex		Under discussion July 21, 2021
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 December 31, 2018 Expired on December 31, 2018
5(a)	Lead in glass of cathode ray tubes		Expired on July 21, 2016 July 21, 2021
5(b)	Lead in glass of fluorescent tubes not exceeding 0,2 % by weight		Under discussion July 21, 2021
6(a)	Lead as an alloying element in steel for machining purposes and in galvanised steel containing up to 0,35 % lead by weight		June 30. 2019 (Shifted to 6(a)-I) July 21, 2021
6(a)-I	Lead as an alloying element in steel for machining purposes containing up to 0,35 % lead by weight and in batch hot dip galvanised steel components containing up to 0,2 % lead by weight		July 21, 2021
6(b)	Lead as an alloying element in aluminium containing up to 0,4 % lead by weight		June 30. 2019 (Shifted to 6(b)-I, II) July 21, 2021
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		July 21, 2021
6(b)-II	Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight		May 18, 2021
6(c)	Copper alloy containing up to 4 % lead by weight		July 21, 2021 July 21, 2021
7(a)	Lead in high melting temperature type solders (i.e. lead- based alloys containing 85 % by weight or more lead)		July 21, 2021 (except applications of No.24) July 21, 2021
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications		Expired on July 21, 2016 July 21, 2021
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		July 21, 2021 (except applications of No.34) July 21, 2021
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher		July 21, 2021 July 21, 2021
7(c)-III	For spare parts for EEE placed on the market before January 1, 2013, lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC		Indefinite period Indefinite period
7(c)-IV	Lead in PZT based dielectric ceramic materials for capacitors which are part of integrated circuits or discrete semiconductors		July 21, 2021 July 21, 2021
8(a)	For spare parts for EEE placed on the market before January 1, 2012, cadmium and its compounds in one shot pellet type thermal cut-offs		Indefinite period Indefinite period
8(b)	Cadmium and its compounds in electrical contacts		February 29, 2020 July 21, 2021

Applications exempted from the RoHS Directive Annex III (continued)

No.	Exemption	Expiration date ^{(1),(2)}	
		Category 1-7, 10	Category 8, 9,11
8(b)-I	Cadmium and its compounds in electrical contacts used in: - circuit breakers, - thermal sensing controls, - thermal motor protectors (excluding hermetic thermal motor protectors) - AC switches rated at: - 6 A and more at 250 V AC and more, or - 12 A and more at 125 V AC and more, - DC switches rated at 20 A and more at 18 V DC and more, and - switches for use at voltage supply frequency \geq 200 Hz.	July 21, 2021	
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75 % by weight in the cooling solution	Under discussion	July 21, 2021
9(b)	Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications		July 21, 2021
9(b)- I	Lead in bearing shells and bushes for refrigerant-containing hermetic scroll compressors with a stated electrical power input equal or below 9 kW for heating, ventilation, air conditioning and refrigeration (HVACR) applications	Expired on July 21, 2019	
11(a)	For spare parts for EEE placed on the market before September 24, 2010, lead used in C-press compliant pin connector systems	Indefinite period	Indefinite period
11(b)	For spare parts for EEE placed on the market before January 1, 2013, lead used in other than C-press compliant pin connector systems	Indefinite period	Indefinite period
12	For spare parts for EEE placed on the market before September 24, 2010, lead as a coating material for the thermal conduction module C-ring	Indefinite period	Indefinite period
13(a)	Lead in white glasses used for optical applications	July 21, 2021	July 21, 2021
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards		July 21, 2021
13(b)- I	Cadmium and lead in filter glasses and glasses used for reflectance standards	July 21, 2021	
13(b)-II	Cadmium in striking optical filter glass types; excluding applications falling under point 39 of this Annex	July 21, 2021	
13(b)-III	Cadmium and lead in glazes used for reflectance standards	July 21, 2021	
14	For spare parts for EEE placed on the market before January 1, 2011, 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	Indefinite period	Indefinite period
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	February 29, 2020	July 21, 2021
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.	July 21, 2021	
17	Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications	Expired on July 21, 2016	July 21, 2021
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)	July 21, 2021	July 21, 2021
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	July 21, 2021 (Category 5)	July 21, 2021 (Category 8)
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	February 29, 2020	July 21, 2021
21(a)	Cadmium when used in colour printed glass to provide filtering functions, used as a component in lighting applications installed in displays and control panels of EEE	July 21, 2021	

Applications exempted from the RoHS Directive Annex III (continued)

No.	Exemption	Expiration date ^{(1),(2)}	
		Category 1-7, 10	Category 8, 9,11
21(b)	Cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	July 21, 2021	
21(c)	Lead in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	July 21, 2021	
23	<u>For spare parts</u> for EEE placed on the market before September 24, 2010, lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm and less	Indefinite period	Indefinite period
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	July 21, 2021	July 21, 2021
25	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring	Expired on July 21, 2016	July 21, 2021
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC	July 21, 2021	July 21, 2021
30	Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more	Expired on July 21, 2016	July 21, 2021
31	Lead in soldering materials in mercury free flat fluorescent lamps (which, e.g. are used for liquid crystal displays, design or industrial lighting)	Expired on July 21, 2016	July 21, 2021
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes	July 21, 2021	July 21, 2021
33	Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers	Expired on July 21, 2016	July 21, 2021
34	Lead in cermet-based trimmer potentiometer elements	July 21, 2021	July 21, 2021
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body	July 21, 2021	July 21, 2021
38	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide	Expired on July 21, 2016	July 21, 2021
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)	Under discussion	Under discussion
41	Lead in solders and termination finishes of electrical and electronic components and finishes of printed circuit boards used in ignition modules and other electrical and electronic engine control systems, which for technical reasons must be mounted directly on or in the crankcase or cylinder of hand-held combustion engines (classes SH:1, SH:2, SH:3 of Directive 97/68/EC of the European Parliament and of the Council	Under discussion	Under discussion
42	Lead in bearings and bushes of diesel or gaseous fuel powered internal combustion engines applied in non-road professional use equipment: — with engine total displacement ≥ 15 litres; or — with engine total displacement < 15 litres and the engine is designed to operate in applications where the time between signal to start and full load is required to be less than 10 seconds; or regular maintenance is typically performed in a harsh and dirty outdoor environment, such as mining, construction, and agriculture applications.		July 21, 2024 (Applies to category 11, excluding applications covered by entry 6(c))
43	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		July 21, 2024 (Category 11)

	duration or intermittent contact over a period of 30 minutes, per day.		
44	Lead in solder of sensors, actuators, and engine control units 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.		July 21, 2024 (Category 11)

Notes:

(1) As for the exempted items in Category 8 and 9 where the expiration date is specified as "July 21, 2021", the expiration dates of in-vitro diagnostic medical device and industrial monitoring and control instruments are as follows.

- Category 8 for in-vitro diagnostic medical device: July 21, 2023

- Category 9 for industrial monitoring and control instruments: July 21, 2024

Note that, as for the exempted items where the expiration date is not "July 21, 2021", the given date is the expiration date that is applied to all the items in Category 8 and 9 .

(2) Expiration date in Category 11 is in principle "July 21, 2024", five years after the start of application.

