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on Persistent Organic
Pollutants**

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Persistent Organic Pollutants Review Committee

Eighteenth meeting

Rome, 26–30 September 2022

Item 5 (b) (iii) of the provisional agenda*

Technical work: consideration of draft risk profiles: long-chain perfluorocarboxylic acids, their salts and related compounds

**Draft indicative list of long-chain perfluorocarboxylic acids,
their salts and related compounds**

Note by the Secretariat

As is mentioned in the note by the Secretariat on draft risk profile: long-chain perfluorocarboxylic acids, their salts and related compounds (UNEP/POPS/POPRC.18/6), the annex to the present note sets out a draft indicative list of long-chain perfluorocarboxylic acids, their salts and related compounds prepared by the intersessional working group on long-chain perfluorocarboxylic acids, their salts and related compounds. The present note, including its annex, has not been formally edited.

* UNEP/POPS/POPRC.18/1.

Annex**Draft indicative list of long-chain perfluorocarboxylic acids, their salts and related compounds**

1. An indicative list of CAS numbers for long-chain perfluorocarboxylic acids, their salts and related compounds is provided in table 1 below.
2. Paragraph 4 of the proposal by Canada to list long-chain perfluorocarboxylic acids (PFCAs), their salts and related compounds in Annexes A, B and/or C to the Stockholm Convention on Persistent Organic Pollutants (UNEP/POPS/POPRC.17/7) specifies that it concerns PFCAs with carbon chain lengths from 9 to 21 inclusive, their salts and related compounds. In the same paragraph, long-chain PFCAs and their salts are defined as “a homologous series of substances with the molecular formula of $C_nF_{2n+1}CO_2H$ (where $8 \leq n \leq 20$)”.
3. Paragraph 5 of the proposal defines related compounds as “any substance that is a precursor and may degrade or transform to long-chain PFCAs, where the perfluorinated alkyl moiety has the formula C_nF_{2n+1} (where $8 \leq n \leq 20$) and is directly bonded to any chemical moiety other than a fluorine, chlorine or bromine atom”.
4. The indicative list has been prepared for the purpose of facilitating Annex E information collection for long-chain PFCAs, their salts and related compounds.

Table 1: Indicative list of CAS numbers for long-chain perfluorocarboxylic acids, their salts and related compounds**Notes:**

- a. Long-chain perfluorocarboxylic acids (PFCAs) or their salts which, in the proposal, as defined as a homologous series of substances with the molecular formula of $C_nF_{2n+1}CO_2H$ (where $8 \leq n \leq 20$);
- b. Compounds related to long-chain PFCAs which, in the proposal, are defined as any substance that is a precursor and may degrade or transform to long-chain PFCAs, where the perfluorinated alkyl moiety has the formula C_nF_{2n+1} (where $8 \leq n \leq 20$) and is directly bonded to any chemical moiety other than a fluorine, chlorine or bromine atom.

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|-------------------------|------------------|---|--|---------------------|---------------------------|---|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| Long-chain PFCAs | | | | | | | |
| 375-95-1 | PFNA | Nonanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9- heptadecafluoro- | Nonanoic acid, heptadecafluoro- | x | | | 1 |
| 335-76-2 | PFDA | Decanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10- nonadecafluoro- | Decanoic acid, nonadecafluoro- | x | | | 1 |
| 2058-94-8 | PFUnDA | Undecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,11 -heneicosfluoro- | Undecanoic acid, heneicosfluoro- | x | | | 1 |
| 307-55-1 | PFDoDA | Dodecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12 ,12,12-tricosfluoro- | Dodecanoic acid, tricosfluoro- | x | | | 1 |
| 72629-94-8 | PFTrDA | Tridecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12 ,12,13,13,13-pentacosfluoro- | Tridecanoic acid, pentacosfluoro- | x | | | 1 |
| 376-06-7 | PFTDA, PFTeDA | Tetradecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12 ,12,13,13,14,14,14-heptacosfluoro- | Tetradecanoic acid, heptacosfluoro- | x | | | 1 |
| 141074-63-7 | PFPeDA | Pentadecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12 ,12,13,13,14,14,15,15,15-nonacosfluoro- | Pentadecanoic acid, nonacosfluoro- | x | | | 1 |
| 67905-19-5 | PFHxDA | Hexadecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12 ,12,13,13,14,14,15,15,16,16,16-henriacontafluoro- | Hexadecanoic acid, henriacontafluoro- | x | | | 1 |

¹ American Chemical Society, 2022. CAS SciFinderⁿ. Available from: <https://scifinder-n.cas.org/>. (Accessed: 4 February 2022).

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|--|------------------|---|--|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 57475-95-3 | PFHpDA | Heptadecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12 ,12,13,13,14,14,15,15,16,16,17,17,17,17-tritriacontafluoro- | Perfluoroheptadecanoic acid | x | | | 1 |
| 16517-11-6 | PFODA, PFOcDA | Octadecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12 ,12,13,13,14,14,15,15,16,16,17,17,18,18,18-pentatriacontafluoro- | Octadecanoic acid, pentatriacontafluoro- | x | | | 1 |
| 133921-38-7 | PFNDA | Nonadecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12 ,12,13,13,14,14,15,15,16,16,17,17,18,18,19, 19,19-heptatriacontafluoro- | Perfluorononadecanoic acid | x | | | 1 |
| 68310-12-3 | C20 PFCA | Eicosanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12 ,12,13,13,14,14,15,15,16,16,17,17,18,18,19, 19,20,20,20-nonatriacontafluoro- | Eicosanoic acid, nonatriacontafluoro- | x | | | 1 |
| No CAS identified | C21 PFCA | n/a | Perfluoroheneicosanoic acid | x | | | 1 |
| Long-chain PFCAs salts | | | | | | | |
| 4149-60-4 | | Nonanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-heptadecafluoro-, ammonium salt (1:1) | Nonanoic acid, heptadecafluoro-, ammonium salt | | x | | 1,3 |
| 21049-39-8 | | Nonanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-heptadecafluoro-, sodium salt (1:1) | Perfluorononan-1-oic acid, sodium salt | | x | | 3 |
| 3830-45-3 | | Decanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-nonadecafluoro-, sodium salt (1:1) | Sodium nonadecafluorodecanoate | | x | | 3 |
| 3108-42-7 | | Decanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-nonadecafluoro-, ammonium salt (1:1) | Ammonium nonadecafluorodecanoate | | x | | 3 |
| Polyfluorinated phosphates and related substances | | | | | | | |
| 65530-63-4 | monoPAP | Ethanol, 2,2'-iminobis-, compd. with α -fluoro- ω -[2-(phosphonoxy)ethyl]poly(difluoromethylene) (2:1) | Ethanol, 2,2'-iminobis-, compd. with α -fluoro- ω -[2-(phosphonoxy)ethyl]poly(difluoromethylene) (2:1) | | | x | 1,4 |
| 65530-64-5 | diPAP | Ethanol, 2,2'-iminobis-, compd. with α,α' -[phosphinicobis(oxy-2,1-ethanediyl)]bis[ω -fluoropoly(difluoromethylene)] (1:1) | Ethanol, 2,2'-iminobis-, compd. with α,α' -[phosphinicobis(oxy-2,1-ethanediyl)]bis[ω -fluoropoly(difluoromethylene)] (1:1) | | | x | 1,4 |