Annex 2. Applications exempted from the RoHS Directive Annex IV

The following table lists the applications (category 8: medical device, category 9: monitoring and control instruments) exempted from the RoHS Directive as of January 10, 2020. As a principle, these applications are exempted from Section I-1, "Prohibited Chemical Substances".

However, the Annex to RoHS Directive is subject to continual revision, and suppliers should be responsible for ensuring that they refer to the latest version when necessary.

No.	Exemption	Expiration date ⁽¹⁾
Equipment utilising or detecting ionising radiation		
1	Lead, cadmium and mercury in detectors for ionising radiation	July 21, 2021
2	Lead bearings in X-ray tubes	July 21, 2021
3	Lead in electromagnetic radiation amplification devices: micro-channel plate and capillary plate	July 21, 2021
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, 2021
5	Lead in shielding for ionising radiation	July 21, 2021
6	Lead in X-ray test objects	July 21, 2021
7	Lead stearate X-ray diffraction crystals	July 21, 2021
8	Radioactive cadmium isotope source for portable X-ray fluorescence spectrometers	July 21, 2021
Sensors, detectors and electrodes		
1a	Lead and cadmium in ion selective electrodes including glass of pH electrodes	July 21, 2021
1b	Lead anodes in electrochemical oxygen sensors	July 21, 2021
1c	Lead, cadmium and mercury in infra-red light detectors	July 21, 2021
1d	Mercury in reference electrodes: low chloride mercury chloride, mercury sulphate and mercury oxide	July 21, 2021
Others		
9	Cadmium in helium-cadmium lasers	July 21, 2021
10	Lead and cadmium in atomic absorption spectroscopy lamps	July 21, 2021
11	Lead in alloys as a superconductor and thermal conductor in MRI	July 21, 2021
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
13	Lead in counterweights	July 21, 2021
14	Lead in single crystal piezoelectric materials for ultrasonic transducers	July 21, 2021
15	Lead in solders for bonding to ultrasonic transducers	July 21, 2021
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, 2021
17	Lead in solders in portable emergency defibrillators	July 21, 2021
18	Lead in solders of high performance infrared imaging modules to detect in the range 8-14µm	July 21, 2021
19	Lead in Liquid crystal on silicon (LCoS) displays	July 21, 2021
20	Cadmium in X-ray measurement filters	July 21, 2021
21	Cadmium in phosphor coatings in image intensifiers for X-ray images	Expired on December 31, 2019
	For spare parts placed on the EU market before January 1, 2020, Cadmium in spare parts for X-ray systems	Indefinite period
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
23	Lead as an alloying element for bearings and wear surfaces in medical equipment exposed to ionising radiation	June 30, 2021

Applications exempted from the RoHS Directive Annex IV (continued)

No.	Exemption	Expiration date ⁽¹⁾
24	Lead enabling vacuum tight connections between aluminium and steel in X-ray image intensifiers	Expired on 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
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	June 30, 2021
27	Lead in — solders, — termination coatings of electrical and electronic components and printed circuit boards, — connections of electrical wires, shields and enclosed connectors, which are used in (a) magnetic fields within the sphere of 1 m radius around the isocentre of the magnet in medical magnetic resonance imaging equipment, including patient monitors designed to be used within this sphere, or (b) magnetic fields within 1 m distance from the external surfaces of cyclotron magnets, magnets for beam transport and beam direction control applied for particle therapy	Under discussion
28	Lead in solders for mounting cadmium telluride and cadmium zinc telluride digital array detectors to printed circuit boards	Expired on 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
30	Hexavalent chromium in alkali dispensers used to create photocathodes in X-ray image intensifiers	Expired on December 31, 2019
	Hexavalent chromium in spare parts for X-ray systems placed on the EU market before January 1, 2020	Indefinite period
31a	Lead, cadmium and hexavalent chromium in reused spare parts, recovered from medical devices placed on the market before July 22, 2014 and used in category 8 equipment placed on the market before July 22, 2021, provided that reuse takes place in auditable closed-loop business-to-business return systems, and that the reuse of parts is notified to the consumer	July 21, 2021
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	Expired on 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	(for class IIa) Expired on June 30, 2016 (for class IIb) December 31, 2020
34	Lead as an activator in the fluorescent powder of discharge lamps when used for extracorporeal photopheresis lamps containing BSP (BaSi ₂ O ₅ :Pb) phosphors	July 22, 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.	December 31, 2020
	Lead used in other than C-press compliant pin connector systems in <u>spare parts</u> for industrial monitoring and control instruments placed on the market before January 1, 2021.	Indefinite period

Applications exempted from the RoHS Directive Annex IV (continued)

No.	Exemption	Expiration date ⁽¹⁾
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.	Under discussion
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.	Expired on December 31, 2019
	Lead in solder in one interface of large area stacked die elements with more than 500 interconnects per interface which are used in spare parts for X-ray detectors of computed tomography and X-ray systems.	Indefinite period
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 × 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 × 10 ⁷ .	July 21, 2021
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.	December 31, 2020
	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021.	Indefinite period
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.	Expired on December 31, 2018
42	Mercury in electric rotating connectors used in intravascular ultrasound imaging systems capable of high operating frequency (> 50 MHz) modes of operation.	Under discussion

Notes:

(1) As for the exempted items in Category 8 and 9 where the expiration date is specified as "July 21, 2021", the expiration date of in-vitro diagnostic medical device and industrial monitoring and control instruments are as follows.

- Category 8 for in-vitro diagnostic medical device: July 21, 2023
- Category 9 for industrial monitoring and control instruments: July 21, 2024

Note that, as for the exempted items where the expiration date is not "July 21, 2021", the given date is the expiration date that is applied to all the items in Category 8 and 9.

I-1-(2) Prohibited Chemical Substances in Batteries

Especially for batteries, use of three heavy metals shall be prohibited as shown in the following table based on the world's key regulations, separately from Section I-1, "Prohibited Chemical Substances".

Substance	Prohibited battery	Exempted battery	Corresponding regulation
Cadmium	All nickel–cadmium batteries	Nothing	<ul style="list-style-type: none"> - Korea "Quality Management and Industrial Products Safety Management Enforcement Ordinances" - Taiwan Waste Disposal Act (Regulation on heavy metal) - EU Batteries Directive (2006/66/EC)
	Zinc–carbon batteries, alkaline manganese batteries, and nickel–metal hydride (Ni-MH) secondary batteries that contain cadmium more than 0.001% by weight	Button cells	
	Batteries, other than the batteries listed above, that contain cadmium more than 0.002% by weight	Batteries used for the following purposes: <ul style="list-style-type: none"> - Emergency and alarm systems, including emergency lighting - Medical equipment 	
Lead	Zinc–carbon batteries that contain lead more than 0.1% by weight	Nothing	<ul style="list-style-type: none"> - Brazilian Batteries Regulation National Environmental Council Resolution 401 - Chinese National Standards regarding the limit of hazardous substances in batteries (GB24427, GB24428) - Korea "Quality Management and Industrial Products Safety Management Enforcement Ordinances"
	Alkaline manganese batteries that contain lead more than 0.004% by weight	Nothing	
	Nickel–metal hydride (Ni-MH) secondary batteries that contain lead more than 0.4% by weight	Button cells	
Mercury	All batteries, other than the following batteries that contain mercury more than 0.0005% by weight	Nothing	<ul style="list-style-type: none"> - EU Batteries Directive (2006/66/EC) - Korea "Quality Management and Industrial Products Safety Management Enforcement Ordinances" - Taiwan Waste Disposal Act (Regulation on heavy metal)
	Zinc–carbon batteries, alkaline manganese batteries, and nickel–metal hydride (Ni-MH) secondary batteries that contain mercury more than 0.0001% by weight	Button cells	