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|------------|------------|---|--|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 65530-70-3 | diPAP | Poly(difluoromethylene), α,α' -[phosphinicobis(oxy-2,1-ethanediyl)]bis[ω -fluoro-, ammonium salt (1:1) | Poly(difluoromethylene), α,α' -[phosphinicobis(oxy-2,1-ethanediyl)]bis[ω -fluoro-, ammonium salt | | | x | 1 |
| 65530-71-4 | monoPAP | Poly(difluoromethylene), α -fluoro- ω -[2-(phosphonoxy)ethyl]-, ammonium salt (1:1) | Poly(difluoromethylene), α -fluoro- ω -[2-(phosphonoxy)ethyl]-, monoammonium salt | | | x | 1 |
| 65530-72-5 | diPAP | Poly(difluoromethylene), α -fluoro- ω -[2-(phosphonoxy)ethyl]-, ammonium salt (1:2) | Poly(difluoromethylene), α -fluoro- ω -[2-(phosphonoxy)ethyl]-, diammonium salt | | | x | 1 |
| 65530-74-7 | monoPAP | Ethanol, 2,2'-iminobis-, compd. with α -fluoro- ω -[2-(phosphonoxy)ethyl]poly(difluoromethylene) (1:1) | Ethanol, 2,2'-iminobis-, compd. with α -fluoro- ω -[2-(phosphonoxy)ethyl]poly(difluoromethylene) (1:1) | | | x | 1,4 |
| 68412-68-0 | | Phosphonic acid, perfluoro-C6-12-alkyl derivs. | Phosphonic acid, perfluoro-C6-12-alkyl derivs. | | | x | 1,3 |
| 68412-69-1 | | Phosphinic acid, bis(perfluoro-C6-12-alkyl) derivs. | Phosphinic acid, bis(perfluoro-C6-12-alkyl) derivs. | | | x | 1,3 |
| 74499-44-8 | | Phosphoric acid, γ - ω -perfluoro-C8-16-alkyl esters, compds. with diethanolamine | Phosphoric acid, γ - ω -perfluoro-C8-16-alkyl esters, compds. with diethanolamine | | | x | 4 |
| 1895-26-7 | 10:2 diPAP | 1-Dodecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosfluoro-, 1,1'-(hydrogen phosphate) | bis[3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosfluorododecyl]hydrogen phosphate | | | x | 3 |
| 63295-27-2 | | 1,2-Tridecanediol, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,13,13-eicosfluoro-12-(trifluoromethyl)-, 1-(dihydrogen phosphate) | 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,13,13-icosfluoro-2-hydroxy-12-(trifluoromethyl)tridecyl dihydrogen phosphate | | | x | 3 |
| 63295-28-3 | | 1,2-Pentadecanediol, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,15,15,15-tetracosfluoro-14-(trifluoromethyl)-, 1-(dihydrogen phosphate) | 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,15,15,15-tetracosfluoro-2-hydroxy-14-(trifluoromethyl)pentadecyl dihydrogen phosphate | | | x | 3 |
| 94158-70-0 | | 1,2-Tridecanediol, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,13-heneicosfluoro-, 1-(dihydrogen phosphate) | 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13-heneicosfluoro-2-hydroxytridecyl dihydrogen phosphate | | | x | 3 |
| 94200-42-7 | | 1,2-Pentadecanediol, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,15-pentacosfluoro-, 1-(dihydrogen phosphate) | 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,15-pentacosfluoro-2-hydroxypentadecyl dihydrogen phosphate | | | x | 3 |

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|-------------------------------|------------|---|---|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 94200-43-8 | | 1,2-Heptadecanediol, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,14,15,15,16,16,17,17,17- nonacosfluoro-, 1-(dihydrogen phosphate) | 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,14,15,15,16,16,17,17,17- nonacosfluoro-2- hydroxyheptadecylidihydrogen phosphate | | | x | 3 |
| 94200-46-1 | | 1,2-Tridecanediol, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,13-heneicosfluoro-, 1-(dihydrogen phosphate), diammonium salt | diammonium 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,13-heneicosfluoro-2-hydroxytridecyl phosphate | | | x | 3 |
| 94200-47-2 | | 1,2-Pentadecanediol, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,14,15,15,15-pentacosfluoro-, 1- (dihydrogen phosphate), diammonium salt | diammonium 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,14,15,15,15-pentacosfluoro-2- hydroxypentadecyl phosphate | | | x | 3 |
| 94200-48-3 | | 1,2-Heptadecanediol, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,14,15,15,16,16,17,17,17- nonacosfluoro-, 1-(dihydrogen phosphate), diammonium salt | diammonium 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,14,15,15,16,16,17,17,17- nonacosfluoro-2-hydroxyheptadecyl phosphate | | | x | 3 |
| 94200-50-7 | | 1,2-Tridecanediol, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,13,13, 13-eicosfluoro-12-(trifluoromethyl)-, 1- (dihydrogen phosphate), diammonium salt | diammonium 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,13,13, 13-eicosfluoro-2-hydroxy-12-(trifluoromethyl)tridecyl phosphate | | | x | 3 |
| 94200-51-8 | | 1,2-Pentadecanediol, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,15,15,15-tetracosfluoro-14- (trifluoromethyl)-, 1-(dihydrogen phosphate), diammonium salt | diammonium 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,15,15,15-tetracosfluoro-2-hydroxy- 14-(trifluoromethyl)pentadecyl phosphate | | | x | 3 |
| Perfluoroalkyl halides | | | | | | | |
| 307-50-6 | | Undecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9, 9,10,10,11,11-tricosfluoro-11-iodo- | Undecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9, 9,10,10,11,11-tricosfluoro-11-iodo- | | | x | 3 |
| 307-60-8 | | Dodecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9, 9,10,10,11,11,12,12-pentacosfluoro-12- iodo- | Dodecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9, 9,10,10,11,11,12,12-pentacosfluoro-12- iodo- | | | x | 3 |
| 307-63-1 | | 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11, 11,12,12,13,13,14,14-Nonacosfluoro-14- iodotetradecane | Tetradecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8, 9,9,10,10,11,11,12,12,13,13,14,14- nonacosfluoro-14-iodo- | | | x | 3 |
| 335-79-5 | | Pentadecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11, 11,12,12,13,13,14,14,15,15- hentriacontafluoro-15-iodo- | Pentadecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8, 9,9,10,10,11,11,12,12,13,13,14,14,15,15- hentriacontafluoro-15-iodo- | | | x | 3 |