I-2. Controlled Chemical Substances

Sections I-2-(1) and I-2-(2) show the chemical substances that must be appropriately managed when procured Items (finished products, parts and materials, packaging materials) contain them. For these chemical substances, suppliers are required to maintain a system to provide information on the type and amount used, part of the product where used, etc., immediately upon request of Nikon-Trimble. Note that the legal and regulatory, thresholds, and others are listed for the purpose of reference in Section I-2-(1).

I-2-(1) Controlled Chemical Substances

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use
1	Candidate substances for authorization of REACH Regulation (SVHC) Refer to the SVHC list in I-2-(2).	• Article 33 of REACH Regulation (EC) No 1907/2006	All	0.1% by weight (1,000 ppm) in a part or material ⁽⁷⁾	
2	Beryllium oxide (BeO)	• EU WEEE Directive 2002/96/EC	All	0.1% by weight (1,000 ppm) in a part	Ceramics
Relevant substance					
Substance name					CAS No.
Beryllium oxide (BeO)					1304-56-9
3	Brominated flame retardants (other than PBBs, PBDEs, or HBCDD)	• JS709	Plastic materials except laminated printed board ⁽¹⁾	0.1% total bromine content by weight (1,000 ppm) in plastic material	flame retardant for housing, connector, package molding sealing
		• IPC-4101 • IEC61249-2-21	Laminated printed board ⁽¹⁾	0.09% total bromine content by weight (900 ppm) in a laminated board	flame retardant
Representative examples of relevant substance					
Substance name					CAS No.
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(14) [Aliphatic/alicyclic brominated compounds]					—
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(15) [Aliphatic/alicyclic brominated compounds in combination with antimony compounds]					—
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(16) [Aromatic brominated compounds excluding brominated diphenyl ether and biphenyls]					—
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(17) [Aromatic brominated compounds excluding brominated diphenyl ether and biphenyls] in combination with antimony compounds]					—
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(22) [Aliphatic/alicyclic chlorinated and brominated compounds]					—
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(42) [Brominated organic phosphorus compounds]					—
Poly(2,6-dibromo-phenylene oxide)					69882-11-7
Tetra-decabromo-diphenoxy-benzene					58965-66-5
1,2-Bis(2,4,6-tribromo-phenoxy) ethane					37853-59-1
3,5,3',5'-Tetrabromo-bisphenol A (TBBA)					79-94-7

Brominated flame retardants (other than PBBs, PBDEs, or HBCDD) (continued)	TBBA, unspecified	30496-13-0
	TBBA-epichlorhydrin oligomer	40039-93-8
	TBBA-TBBA-diglycidyl-ether oligomer	70682-74-5
	TBBA carbonate oligomer	28906-13-0
	TBBA carbonate oligomer, phenoxy end capped	94334-64-2
	TBBA carbonate oligomer, 2,4,6-tribromo-phenol terminated	71342-77-3
	TBBA-bisphenol A-phosgene polymer	32844-27-2
	Brominated epoxy resin end-capped with tribromophenol	139638-58-7
	Brominated epoxy resin end-capped with tribromophenol	135229-48-0
	TBBA-(2,3-dibromo-propyl-ether)	21850-44-2
	TBBA bis-(2-hydroxy-ethyl-ether)	4162-45-2
	TBBA-bis-(allyl-ether)	25327-89-3
	TBBA-dimethyl-ether	37853-61-5
	Tetrabromo-bisphenol S	39635-79-5
	TBBS-bis-(2,3-dibromo-propyl-ether)	42757-55-1
	2,4-Dibromo-phenol	615-58-7
	2,4,6-tribromo-phenol	118-79-6
	Pentabromo-phenol	608-71-9
	2,4,6-Tribromo-phenyl-allyl-ether	3278-89-5
	Tribromo-phenyl-allyl-ether, unspecified	26762-91-4
	Bis(methyl)tetrabromo-phthalate	55481-60-2
	Bis(2-ethylhexyl)tetrabromo-phthalate	26040-51-7
	2-Hydroxy-propyl-2-(2-hydroxy-ethoxy)-ethyl-TBP	20566-35-2
	TBPA, glycol-and propylene-oxide esters	75790-69-1
	N,N'-Ethylene -bis-(tetrabromo-phthalimide)	32588-76-4
	Ethylene-bis(5,6-dibromo-norbornane-2,3-dicarboximide)	52907-07-0
	2,3-Dibromo-2-butene-1,4-diol	3234-02-4
	Dibromo-neopentyl-glycol	3296-90-0
	Dibromo-propanol	96-13-9
	Tribromo-neopentyl-alcohol	36483-57-5
	Poly tribromo-styrene	57137-10-7
	Tribromo-styrene	61368-34-1
	Dibromo-styrene grafted PP	171091-06-8
	Poly-dibromo-styrene	31780-26-4
	Bromo-/Chloro-paraffins	68955-41-9
	Bromo-/Chloro-alpha-olefin	82600-56-4
	Vinylbromide	593-60-2
	Tris-(2,3-dibromo-propyl)-isocyanurate	52434-90-9
	Tris(2,4-Dibromo-phenyl) phosphate	49690-63-3
	Tris(tribromo-neopentyl) phosphate	19186-97-1
	Chlorinated and brominated phosphate ester	125997-20-8
	Pentabromo-toluene	87-83-2
	Pentabromo-benzyl bromide	38521-51-6
	1,3-Butadiene homopolymer,brominated	68441-46-3
	Pentabromo-benzyl-acrylate, monomer	59447-55-1
	Pentabromo-benzyl-acrylate, polymer	59447-57-3
	Decabromo-diphenyl-ethane	84852-53-9
	Tribromo-bisphenyl-maleinimide	59789-51-4
	Tetrabromo-cyclo-octane	31454-48-5
	1,2-Dibromo-4-(1,2 dibromo-methyl)-cyclo-hexane	3322-93-8
	Tetrabromophthalic acid Na salt	25357-79-3
	Tetrabromo phthalic anhydride	632-79-1
	Octabromo-1,1,3-trimethyl-1-phenylindane (FR-1808)	155613-93-7

Controlled Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use							
4	Chlorinated flame retardants	• JS709	Plastic materials except laminated printed board ⁽¹⁾	0.1% total chlorine content by weight (1,000 ppm) in plastic material	flame retardant for housing, connector, package molding sealing							
		• IPC-4101 • IEC61249-2-21	Laminated printed board ⁽¹⁾	0.09% total chlorine content by weight (900 ppm) in a laminated board	flame retardant							
		Representative examples of relevant substance										
		<table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr> <td>Tetrakis(2-chloroethyl)dichloroisopentylidiphosphate</td> <td>38051-10-4</td> </tr> <tr> <td>Tris(1-chloro-2-propyl)phosphate</td> <td>13674-84-5</td> </tr> <tr> <td>Tris(2,3-dichloro-1-propyl)phosphate</td> <td>66108-37-0</td> </tr> </tbody> </table>					Substance name	CAS No.	Tetrakis(2-chloroethyl)dichloroisopentylidiphosphate	38051-10-4	Tris(1-chloro-2-propyl)phosphate	13674-84-5
Substance name	CAS No.											
Tetrakis(2-chloroethyl)dichloroisopentylidiphosphate	38051-10-4											
Tris(1-chloro-2-propyl)phosphate	13674-84-5											
Tris(2,3-dichloro-1-propyl)phosphate	66108-37-0											
5	Nickel ⁽⁴⁾ /Nickel compounds	• ANNEX XVII No.27 of REACH Regulation (EC) No 1907/2006	All, where prolonged skin contact is expected ⁽⁴⁾	Intentionally added ^{(2),(3)}	Stainless steel, plating (Example application for prolonged skin contact : headphone)							
		Relevant substance										
		<table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr> <td>Nickel</td> <td>7440-02-0</td> </tr> </tbody> </table>					Substance name	CAS No.	Nickel	7440-02-0		
Substance name	CAS No.											
Nickel	7440-02-0											
6	Perchlorates	• US/ California - Perchlorate Contamination Prevention Act of 2003	All	0.000006% by weight (0.006 ppm) of the product	Coin cell batteries							
		Representative examples of relevant substance										
		<table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr> <td>Lithium perchlorate</td> <td>7791-03-9</td> </tr> </tbody> </table>					Substance name	CAS No.	Lithium perchlorate	7791-03-9		
Substance name	CAS No.											
Lithium perchlorate	7791-03-9											
7	Diisodecyl phthalate (DIDP)	• ANNEX XVII No.52 of REACH Regulation (EC) No 1907/2006 • U.S. Consumer Product Safety Improvement Act (CPSIA)	Plastic material	0.1% by weight (1,000 ppm) in plasticized material	Plasticizer, dye, pigment, paint, ink, adhesive, lubricant							
		Relevant substances										
		<table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr> <td>Diisodecyl phthalate (DIDP)</td> <td>26761-40-0 68515-49-1</td> </tr> </tbody> </table>					Substance name	CAS No.	Diisodecyl phthalate (DIDP)	26761-40-0 68515-49-1		
Substance name	CAS No.											
Diisodecyl phthalate (DIDP)	26761-40-0 68515-49-1											
8	Diisononyl phthalate (DINP)	• ANNEX XVII No.52 of REACH Regulation (EC) No 1907/2006 • U.S. Consumer Product Safety Improvement Act (CPSIA)	Plastic material	0.1% by weight (1,000 ppm) in plasticized material	Plasticizer, dye, pigment, paint, ink, adhesive, lubricant							
		Relevant substances										
		<table border="1"> <thead> <tr> <th>Substance name</th> <th>CAS No.</th> </tr> </thead> <tbody> <tr> <td>Diisononyl phthalate (DINP)</td> <td>28553-12-0 68515-48-0</td> </tr> </tbody> </table>					Substance name	CAS No.	Diisononyl phthalate (DINP)	28553-12-0 68515-48-0		
Substance name	CAS No.											
Diisononyl phthalate (DINP)	28553-12-0 68515-48-0											

Controlled Chemical Substances (continued)

No.	Substance/Category	Key Legal and Regulatory or Industry Standard	Application(s)	Threshold Level	Examples of Use
9	Di-n-octyl phthalate (DNOP)	• ANNEX XVII No.52 of REACH Regulation (EC) No 1907/2006 • U.S. Consumer Product Safety Improvement Act (CPSIA)	Plastic material	0.1% by weight (1,000 ppm) in plasticized material	Plasticizer, dye, pigment, paint, ink, adhesive, lubricant
		Relevant substances			
		Substance name	CAS No.		
		Di-n-octyl phthalate (DNOP)	117-84-0		
10	Polyvinyl chloride (PVC) / PVC compounds	• JS709	Plastic materials except applications specified as prohibited chemical substances	0.1% total chlorine content by weight (1,000 ppm) in plastic material	Insulator, cable coating, film, tube, tamperproof labels, clam-shell packs
		Representative examples of relevant substance			
		Substance name	CAS No.		
		Polyvinyl chloride (PVC)	9002-86-2		
11	Perfluorohexanesulphonic acid (PFHxS), its salts and PFHxS-related substances	• Candidate substances for listing in Annex A (elimination) to the POPs Convention	All	Intentionally added ⁽⁴⁾	Carpets, leather, textile, paper, plating, electronic components
		Representative examples of relevant substance			
		Substance name	CAS No.		
		Perfluorohexanesulphonic acid (PFHxS)	355-46-4		
		Sodium perfluorohexanesulfonate	82382-12-5		
		Perfluorohexanesulfonic acid potassium salt	3871-99-6		
		1-Hexanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-, lithium salt	55120-77-9		
		Ammonium perfluorohexane-1-sulfonate	68259-08-5		

Notes:

- (1) A laminated printed wiring board refers to the layered board materials excluding surface finishing and components
- (2) Intentionally added: It means that the corresponding substance or compound including the corresponding substance is intentionally added during manufacturing process, etc., irrespective of quantity. Ordinary impurities do not fall under this category. The substance, for which "Intentionally added" is written in its threshold field, must not be intentionally added.
- (3) Regulatory thresholds for substances in these applications are based on emission or exposure limits rather than on the concentration in the product. The regulatory limits are:
 - Nickel released from the parts coming into direct and prolonged contact with the skin : 0,5 µg/cm²/week (Based on DIN EN 1811)

Because emission and exposure levels cannot be derived from actual concentrations, a threshold level of "intentionally added" is indicated for reporting. Suppliers may choose to report a default concentration of 0.1% by weight in the product for these substances, in lieu of determining the exact concentrations in their products, to indicate that the substance is known to be present in their product, as the actual concentration in the product is not informative for regulatory compliance assessment.
- (4) Nickel must be reported in certain regulated applications where it is likely to result in prolonged skin exposure (e.g., an outer enclosure for a portable electronic product designed to be carried). Use of nickel or nickel contained in components and parts designed to be located inside the outer enclosure of a product need not be reported.
- (5) According to the judgement of European Court of Justice on September 2015, in principle the denominator of the threshold (control value) would be a part or material constituting the product.

I-2-(2) SVHCs of REACH Regulation

SVHCs of REACH Regulation are subject to continual addition, and suppliers should be responsible for always ensuring that they refer to the latest version. The following table lists the SVHCs as of January 20, 2020. Refer to the following ECHA website for the latest SVHCs information.

<https://echa.europa.eu/candidate-list-table>

Besides, some of SVHCs are defined to be the “prohibited chemical substances”. Refer to the list of Section I-1-(1), “Prohibited Chemical Substances” for the substances marked as “PCS” in the remarks column of the following list.