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|-----------------------------------|------------|--|--|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 376-04-5 | | Tridecane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11, 11,12,12,13,13-heptacosfluoro-13-iodo- | Tridecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9, 9,10,10,11,11,12,12,13,13-heptacosfluoro-13-iodo- | | | x | 3 |
| 423-62-1 | | Decane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10-heneicosfluoro-10-iodo- | Decane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10-heneicosfluoro-10-iodo- | | | x | 3 |
| 558-97-4 | | Nonane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9-nonadecafluoro-9-iodo- | Nonane, 1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9-nonadecafluoro-9-iodo- | | | x | 3 |
| 677-93-0 | | Decane, 1,1,1,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10-eicosfluoro-10-iodo-2-(trifluoromethyl)- | Decane,1,1,1,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10-eicosfluoro-10-iodo-2-(trifluoromethyl)- | | | x | 3 |
| 3248-61-1 | | Dodecane, 1,1,1,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12-tetracosfluoro-12-iodo-2-(trifluoromethyl)- | Dodecane,1,1,1,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12-tetracosfluoro-12-iodo-2-(trifluoromethyl)- | | | x | 3 |
| 3248-63-3 | | Tetradecane, 1,1,1,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14-octacosfluoro-14-iodo-2-(trifluoromethyl)- | Tetradecane,1,1,1,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14-octacosfluoro-14-iodo-2-(trifluoromethyl)- | | | x | 3 |
| 90622-71-2 | | Alkyl iodides, C6-18, perfluoro | Alkyl iodides, C6-18, perfluoro | | | x | 3 |
| Polyfluorinated iodides | | | | | | | |
| 2043-54-1 | 10:2 FTI | Dodecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10-heneicosfluoro-12-iodo- | Dodecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10-heneicosfluoro-12-iodo- | | | x | 3 |
| 30046-31-2 | 12:2 FTI | Tetradecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12-pentacosfluoro-14-iodo- | Tetradecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12-pentacosfluoro-14-iodo- | | | x | 3 |
| 65510-55-6 | 14:2 FTI | Hexadecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14-nonacosfluoro-16-iodo- | Hexadecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14-nonacosfluoro-16-iodo- | | | x | 3 |
| 65510-56-7 | 9:2 FTI | Undecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9-nonadecafluoro-11-iodo- | Undecane,1,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9-nonadecafluoro-11-iodo- | | | x | 3 |
| 68188-12-5 | FTI | Alkyl iodides, C4-20, γ - ω -perfluoro | Alkyl iodides, C4-20, γ - ω -perfluoro | | | x | 3 |
| 68390-33-0 | FTI | Alkyl iodides, C10-12, γ - ω -perfluoro | Alkyl iodides, C10-12, γ - ω -perfluoro | | | x | 3 |
| Polyfluorinated thioethers | | | | | | | |
| 65530-69-0 | | Poly(difluoromethylene), α -[2-[(2-carboxyethyl)thio]ethyl]- ω -fluoro-, lithium salt (1:1) | Poly(difluoromethylene), α -[2-[(2-carboxyethyl)thio]ethyl]- ω -fluoro-, lithium salt | | | x | 1,4 |

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|--|------------|---|---|------------------|------------------------|------------------------------------|-------|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 65530-83-8 | | Poly(difluoromethylene), α -[2-[(2-carboxyethyl)thio]ethyl]- ω -fluoro- | Poly(difluoromethylene), α -[2-[(2-carboxyethyl)thio]ethyl]- ω -fluoro- | | | x | 1,4 |
| 68187-25-7 | | Butanoic acid, 4-[[3-(dimethylamino)propyl]amino]-4-oxo-, 2(or 3)-[(γ - ω -perfluoro-C6-20-alkyl)thio] derivs. | Butanoic acid, 4-[[3-(dimethylamino)propyl]amino]-4-oxo-, 2(or 3)-[(γ - ω -perfluoro-C6-20-alkyl)thio] derivs. | | | x | 1,4 |
| 68187-47-3 | | 1-Propanesulfonic acid, 2-methyl-, 2-[[1-oxo-3-[(γ - ω -perfluoro-C4-16-alkyl)thio]propyl]amino] derivs., sodium salts | 1-Propanesulfonic acid, 2-methyl-, 2-[[1-oxo-3-[(γ - ω -perfluoro-C4-16-alkyl)thio]propyl]amino] derivs., sodium salts | | | x | 1,4 |
| Polyfluorinated alcohols | | | | | | | |
| 865-86-1 | 10:2 FTOH | 1-Dodecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosfluoro- | 1-Dodecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosfluoro- | | | x | 1,3,4 |
| 39239-77-5 | 12:2 FTOH | 1-Tetradecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosfluoro- | 1-Tetradecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosfluoro- | | | x | 1,3,4 |
| 68391-08-2 | | Alcohols, C8-14, γ - ω -perfluoro | Alcohols, C8-14, γ - ω -perfluoro | | | x | 1,4 |
| 60699-51-6 | 14:2 FTOH | 1-Hexadecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,16-nonacosfluoro- | 1-Hexadecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,16-nonacosfluoro- | | | x | 1,3 |
| 65104-65-6 | 18:2 FTOH | 1-Eicosanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,19,19,20,20-heptatriacontafluoro- | 1-Eicosanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,19,19,20,20-heptatriacontafluoro- | | | x | 1 |
| 65104-67-8 | | 1-Octadecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,18,18-tritriacontafluoro- | 1-Octadecanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,18,18-tritriacontafluoro- | | | x | 1 |
| Polyfluorinated alcohol derivatives | | | | | | | |
| 65545-80-4 | | Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy-, ether with α -fluoro- ω -(2-hydroxyethyl)poly(difluoromethylene) (1:1) | Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy-, ether with α -fluoro- ω -(2-hydroxyethyl)poly(difluoromethylene) (1:1) | | | x | 1,4 |
| 71002-41-0 | | Poly(difluoromethylene), α -[2-(acetoxy)-2-[(carboxymethyl)dimethylammonio]ethyl]- ω -fluoro-, inner salt | Poly(difluoromethylene), α -[2-(acetoxy)-2-[(carboxymethyl)dimethylammonio]ethyl]- ω -fluoro-, hydroxide, inner salt | | | x | 1,4 |
| 123171-68-6 | | Poly(difluoromethylene), α -[2-(acetoxy)-3-[(carboxymethyl)dimethylammonio]propyl]- ω -fluoro-, inner salt | Poly(difluoromethylene), α -[2-(acetoxy)-3-[(carboxymethyl)dimethylammonio]propyl]- ω -fluoro-, hydroxide, inner salt | | | x | 1 |

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|--|------------|--|---|------------------|------------------------|------------------------------------|-------|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| Polyfluorinated acrylates and methacrylates | | | | | | | |
| 16083-87-7 | | 2-Propenoic acid, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,15,15,15-tetracosafuoro-2-hydroxy- 14-(trifluoromethyl)pentadecyl ester | 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,15,15,15-tetracosafuoro-2-hydroxy- 14-(trifluoromethyl)pentadecylacrylate | | | x | 3 |
| 52956-82-8 | | 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,14,14,14-tetracosafuoro-13- (trifluoromethyl)tetradecyl ester | 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,14,14,14-tetracosafuoro-13- (trifluoromethyl)tetradecyl acrylate | | | x | 3 |
| 65104-45-2 | | 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 12-heneicosafuorododecyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10- heptadecafluorododecyl 2-methyl-2- propenoate, methyl 2-methyl-2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,14-pentacosafuorotetradecyl 2- methyl-2-propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoroctyl 2- methyl-2-propenoate | 2-Propenoic acid, 2- methyl-,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,1 1,12,12,12-heneicosafuorododecyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9, 10,10,10-heptadecafluorododecyl 2-methyl-2- propenoate, methyl 2-methyl-2- propenoate,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10, 11,11,12,12,13,13,14,14,14- pentacosafuorotetradecyl 2-methyl-2- propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,8- tridecafluoroctyl 2-methyl-2-propenoate | | | x | 3,4 |
| 74256-14-7 | | 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,12,12,12- eicosafuoro-11-(trifluoromethyl)dodecyl ester | 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,12,12- icosafuoro-11-(trifluoromethyl)dodecyl methacrylate | | | x | 3 |
| 74256-15-8 | | 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,14,14,14-tetracosafuoro-13- (trifluoromethyl)tetradecyl ester | 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,14,14,14-tetracosafuoro-13- (trifluoromethyl)tetradecyl methacrylate | | | x | 3 |
| 2144-54-9 | 10:2 FTMAC | 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 12-heneicosafuorododecyl ester | 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 12-heneicosafuorododecyl ester | | | x | 1,3,4 |
| 6014-75-1 | 12:2 FTMAC | 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,14-pentacosafuorotetradecyl ester | 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,14-pentacosafuorotetradecyl ester | | | x | 1,3,4 |
| 4980-53-4 | 14:2 FTMAC | 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,15,15,16,16,16- nonacosafuorohexadecyl ester | 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,15,15,16,16,16- nonacosafuorohexadecyl ester | | | x | 1,3,4 |

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|------------------------------------|------------|---|---|------------------|------------------------|------------------------------------|-------|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 59778-97-1 | 16:2 FTMAC | 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,18,18-tritriacontafluorooctadecyl ester | 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,18,18-tritriacontafluorooctadecyl ester | | | x | 1,4 |
| 65104-66-7 | 18:2 FTMAC | 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,19,19,20,20-heptatriacontafluoroeicosyl ester | 2-Propenoic acid, 2-methyl-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,17,17,18,18,19,19,20,20-heptatriacontafluoroeicosyl ester | | | x | 1,4 |
| 17741-60-5 | | 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafafluorododecyl ester | 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafafluorododecyl ester | | | x | 1,3 |
| 85631-54-5 | | 2-Propenoic acid, γ - ω -perfluoro-C8-14-alkyl esters | 2-Propenoic acid, γ - ω -perfluoro-C8-14-alkyl esters | | | x | 1,3,4 |
| 65530-66-7 | | Poly(difluoromethylene), α -fluoro- ω -[2-[(2-methyl-1-oxo-2-propen-1-yl)oxy]ethyl]- | Poly(difluoromethylene), α -fluoro- ω -[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]- | | | x | 1 |
| 65605-70-1 | | Poly(difluoromethylene), α -fluoro- ω -[2-[(1-oxo-2-propen-1-yl)oxy]ethyl]- | Poly(difluoromethylene), α -fluoro- ω -[2-[(1-oxo-2-propenyl)oxy]ethyl]- | | | x | 1 |
| Polyfluorinated carboxylate | | | | | | | |
| 65530-59-8 | | Poly(difluoromethylene), α -fluoro- ω -(2-hydroxyethyl)-, 2-hydroxy-1,2,3-propanetricarboxylate (3:1) | Poly(difluoromethylene), α -fluoro- ω -(2-hydroxyethyl)-, 2-hydroxy-1,2,3-propanetricarboxylate (3:1) | | | x | 1,4 |
| 65605-56-3 | | Poly(difluoromethylene), α -fluoro- ω -(2-hydroxyethyl)-, dihydrogen 2-hydroxy-1,2,3-propanetricarboxylate | Poly(difluoromethylene), α -fluoro- ω -(2-hydroxyethyl)-, dihydrogen 2-hydroxy-1,2,3-propanetricarboxylate | | | x | 1,4 |
| 65605-57-4 | | Poly(difluoromethylene), α -fluoro- ω -(2-hydroxyethyl)-, hydrogen 2-hydroxy-1,2,3-propanetricarboxylate | Poly(difluoromethylene), α -fluoro- ω -(2-hydroxyethyl)-, hydrogen 2-hydroxy-1,2,3-propanetricarboxylate | | | x | 1,4 |
| Polyfluorinated urethane | | | | | | | |
| 110053-43-5 | | Imidodicarbonic diamide, N,N',2-tris(6-isocyanatohexyl)-, reaction products with 3-chloro-1,2-propanediol and α -fluoro- ω -(2-hydroxyethyl)poly(difluoromethylene) | Imidodicarbonic diamide, N,N',2-tris(6-isocyanatohexyl)-, reaction products with 3-chloro-1,2-propanediol and α -fluoro- ω -(2-hydroxyethyl)poly(difluoromethylene) | | | x | 1 |
| Fluoro ester | | | | | | | |
| 148878-17-5 | | 2-Propenoic acid, 2-methyl-, C2-18-alkyl esters, polymers with α -fluoro- ω -[2-[(1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene) and vinylidene chloride | 2-Propenoic acid, 2-methyl-, C2-18-alkyl esters, polymers with α -fluoro- ω -[2-[(1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene) and vinylidene chloride | | | x | 1 |