No.	Substance name	EC No.	CAS No.	Examples of use	Remarks
1	Anthracene	204-371-1	120-12-7	Raw material of carbon black, stabilizer	
2	4,4'-Diaminodiphenylmethane (MDA)	202-974-4	101-77-9	Hardening agent	PCS No.18
3	Dibutyl phthalate	201-557-4	84-74-2	Plasticizer, softening agent	PCS No.26
4	Cobalt dichloride	231-589-4	7646-79-9	Drying agent, pigment, coloring agent	
5	Diarsenic pentaoxide	215-116-9	1303-28-2	addition agent for glass, wood preservative, dye	PCS No.28
6	Diarsenic trioxide	215-481-4	1327-53-3	Decolorant for glass and enamel, wood preservative, material for catalyzer	PCS No.28
7	Sodium dichromate	234-190-3 —	10588-01-9 (anhydrate) 7789-12-0 (dihydrate)	Pigment, dye	PCS No.2
8	5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	201-329-4	81-15-2	Perfume	
9	Bis (2-ethylhexyl)phthalate (DEHP)	204-211-0	117-81-7	Plasticizer	PCS No.26
10	Hexabromocyclododecane (HBCD) and all major diastereoisomers identified: α-HBCD β-HBCD γ-HBCD	247-148-4	25637-99-4	Flame retarder	PCS No.23
		221-695-9	3194-55-6		
		—	134237-50-6		
		—	134237-51-7		
—	—	134237-52-8			
*11	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) (SCCPs)	287-476-5	85535-84-8	Plasticizer, flame retarder	PCS No.10
12	Bis(tributyltin)oxide (TBTO)	200-268-0	56-35-9	Wood preservative, paint, pigment, antistatic agent, foaming agent	PCS No.12
13	Lead hydrogen arsenate	232-064-2	7784-40-9	Wood preservative, addition agent for glass and electronic component	PCS No.3, 28
14	Benzyl butyl phthalate (BBP)	201-622-7	85-68-7	Plasticizer, ink, adhesive	PCS No.26
15	Triethyl arsenate	427-700-2	15606-95-8	Wood preservative, addition agent for glass and electronic component	PCS No.28

SVHCs of REACH Regulation (continued)

No.	Substance name	EC No.	CAS No.	Examples of use	Remarks
16	Anthracene oil	292-602-7	90640-80-5	Component in tar oil (e.g. for production of carbon black, heating oil, bunker fuel), impregnation agent, component in tar paint for special application	
17	Anthracene oil, anthracene paste, distr. lights	295-278-5	91995-17-4		
18	Anthracene oil, anthracene paste, anthracene fraction	295-275-9	91995-15-2		
19	Anthracene oil, anthracene-low	292-604-8	90640-82-7		
20	Anthracene oil, anthracene paste	292-603-2	90640-81-6		
21	Pitch, coal tar, high temp.	266-028-2	65996-93-2	Binding agent, heavy duty corrosion protection agent, medicinal preparation	
22	2,4-Dinitrotoluene	204-450-0	121-14-2	Intermediate in the production of toluene diisocyanate	
23	Diisobutyl phthalate	201-553-2	84-69-5	Plasticiser, dispersion	PCS No.26
24	Lead chromate	231-846-0	7758-97-6	Pigment, dye, paint	PCS No.2, 3
25	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	235-759-9	12656-85-8		
26	Lead sulfochromate yellow (C.I. Pigment Yellow 34)	215-693-7	1344-37-2		
27	Tris(2-chloroethyl)phosphate (TCEP)	204-118-5	115-96-8	Acrylic resin, adhesive	
28	Acrylamide	201-173-7	79-06-1	Raw material of the polyacrylamide composition	
29	Trichloroethylene	201-167-4	79-01-6	Cleaning agent, degreasing agent	
30	Boric acid	233-139-2 234-343-4	10043-35-3 11113-50-1	Adhesive, flame retardant, paint, disinfectant, addition agent for glass and ceramics	
31	Disodium tetraborate, anhydrous	215-540-4	1303-96-4 1330-43-4 12179-04-3		
32	Tetraboron disodium heptaoxide, hydrate	235-541-3	12267-73-1		
33	Sodium chromate	231-889-5	7775-11-3	Wood preservative, dye	PCS No.2
34	Potassium chromate	232-140-5	7789-00-6	Colouring agent, pigment, ink	PCS No.2
35	Ammonium dichromate	232-143-1	7789-09-5	Oxidising agent,	PCS No.2
36	Potassium dichromate	231-906-6	7778-50-9	Metal treatment	PCS No.2
37	Cobalt(II) sulphate	233-334-2	10124-43-3	Catalyst, pigment, paint, surface treatment	
38	Cobalt(II) dinitrate	233-402-1	10141-05-6		
39	Cobalt(II) carbonate	208-169-4	513-79-1		
40	Cobalt(II) diacetate	200-755-8	71-48-7		
41	2-Methoxyethanol	203-713-7	109-86-4	Solvent, brake fluid	
42	2-Ethoxyethanol	203-804-1	110-80-5		
43	Chromium trioxide	215-607-8	1333-82-0	Chrome plating, pigment, paint, oxidising agent	PCS No.2
44	Acids generated from chromium trioxide and their oligomers Group containing: • Chromic acid • Dichromic acid • Oligomers of chromic acid and dichromic acid	231-801-5 236-881-5 not yet assigned	7738-94-5 13530-68-2 not yet assigned		
45	2-ethoxyethyl acetate	203-839-2	111-15-9	Paint solvent	

SVHCs of REACH regulation (continued)