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|--|------------|--|---|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 65530-65-6 | | Poly(difluoromethylene), α -fluoro- ω -[2-[(1-oxooctadecyl)oxy]ethyl]- | Poly(difluoromethylene), α -fluoro- ω -[2-[(1-oxooctadecyl)oxy]ethyl]- | | | x | 1 |
| Carboxylic acid and ester derivatives | | | | | | | |
| 125768-41-4 | | 9-Octadecenoic acid (9Z)-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 12-heneicosfluorododecyl ester | 9-Octadecenoic acid (9Z)-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 12-heneicosfluorododecyl ester | | | x | 4 |
| 220237-52-5 | | 9-Octadecenoic acid (9Z)-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,14-pentacosfluorotetradecyl ester | 9-Octadecenoic acid (9Z)-, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,14-pentacosfluorotetradecyl ester | | | x | 4 |
| 94095-37-1 | | Pentanoic acid, 4,4-bis[$(\gamma$ - ω -perfluoro-C6-12-alkyl)thio] derivs., compds. with diethanolamine | Pentanoic acid, 4,4-bis[$(\gamma$ - ω -perfluoro-C6-12-alkyl)thio] derivatives,compounds with diethanolamine | | | x | 4 |
| 71608-61-2 | | Pentanoic acid, 4,4-bis[$(\gamma$ - ω -perfluoro-C8-20-alkyl)thio] derivs., compds. with diethanolamine | Pentanoic acid, 4,4-bis[$(\gamma$ - ω -perfluoro-C8-20-alkyl)thio] derivatives,compounds with diethanolamine | | | x | 4 |
| 253682-98-3 | | Butanedioic acid, monopolyisobutylene derivs., 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 12-heneicosfluorododecyl ester | Butanedioic acid, monopolyisobutylene derivs.,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,1 1,12,12,12-heneicosfluorododecyl ester | | | x | 4 |
| 253682-97-2 | | Butanedioic acid, monopolyisobutylene derivs., 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,14-pentacosfluoro tetradecyl ester | Butanedioic acid, monopolyisobutylene derivs.,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,1 1,12,12,13,13,14,14,14-pentacosfluoro tetradecyl ester | | | x | 4 |
| 70983-60-7 | | 1-Propanaminium, 2-hydroxy-N,N,N-trimethyl-, 3-[$(\gamma$ - ω -perfluoro-C6-20-alkyl)thio] derivs., chlorides | 1-Propanaminium, 2-hydroxy-N,N,N-trimethyl-, 3-[$(\gamma$ - ω -perfluoro-C6-20-alkyl)thio] derivs., chlorides | | | x | 1,4 |
| Alkyl ammonium and amine derivatives | | | | | | | |
| 98219-29-5 | | Betaines, N-(hydroxyethyl)-N-methyl-N-(2-sulfoethyl)-N-(1,1,2-trihydroperfluoro-C8-14-2-alkenyl) | Betaines, N-(hydroxyethyl)-N-methyl-N-(2-sulfoethyl)-N-(1,1,2-trihydroperfluoro-C8-14-2-alkenyl) | | | x | 4 |
| 115340-82-4 | | Betaines, (hydroxyethyl)methyl(γ , ω -perfluoro-C ₈₋₁₄ - β -alkenyl)(2-sulfopropyl) | Betaines, (hydroxyethyl)methyl(γ , ω -perfluoro-C8-14-.beta.-alkenyl)(2-sulfopropyl) | | | x | 4 |
| 92129-34-5 | | Quaternary ammonium compounds, (hydroxyethyl)dimethyl(γ - ω -perfluoro-C8-14- β -alkenyl), Me sulfates (salts) | Quaternary ammonium compounds, (hydroxyethyl)dimethyl(γ - ω -perfluoro-C8-14-.beta.-alkenyl), methyl sulfates | | | x | 4 |

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|--------------------------|------------|--|--|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 115535-36-9 | | Quaternary ammonium compounds, trimethyl(δ-ω-perfluoro-C ₈₋₁₄ -β-alkenyl), chlorides | Quaternary ammonium compounds, trimethyl(δ-ω-perfluoro-C ₈₋₁₄ -β-alkenyl), chlorides | | | x | 4 |
| 127133-57-7 | | Quaternary ammonium compounds, diethylmethyl(γ-ω-perfluoro-C ₈₋₁₄ -β-alkenyl), Me sulfates | Quaternary ammonium compounds, diethylmethyl(γ-ω-perfluoro-C ₈₋₁₄ -β-alkenyl), methyl sulfates | | | x | 4 |
| 145477-02-7 | | Quaternary ammonium compounds, diethylmethyl(γ-ω-perfluoro-C ₈₋₁₄ -β-alkenyl), tetraphenylborates | Quaternary ammonium compounds, diethylmethyl(γ-ω-perfluoro-C ₈₋₁₄ -β-alkenyl), tetraphenyl borates | | | x | 4 |
| 153325-45-2 | | Quaternary ammonium compounds, diethylmethyl(γ-ω-perfluoro-C ₈₋₁₄ -β-alkenyl), tetraphenylborates | Quaternary ammonium compounds, diethylmethyl(γ-ω-perfluoro-C ₈₋₁₄ -β-alkenyl), tetrafluoroborates | | | x | 4 |
| 65530-57-6 | | Poly(difluoromethylene), α-fluoro-ω-[2-[(2-(trimethylammonio)ethyl]thio]ethyl]-, methyl sulfate (1:1) | Poly(difluoromethylene), α-fluoro-ω-[2-[(2-(trimethylammonio)ethyl]thio]ethyl]-, methyl sulfate | | | x | 4 |
| Other derivatives | | | | | | | |
| 71356-38-2 | | Piperazinium, 1-(carboxymethyl)-1-(2-hydroxyethyl)-4-(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10,10-nonaadecafluoro-1-oxodecyl)-, inner salt | Piperazinium, 1-(carboxymethyl)-1-(2-hydroxyethyl)-4-(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-nonaadecafluoro-1-oxodecyl)-, hydroxide, inner salt | | | x | 4 |
| 68140-21-6 | | Thiols, C10-20, γ-ω-perfluoro | Thiols, C10-20, γ-ω-perfluoro | | | x | 4 |
| 68516-17-6 | | Sulfuric acid, mono(γ-ω-perfluoro-C ₆ -12-alkyl) esters, ammonium salts | Sulfuric acid, mono(γ-ω-perfluoro-C ₆ -12-alkyl) esters, ammonium salts | | | x | 4 |
| 59493-72-0 | | 1-Propanaminium, 3-[[4-[(heptadecafluorononen-1-yl)oxy]benzoyl]amino]-N,N,N-trimethyl-, iodide (1:1) | 1-Propanaminium, 3-[[4-[(heptadecafluorononenyl)oxy]benzoyl]amino]-N,N,N-trimethyl-, iodide | | | x | 4 |
| 84238-62-0 | | Sulfuric acid, mono(γ-ω-perfluoro-C ₈ -12-alkyl) esters, ammonium salts | Sulfuric acid, mono(γ-ω-perfluoro-C ₈ -12-alkyl) esters, ammonium salts | | | x | 4 |
| Others | | | | | | | |
| 68891-05-4 | | Ethene, tetrafluoro-, homopolymer, α-fluoro-ω-(2-hydroxyethyl)-, citrate, reaction products with 1,6-diisocyanatohexane | Ethene, tetrafluoro-, homopolymer, α-fluoro-ω-(2-hydroxyethyl)-, citrate, reaction products with 1,6-diisocyanatohexane | | | x | 1 |
| 86508-42-1 | | Perfluoro compounds, C ₅ -18 | Perfluoro compounds, C ₅ -18 | | | x | 1 |
| 148240-84-0 | | 1,3-Propanediol, 2,2-bis[[(γ-ω-perfluoro-C ₄ -10-alkyl)thio]methyl] derivs., phosphates | 1,3-Propanediol, 2,2-bis[[(γ-ω-perfluoro-C ₄ -10-alkyl)thio]methyl] derivs., phosphates | | | x | 1 |

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|-------------|------------|--|--|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 277752-44-0 | | Hexanedioic acid, dimethyl ester, polymers with 2,2-bis(bromomethyl)-1,3-propanediol-ethanethiol-tetrafluoroethylene telomer reaction products | 3-cyclohexene-1-carboxylic acid, 6-[(di-2-propenylamino)carbonyl](1R, 6R), reaction products with pentafluoridoethane-tetrafluoroethylene telomer, ammonium salts | | | x | 1 |
| 333784-46-6 | | 2-Propenoic acid, 2-methyl-, 2-ethylhexyl ester, polymers with maleic anhydride, 2-[(2-mercaptoethoxy)carbonyl]aminoethyl methacrylate, γ - ω -perfluoro-C ₈₋₁₆ -alkyl acrylate and stearyl methacrylate | Graft polymer of alkyl methacrylate-maleic anhydride-2-[(2-mercaptoethyl)oxy]carbonyl]aminoethyl methacrylate copolymer and octadecyl methacrylate-2-(perfluoro(alkyl(C=6,8,10,12,14)))ethyl acrylate copolymer | | | x | 1 |
| 333784-44-4 | | 2-Propenoic acid, 2-methyl-, 3-chloro-2-hydroxypropyl ester, polymers with 2,3-dihydroxypropyl methacrylate, γ - ω -perfluoro-C ₈₋₁₆ -alkyl acrylate, polyethylene glycol methacrylate Me ether and polypropylene glycol monomethacrylate | Poly[3-chloro-2-hydroxypropyl methacrylate, 2,3-dihydroxypropyl methacrylate, hydroxypoly(2-23)(oxypropylene)methacrylate, methoxypoly(2-23)(oxyethylene)methacrylate, 2-(perhalo(alkyl(C=6,8,10,12,14)))ethyl acrylate] | | | x | 1 |
| 174125-96-3 | | 2-Propenoic acid, 2-methyl-, 2-(dimethylamino)ethyl ester, polymers with δ - ω -perfluoro-C10-16-alkyl acrylate and vinyl acetate | 2-Propenoic acid, 2-methyl-, 2-(dimethylamino)ethyl ester, polymers with δ - ω -perfluoro-C10-16-alkyl acrylate and vinyl acetate | | | x | 1 |
| 70983-59-4 | | Poly(oxy-1,2-ethanediyl), α -methyl- ω -hydroxy-, 2-hydroxy-3-[γ - ω -perfluoro-C6-20-alkyl]thio]propyl ethers | Poly(oxy-1,2-ethanediyl), α -methyl- ω -hydroxy-, 2-hydroxy-3-[γ - ω -perfluoro-C6-20-alkyl]thio]propyl ethers | | | x | 1,4 |
| 182700-77-2 | | Siloxanes and Silicones, di-Me, hydroxy-terminated, polymers with tetradecanedioic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,13-tricosfluoro-1-tridecanol-terminated | Siloxanes and silicones, di-Me, hydroxy-terminated, polymers with tetradecanedioic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13-tricosfluoro-1-tridecanol-terminated | | | x | 1 |
| 678-39-7 | | 1-Decanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluoro- | 1-Decanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluoro | | | x | 1 |
| 65530-61-2 | | Poly(difluoromethylene), α -fluoro- ω -[2-(phosphonoxy)ethyl]- | Poly(difluoromethylene), α -fluoro- ω -[2-(phosphonoxy)ethyl]- | | | x | 1 |
| 70969-47-0 | | Thiols, C8-20, γ - ω -perfluoro, telomers with acrylamide | Thiols, C8-20, γ - ω -perfluoro, telomers with acrylamide | | | x | 1 |
| 68333-92-6 | | Fatty acids, C ₇₋₁₃ , perfluoro | Fatty acids, C7-13, perfluoro | | | x | 3 |
| 91032-01-8 | | Fatty acids, C7-19, perfluoro | Fatty acids, C7-19, perfluoro | | | x | 3 |