No.	Substance name	EC No.	CAS No.	Examples of use	Remarks
46	Strontium chromate	232-142-6	7789-06-2	Corrosion inhibitor	PCS No.2
47	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)	271-084-6	68515-42-4	Plasticiser, foam, adhesive, paint	
48	Hydrazine	206-114-9	302-01-2 7803-57-8	Reducing agent, rocket fuel	
49	1-methyl-2-pyrrolidone	212-828-1	872-50-4	Solvent, detergent	
50	1,2,3-trichloropropane	202-486-1	96-18-4	Solvent, paint	
51	1,2-Benzenedicarboxylic acid di-C6-8-branched alkyl esters, C7-rich	276-158-1	71888-89-6	Plasticiser, sealant, paint, ink	
52	Lead styphnate	239-290-0	15245-44-0	Initiator or booster in detonators for both civilian and military uses	PCS No.3
53	Lead azide Lead diazide	236-542-1	13424-46-9		
54	Lead dipicrate	229-335-2	6477-64-1		
55	Phenolphthalein	201-004-7	77-09-8	PH indicator	
56	2,2'-dichloro-4,4'-methylenedianiline (MOCA)	202-918-9	101-14-4	Curing agent in resins and in the production of polymer article	PCS No.18
57	N,N-dimethylacetamide (DMAC)	204-826-4	127-19-5	Solvent, thin film, ink remover	
58	Trilead diarsenate	222-979-5	3687-31-8	Trioxide arsenic production intermediate	PCS No.3, 28
59	Calcium arsenate	231-904-5	7778-44-1	Trioxide arsenic production	PCS No.28
60	Arsenic acid	231-901-9	7778-39-4	Glass and ceramic additive, copper foil of the printed circuit board	PCS No.28
61	Bis(2-methoxyethyl) ether	203-924-4	111-96-6	Solvent for battery electrolytes, adhesive	
62	1,2-Dichloroethane	203-458-1	107-06-2	Solvent for the chemical and pharmaceutical industry	
63	4-(1,1,3,3-tetramethylbutyl) phenol, (4-tert-Octylphenol)	205-426-2	140-66-9	Adhesive, coating, ink, rubber article	
64	2-Methoxyaniline; o-Anisidine	201-963-1	90-04-0	Dye	PCS No.18
65	Bis(2-methoxyethyl) phthalate	204-212-6	117-82-8	Polymeric material, paint, plasticiser	
66	Formaldehyde, oligomeric reaction products with aniline (technical MDA)	500-036-1	25214-70-4	Hardener for epoxy resin	
67	Zirconia Aluminosilicate, Refractory Ceramic Fibres (Zr-RCF)	—	—	Heat shield, auto parts, aerospace products	
68	Aluminosilicate Refractory Ceramic Fibres (RCF)	—	—		
69	Pentazinc chromate octahydroxide	256-418-0	49663-84-5	Coating for auto parts / aerospace products	PCS No.2
70	Potassium hydroxyoctaoxidizincatedi-chromate	234-329-8	11103-86-9		
71	Dichromium tris(chromate)	246-356-2	24613-89-6	Mixtures for metal surface treatment in the steel and aluminium	PCS No.2
72	1,2-bis(2-methoxyethoxy)ethane (Triglyme)	203-977-3	112-49-2	Solvent, refrigerant, absorbent	

SVHCs of REACH regulation (continued)

No.	Substance name	EC No.	CAS No.	Examples of use	Remarks
73	1,2-dimethoxyethane; Ethylene glycol dimethyl ether (EGDME)	203-794-9	110-71-4	Solvent, electrolyte of lithium battery, refrigerant	
74	Diboron trioxide	215-125-8	1303-86-2	Glass, ceramic, flame retardant, catalyst, adhesive	
75	Formamide	200-842-0	75-12-7	Solvent, reagent, plasticizer	
76	Lead(II) bis(methanesulfonate)	401-750-5	17570-76-2	Plating process for the printed circuit board	PCS No.3
77	TGIC (1,3,5-tris(oxiranylmethyl)-1,3,5-triazine -2,4,6(1H,3H,5H)-trione)	219-514-3	2451-62-9	Hardener for resin and paint, Electrical insulation material, adhesive, plastic stabilizer	
78	β -TGIC (1,3,5-tris[(2S and 2R)- 2,3-epoxypropyl]-1,3,5-triazine-2,4,6- (1H,3H,5H)-trione)	423-400-0	59653-74-6		
79	4,4'-bis(dimethylamino)benzophenone (Michler's Ketone)	202-027-5	90-94-8	Photoresponsive additive for dye and pigment	
80	N,N,N',N'-tetramethyl-4,4'-methylenedia niline (Michler's Base)	202-959-2	101-61-1	Intermediate in production such as the dye	
*81	[4-[[4-anilino-1-naphthyl][4-(dimethylami no)phenyl]methylene]cyclohexa-2,5-die n-1-ylidene]dimethylammonium chloride (C.I. Basic Blue 26)	219-943-6	2580-56-5	Dye, paint, ink	
*82	[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1-y lidene]dimethylammonium chloride (C.I. Basic Violet 3)	208-953-6	548-62-9	Dye, paint, ink	
*83	4,4'-bis(dimethylamino)-4''-(methylamin o)trityl alcohol	209-218-2	561-41-1	Dye, paint, ink	
*84	α,α -Bis[4-(dimethylamino)phenyl]- 4(phenylamino)naphthalene-1-methano l (C.I. Solvent Blue 4)	229-851-8	6786-83-0	Ink	
85	Bis(pentabromophenyl) ether (decabromodiphenyl ether; DecaBDE)	214-604-9	1163-19-5	Flame retardant	PCS No.6
86	Pentacosafuorotridecanoic acid	276-745-2	72629-94-8	Fluorochemical surfactant	
87	Tricosafuorododecanoic acid	206-203-2	307-55-1		
88	Henicosafuoroundecanoic acid	218-165-4	2058-94-8		
89	Heptacosafuorotetradecanoic acid	206-803-4	376-06-7		
90	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))	204-650-8	123-77-3	Foaming agent for rubber and synthetic resin	
91	Cyclohexane-1,2-dicarboxylic anhydride	201-604-9	85-42-7	Plasticizer, resin reforming agent	
	Cis-cyclohexane-1,2-dicarboxylic anhydride	236-086-3	13149-00-3		
	Trans-cyclohexane-1,2-dicarboxylic anhydride	238-009-9	14166-21-3		
92	Hexahydromethylphthalic anhydride	247-094-1	25550-51-0	Epoxy resin curing agent, paint	
	Hexahydro-4-methylphthalic anhydride	243-072-0	19438-60-9		
	Hexahydro-1-methylphthalic anhydride	256-356-4	48122-14-1		
	Hexahydro-3-methylphthalic anhydride	260-566-1	57110-29-9		
93	4-Nonylphenol, branched and linear	—	—	Surfactant, ink, paint	
94	4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated	—	—	Surfactant	

SVHCs of REACH regulation (continued)