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|------------|------------|---|---|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 15811-52-6 | | Dodecanoyl fluoride, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,12,12 ,12-docosafluoro-11-(trifluoromethyl)- | Dodecanoyl fluoride,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10, 11,12,12,12-docosafluoro-11-(trifluoromethyl)- | | | x | 3 |
| 16486-96-7 | | Dodecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,12,12 ,12-docosafluoro-11-(trifluoromethyl)- | Dodecanoic acid,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11, 12,12,12-docosafluoro-11-(trifluoromethyl)- | | | x | 3 |
| 18024-09-4 | | Tetradecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12 ,12,13,14,14,14-hexacosafuoro-13-(trifluoromethyl)- | Tetradecanoic acid,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11, 11,12,12,13,14,14,14-hexacosafuoro-13-(trifluoromethyl)- | | | x | 3 |
| 68015-87-2 | | Dodecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,12,12 ,12-docosafluoro-11-(trifluoromethyl)-, compd. with ethanamine (1:1) | Dodecanoic acid,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11, 12,12,12-docosafluoro-11-(trifluoromethyl)-, compd. with ethanamine(1:1) | | | x | 3 |
| 68025-62-7 | | Tetradecanoyl fluoride, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12 ,12,13,14,14,14-hexacosafuoro-13-(trifluoromethyl)- | Tetradecanoyl fluoride,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10, 11,11,12,12,13,14,14,14-hexacosafuoro-13-(trifluoromethyl)- | | | x | 3 |
| 3658-63-7 | | Decanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,10,10,10-octadecafluoro-9-(trifluoromethyl)-, ammonium salt (1:1) | Decanoic acid,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,10,10,10-octadecafluoro-9-(trifluoromethyl)-, ammonium salt | | | x | 3 |
| 3793-74-6 | | Dodecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12 ,12,12-tricosafuoro-, ammonium salt (1:1) | Ammonium tricosafuorododecanoate | | | x | 3 |
| 72968-38-8 | | Fatty acids, C7-13, perfluoro, ammonium salts | Fatty acids, C7-13, perfluoro, ammonium salts | | | x | 3 |
| 307-71-1 | | Undecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11-eicosafuoro-, potassium salt (1:1) | Undecanoic acid,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11, 11-eicosafuoro-, potassium salt | | | x | 3 |
| 93062-53-4 | | Phosphinic acid, bis(perfluoro-C6-12-alkyl) derivs., aluminum salts | Phosphinic acid, bis(perfluoro-C6-12-alkyl) derivs., aluminum salts | | | x | 3 |
| 1765-48-6 | | Undecanoic acid, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11-eicosafuoro- | Undecanoic acid,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11, 11-eicosafuoro- | | | x | 3 |
| 93776-16-0 | | 1-Pentadecanaminium, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,14,15,15,15-pentacosafuoro-2-hydroxy-N,N-bis(2-hydroxyethyl)-N-methyl-, iodide (1:1) | bis(2-hydroxyethyl)methyl(4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,15-pentacosafuoro-2-hydroxypentadecyl)ammonium iodide | | | x | 3 |

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|------------|------------|---|---|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 93776-17-1 | | 1-Tridecanaminium, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,13-heneicosfluoro-2-hydroxy-N,N- bis(2-hydroxyethyl)-N-methyl-, iodide (1:1) | [4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,13-heneicosfluoro-2-hydroxytridecan-1- yl][bis(2-hydroxyethyl)]methylammonium iodide | | | x | 3 |
| 94159-76-9 | | 1-Pentadecanaminium, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,15,15,15-tetracosfluoro-2-hydroxy- N,N-bis(2-hydroxyethyl)-N-methyl-14- (trifluoromethyl)-, iodide (1:1) | bis(2- hydroxyethyl)methyl[4,4,5,5,6,6,7,7,8,8,9,9, 10,10,11,11,12,12,13,13,14,15,15,15- tetracosfluoro-2-hydroxy-14- (trifluoromethyl)pentadecyl] ammonium iodide | | | x | 3 |
| 94159-79-2 | | 2-Pentadecanol, 1-[3- (dimethylamino)propyl]amino]- 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,14,15,15,15-pentacosfluoro- | 1-[3-(dimethylamino)propyl]amino]- 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,14,15,15,15- pentacosfluoropentadecan-2-ol | | | x | 3 |
| 94159-80-5 | | 2-Tridecanol, 1-[3- (dimethylamino)propyl]amino]- 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,13-heneicosfluoro- | 1-[3-(dimethylamino)propyl]amino]- 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,13-heneicosfluorotridecan-2-ol | | | x | 3 |
| 94159-82-7 | | 2-Pentadecanol, 1-[3- (dimethylamino)propyl]amino]- 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,15,15,15-tetracosfluoro-14- (trifluoromethyl)- | 1-[3-(dimethylamino)propyl]amino]- 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13, 13,14,15,15,15-tetracosfluoro-14- (trifluoromethyl)pentadecan-2-ol | | | x | 3 |
| 94159-83-8 | | 2-Tridecanol, 1-[3- (dimethylamino)propyl]amino]- 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,13,13, 13-eicosfluoro-12-(trifluoromethyl)- | 1-[3-(dimethylamino)propyl]amino]- 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,13,13, 13-eicosfluoro-12-(trifluoromethyl)tridecan- 1-ol | | | x | 3 |
| 93776-12-6 | | 1-Propanaminium, N-(2-carboxyethyl)-N,N- dimethyl-3-[(4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,1 3,13,14,14,15,15,15-pentacosfluoro-2- hydroxypentadecyl)amino]-, inner salt | (2-carboxylatoethyl)(dimethyl)[3- [(4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,1 3,13,14,14,15,15,15-pentacosfluoro-2- hydroxypentadecyl)amino]propyl]ammoniu m | | | x | 3 |
| 93776-13-7 | | 1-Propanaminium, N-(2-carboxyethyl)-3- [(4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,1 3,13,13-heneicosfluoro-2- hydroxytridecyl)amino]-N,N-dimethyl-, inner salt | (2-carboxylatoethyl)[3- [(4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,1 3,13,13-heneicosfluoro-2- hydroxytridecyl)amino]propyl]dimethylamm onium | | | x | 3 |