No.	Substance name	EC No.	CAS No.	Examples of use	Remarks
95	Methoxyacetic acid	210-894-6	625-45-6	Synthetic intermediate	
96	N,N-dimethylformamide	200-679-5	68-12-2	Synthetic leather, solvent	
97	Dibutyltin dichloride (DBTC)	211-670-0	683-18-1	Intermediate of vinyl chloride stabilizer, catalyst	PCS No.13
98	Lead monoxide (Lead oxide)	215-267-0	1317-36-8	Pigment, vinyl chloride stabilizer, synthetic rubber accelerator	PCS No.3
99	Orange lead (Lead tetroxide)	215-235-6	1314-41-6	Electronic material, paint, battery	PCS No.3
100	Lead bis(tetrafluoroborate)	237-486-0	13814-96-5	Plating agent	PCS No.3
101	Trilead bis(carbonate)dihydroxide	215-290-6	1319-46-6	Electroceramic materials	PCS No.3
102	Lead titanium trioxide	235-038-9	12060-00-3		
103	Lead titanium zirconium oxide	235-727-4	12626-81-2		
104	Silicic acid, lead salt	234-363-3	11120-22-2	Material of glass, pigment, paint, drying agent	PCS No.3
*105	Silicic acid (H ₂ Si ₂ O ₅), barium salt (1:1), lead-doped	272-271-5	68784-75-8	Fluorescent material of lamp	PCS No.3
106	1-bromopropane (n-propyl bromide)	203-445-0	106-94-5	Medicine, agricultural chemicals, washing solvent	PCS No.15
107	Methyloxirane (Propylene oxide)	200-879-2	75-56-9	Resin material, solvent	
108	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	284-032-2	84777-06-0	Plasticizer	
109	Diisopentylphthalate (DIPP)	210-088-4	605-50-5	Plasticizer	
110	N-pentyl-isopentylphthalate	—	776297-69-9		
111	1,2-diethoxyethane	211-076-1	629-14-1	Ink, solvent for paint	
112	Acetic acid, lead salt, basic	257-175-3	51404-69-4	Synthetic intermediate, rust preventive pigment	PCS No.3
113	Lead oxide sulfate	234-853-7	12036-76-9	Electrode material for battery	PCS No.3
114	[Phthalato(2-)]dioxotrilead	273-688-5	69011-06-9	Stabilizer for PVC	PCS No.3
115	Dioxobis(stearato)trilead	235-702-8	12578-12-0		
116	Fatty acids, C16-18, lead salts	292-966-7	91031-62-8		
117	Lead cyanamate	244-073-9	20837-86-9	Rust preventive pigment	PCS No.3
118	Lead dinitrate	233-245-9	10099-74-8	Synthetic material, material of optical glass	PCS No.3
119	Pentalead tetraoxide sulphate	235-067-7	12065-90-6	Electrode material for battery, stabilizer for PVC	PCS No.3
120	Pyrochlore, antimony lead yellow	232-382-1	8012-00-8	Pigment	PCS No.3
121	Sulfurous acid, lead salt, dibasic	263-467-1	62229-08-7	Stabilizer for PVC	PCS No.3
122	Tetraethyllead	201-075-4	78-00-2	Gasoline additive	PCS No.3
123	Tetrolead trioxide sulphate	235-380-9	12202-17-4	Stabilizer for PVC	PCS No.3
124	Trilead dioxide phosphonate	235-252-2	12141-20-7	Stabilizer for PVC	PCS No.3

SVHCs of REACH regulation (continued)

No.	Substance name	EC No.	CAS No.	Examples of use	Remarks
125	Furan	203-727-3	110-00-9	Raw material of synthetic resin, solvent, cleaning agent	
126	Diethyl sulphate	200-589-6	64-67-5	Ethylating agent, lenitive dehydrating agent	
127	Dimethyl sulphate	201-058-1	77-78-1	Methylation agent, medicine	
128	3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	421-150-7	143860-04-2		
129	Dinoseb (6-sec-butyl-2,4-dinitrophenol)	201-861-7	88-85-7	Polymer raw material	
130	4,4'-methylenedi-o-toluidine	212-658-8	838-88-0	Curing agent for resin, synthetic resin intermediate	PCS No.18
131	4,4'-oxydianiline and its salts	202-977-0	101-80-4	Raw material of polyimide resin	
132	4-aminoazobenzene	200-453-6	60-09-3	Dye	PCS No.18
133	4-methyl-m-phenylenediamine (toluene-2,4-diamine)	202-453-1	95-80-7		
134	6-methoxy-m-toluidine (p-cresidine)	204-419-1	120-71-8		
135	Biphenyl-4-ylamine	202-177-1	92-67-1		
136	o-aminoazotoluene [(4-o-tolylazo-o-toluidine)]	202-591-2	97-56-3		
137	o-toluidine	202-429-0	95-53-4		
138	N-methylacetamide	201-182-6	79-16-3	solvent	
139	Cadmium	231-152-8	7440-43-9	Pigment, battery, alloy, plating	PCS No.1
140	Cadmium oxide	215-146-2	1306-19-0	Pigment, catalyst, battery	PCS No.1
141	Ammonium pentadecafluorooctanoate (APFO)	223-320-4	3825-26-1	Surface treatment agent, surfactant, water repellent	
142	Pentadecafluorooctanoic acid (PFOA)	206-397-9	335-67-1	Water repellent, Surface treatment agent,	PCS No.24
143	Dipentyl phthalate (DPP)	205-017-9	131-18-0	Plasticizer	
*144	4-Nonylphenol, branched and linear, ethoxylated	—	—	Surfactant	
145	Cadmium sulphide	215-147-8	1306-23-6	Pigment	PCS No.1
146	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)] bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	209-358-4	573-58-0	Dye	PCS No.18
147	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)	217-710-3	1937-37-7	Dye	PCS No.18
148	Dihexyl phthalate (DHP)	201-559-5	84-75-3	Plasticizer	
149	Imidazolidine-2-thione(2-imidazoline-2-thiol)	202-506-9	96-45-7	Vulcanisation accelerator	
150	Lead di(acetate)	206-104-4	301-04-2	Waterproofing agent, reagent	PCS No.3
151	Trixylyl phosphate	246-677-8	25155-23-1	Plasticizer	
152	Cadmium chloride	233-296-7	10108-64-2	Plasticizer	PCS No.1

SVHCs of REACH regulation (continued)

No.	Substance name	EC No.	CAS No.	Examples of use	Remarks
153	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear (DIHP)	271-093-5	68515-50-4	Plating, catalyst	
154	Sodium peroxometaborate	231-556-4	7632-04-4		
155	Sodium perborate; perboric acid, sodium salt	239-172-9; 234-390-0	—	Antiseptic, bleach, disinfectant	
156	Cadmium fluoride	232-222-0	7790-79-6	Manufacture of alloy	PCS No.1
157	Cadmium sulphate	233-331-6	10124-36-4; 31119-53-6	Reagent, battery	PCS No.1
158	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	223-346-6	3846-71-7	Ultraviolet absorber	PCS No.22
159	2-(2H-benzotriazol-2-yl)-4,6-ditertpentyl phenol (UV-328)	247-384-8	25973-55-1		
160	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate	239-622-4	15571-58-1	Stabilizer for PVC	PCS No.14
161	reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE and MOTE)	—	—		
162	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate (EC No. 201-559-5)	271-094-0 272-013-1	68515-51-5 68648-93-1	Plasticizer, lubricating oil	
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 stereoisomers of [1] and [2] or any combination thereof]	—	—	Perfume	
164	Nitrobenzene	202-716-0	98-95-3	Raw material of aniline, solvent	
165	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	223-383-8	3864-99-1	UV-protection agent	
166	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	253-037-1	36437-37-3	UV-protection agent	
167	1,3-propanesultone	214-317-9	1120-71-4	Electrolyte fluid of lithium ion battery	
168	Perfluorononan-1-oic-acid and its sodium and ammonium salts	206-801-3	375-95-1 21049-39-8 4149-60-4	Processing aid for fluoropolymer manufacture, lubricating oil additive, cleaning agent	
169	Benzo[def]chrysene (Benzo[a]pyrene)	200-028-5	50-32-8	Adhesive, paint, waterproofing agent	PCS No.25
170	4,4'-isopropylidenediphenol (bisphenol A; BPA)	201-245-8	80-05-7	Raw material of polycarbonate and epoxy resin, plasticizer, antioxidant	
171	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts	206-400-3 - 221-470-5	335-76-2 3830-45-3 3108-42-7	Lubricant, wetting agent, plasticizer, preservative	

SVHCs of REACH regulation (continued)

No.	Substance name	EC No.	CAS No.	Examples of use	Remarks
172	p-(1,1-dimethylpropyl) phenol	201-280-9	80-46-6	Dye intermediate, Rubber chemical, surfactant, photographic film	
173	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]	—	—	Lubricant additive	
174	Perfluorohexane-1-sulphonic acid and its salts (PFHxS)	206-587-1	355-46-4	Carpet, leather, Textile, paper, plating, electronic parts	
175	Chrysene	205-923-4	218-01-9 1719-03-5	Component of coal tar, paint, fuel	PCS No.25
176	Benz[a]anthracene	200-280-6	56-55-3 1718-53-2		
177	Cadmium nitrate	233-710-6	10325-94-7 10022-68-1 (tetrahydrate)	Colorant for ceramics, battery, synthetic intermediate, emulsion for photograph, adhesive	PCS No.1
178	Cadmium hydroxide	244-168-5	21041-95-2	Material of battery	PCS No.1
179	Cadmium carbonate	208-168-9	513-78-0	Stabilizer for PVC, additive of glass	PCS No.1
180	Dodecachloropentacyclo[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]	—	—	Adhesive, sealant	
181	Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP) [with \geq 0.1% w/w 4-heptylphenol, branched and linear]	—	—	Lubricant additive, mold release agent, grease	
182	Octamethylcyclotetrasiloxane (D4)	209-136-7	556-67-2	Cleaning agent, wax, cosmetics, personal care product	
183	Decamethylcyclopentasiloxane (D5)	208-764-9	541-02-6	Cleaning agent, wax, cosmetics, personal care product, fiber treatment agent, dye	
184	Dodecamethylcyclohexasiloxane (D6)	208-762-8	540-97-6	Cleaning agent, wax, cosmetics, personal care product	
185	Lead	231-100-4	7439-92-1	Metal, solder, plating, paint, resin additive	PCS No.3
186	Disodium octaborate	234-541-0	12008-41-2	Anti-freezing agent, lubricating oil, grease, cleaning agent	
187	Benzo[ghi]perylene	205-883-8	191-24-2	Color pigment of rubber and plastic	

SVHCs of REACH regulation (continued)

No.	Substance name	EC No.	CAS No.	Examples of use	Remarks
188	Terphenyl hydrogenated	262-967-7	61788-32-7	Heating medium, solvent, adhesive, sealing material, resin additive	
189	Ethylenediamine (EDA)	203-468-6	107-15-3	Adhesives, sealing agent, filler, putty, plaster	
190	Benzene-1,2,4-tricarboxylic acid 1,2 anhydride (trimellitic anhydride) (TMA)	209-008-0	552-30-7	Production of esters and polymers	
191	Dicyclohexyl phthalate (DCHP)	201-545-9	84-61-7	Plasticizer	
192	2,2-bis(4'-hydroxyphenyl)-4-methylpentane	401-720-1	6807-17-6	Synthetic resin additives, Liquid crystal material, photosensitizer, polycarbonate resin raw material	
193	Benzo[k]fluoranthene	205-916-6	207-08-9	Petroleum fuel such as kerosene and light oil, color pigments of rubber and plastic	PCS No.25
194	Fluoranthene	205-912-4	206-44-0		
195	Phenanthrene	201-581-5	85-01-8		
196	Pyrene	204-927-3	129-00-0		
197	1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1]heptan-2-one (3-benzylidene camphor)	239-139-9	15087-24-8	Cosmetics, sunscreen	
198	2-methoxyethyl acetate	203-772-9	110-49-6	Solvent for cleaning electronic materials, for printing ink/ paint and for adhesive	
199	Tris(4-nonylphenyl, branched and linear) phosphite (TNPP) with ? 0.1% w/w of 4-nonylphenol, branched and linear (4-NP)	—	—	Antioxidant to stabilize polymers	
200	2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propionic acid, its salts and its acyl halides (covering any of their individual isomers and combinations thereof)	—	—	Processing aid in the production of fluorinated polymers	
201	4-tert-butylphenol	202-679-0	98-54-4	Paint product, polymer, adhesive, encapsulant	
202	2-benzyl-2-dimethylamino-4'-morpholinobutyrophenone	404-360-3	119313-12-1	Photopolymerizing agent, UV curing agent	
203	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	400-600-6	71868-10-5	Photopolymerizing agent, UV curing agent	
204	Diisohexyl phthalate	276-090-2	71850-09-4	Plasticizer	
205	Perfluorobutane sulfonic acid (PFBS) and its salts	—	—	Water repellent, surface treatment agent, antifouling agent, fire extinguisher, coating agent	

Notes:

- * No.11: Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) is abbreviated to SCCPs. Here, the short chain corresponds to carbon number 10 to 13 (as the medium chain and long chain correspond to carbon number 14 to 19 and 20 to 30, respectively). SCCPs are a persistent and high-bioaccumulative substance used for various purposes because it has flame retardant properties, plasticity, lubricating properties in metallic processing, and hydrophobicity.
- * No.67: Refractory Ceramic Fibers, Zirconia Aluminiumsilicate are fibers covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008 of the European

Parliament and of the Council of December 16, 2008 on classification, labelling and packaging of substances and mixtures, and fulfil the three following conditions:

- a) oxides of aluminium and silicon are the main components present (in the fibers) within variable concentration ranges
- b) fibers have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (μm)
- c) alkaline oxide and alkali earth oxide ($\text{Na}_2\text{O}+\text{K}_2\text{O}+\text{CaO}+\text{MgO}+\text{BaO}$) content less or equal to 18% by weight

- * No.68: Refractory Ceramic Fibers, Aluminosilicate are fibers covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of December 16, 2008 on classification, labelling and packaging of substances and mixtures, and fulfil the three following conditions:
 - a) oxides of aluminium, silicon and zirconium are the main components present (in the fibers) within variable concentration ranges
 - b) fibers have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (μm)
 - c) alkaline oxide and alkali earth oxide ($\text{Na}_2\text{O}+\text{K}_2\text{O}+\text{CaO}+\text{MgO}+\text{BaO}$) content less or equal to 18% by weight
- * No.81,82,83,84 are identified as SVHCs in case [with $\geq 0.1\%$ of Michler's ketone (EC No.202-027-5) or Michler's base (EC No.202-959-2)].
- * No.105 is identified as a SVHC in the following case:
 - with lead (Pb) content above the applicable generic concentration limit for 'toxicity for reproduction' Repr. 1A (CLP) or category 1 (DSD); the substance is a member of the group entry of lead compounds, with index number 082-001-00-6 in Regulation (EC) No 1272/2008
- * No.144 are 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

Revision History		
Date	Edition	Description
April 1 ,2020	2.0	<ul style="list-style-type: none"> - Changed contents of I -1- (1) Prohibited Chemical Substances (No.9,10,20,21,23,24,27) - Updated the expiration dates in I -1- (1) Annex 1" Applications exempted from the RoHS Directive Annex III" and added No.42-44 - Updated the expiration dates in I -1- (1) Annex 2" Applications exempted from the RoHS Directive Annex IV " - Added content of 1- 2- (1) Controlled Chemical Substances (No.11) - Added 4 substances of 21th SVHC and 4 substances of 22th SVHC to "I -2- (2) SVHCs of REACH Regulation"