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|--|------------|--|--|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 93776-15-9 | | 1-Propanaminium, N-(2-carboxyethyl)-N,N-dimethyl-3-[4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,15,15,15-pentacosfluoro-2-hydroxy-14-(trifluoromethyl)pentadecyl]amino]-, inner salt | (2-carboxylatoethyl)(dimethyl)[[[4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,15,15,15-tetracosfluoro-2-hydroxy-14-(trifluoromethyl)pentadecyl]amino]propyl]ammonium | | | x | 3 |
| 90622-99-4 | | Amides, C7-19, α - ω -perfluoro-N,N-bis(hydroxyethyl) | Amides, C7-19, α - ω -perfluoro-N,Nbis(hydroxyethyl) | | | x | 3 |
| 71356-38-2 | | Piperazinium, 1-(carboxymethyl)-1-(2-hydroxyethyl)-4-(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-nonadecafluoro-1-oxodecyl)-, inner salt | 1-(carboxylatomethyl)-1-(2-hydroxyethyl)-4-(2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-nonadecafluoro-1-oxodecyl)piperazinium | | | x | 3 |
| 85681-64-7 | | 2-Propenoic acid, perfluoro-C8-16-alkyl esters | 2-Propenoic acid, perfluoro-C8-16-alkyl esters | | | x | 3 |
| 68155-54-4 | | 2H-Pyran, 2,2,3,3,4,4,5,5,6-nonafluorotetrahydro-6-(1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9,9-nonadecafluorononyl)- | 2H-Pyran, 2,2,3,3,4,4,5,5,6-nonafluorotetrahydro-6-(nonadecafluorononyl)- | | | x | 3 |
| 459415-06-6 | | 2-Propenoic acid, 2-methyl-, 2-methylpropyl ester, polymer with butyl 2-propenoate and 2,5-furandione, γ - ω -perfluoro-C ₈₋₁₄ -alkyl esters, <i>tert</i> -Bu benzenecarboperoxoate-initiated | 2-propenoic acid, 2-methyl-, 2-methylpropyl ester, polymer with butyl 2-propenoateand 2,5 furandione, γ - ω -perfluoro-C8-14-alkyl esters, <i>tert</i> -Bu benzenecarboperoxoate-initiated | | | x | 2 |
| 464178-90-3 | | 2-Propen-1-ol, reaction products with 1,1,1,2,2-pentafluoro-2-iodoethane-tetrafluoroethylene telomer, dehydroiodinated, reaction products with epichlorohydrin and triethylenetetramine | 2-propen-1-ol, reaction products with pentafluoroiodoethane tetrafluoroethylene telomer,dehydroiodinated, reaction products with epichlorohydrin and triethylenetetramine | | | x | 2 |
| 1246542-93-7 | | Alcohols, C ₁₆₋₂₀ -branched, reaction products with 1,6-diisocyanatohexane homopolymer, α -fluoro- ω -(2-hydroxyethyl)poly(difluoromethylene) and stearyl alc. | Hexane, 1,6-diisocyanato-, homopolymer, reaction products with α -fluoro- ω -2-hydroxyethyl-poly(difluoro- methylene), C16-20-branched alcohols and 1-octadecanol | | | x | 2 |
| 93776-00-2 | | 2-Pentadecanol, 1,1'-[oxybis[(1-methyl-2,1-ethanediyl)oxy]]bis[4,4,5,5,6,6,7,7,8,8,9,9,10,11,11,12,12,13,13,14,14,15,15,15-pentacosfluoro- | 1,1'-[oxybis[(1-methylethylene)oxy]]bis[4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,15-pentacosfluoropentadecan-2-ol] | | | x | 3 |
| Side-chain fluorinated polymers | | | | | | | |

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|-------------|------------|---|---|------------------|------------------------|------------------------------------|-------|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 115592-83-1 | | 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 12-heneicosfluorododecyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10- heptadecafluorododecyl 2-propenoate, hexadecyl 2-propenoate, N- (hydroxymethyl)-2-propenamide, octadecyl 2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,14-pentacosfluorotetradecyl 2- propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,8- tridecafluorooctyl 2-propenoate | 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 12-heneicosfluorododecyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10- heptadecafluorododecyl 2-propenoate, hexadecyl 2-propenoate, N- (hydroxymethyl)-2-propenamide, octadecyl 2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,14-pentacosfluorotetradecyl 2- propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,8- tridecafluorooctyl 2-propenoate | | | x | 1,3,4 |
| 144031-01-6 | | 2-Propenoic acid, dodecyl ester, polymers with Bu (1-oxo-2-propenyl)carbamate and γ - ω -perfluoro-C ₈₋₁₄ -alkyl acrylate | 2-Propenoic acid, dodecyl ester, polymers with Bu (1-oxo-2-propenyl)carbamate and γ - ω -perfluoro-C ₈₋₁₄ -alkyl acrylate | | | x | 1,3 |
| 65605-58-5 | | 2-Propenoic acid, 2-methyl-, dodecyl ester, polymer with α -fluoro- ω -[2-(2-methyl-1- oxo-2-propen-1- yl)oxy]ethyl]poly(difluoromethylene) | 2-Propenoic acid, 2-methyl-, dodecyl ester, polymer with α -fluoro- ω -[2-(2-methyl-1- oxo-2- propenyl)oxy]ethyl]poly(difluoromethylene) | | | x | 1,4 |
| 65636-35-3 | | Ethanaminium, N,N-diethyl-N-methyl-2-[(2- methyl-1-oxo-2-propen-1-yl)oxy]-, methyl sulfate (1:1), polymer with 2-ethylhexyl 2- methyl-2-propenoate, α -fluoro- ω -[2-(2- methyl-1-oxo-2-propen-1- yl)oxy]ethyl]poly(difluoromethylene), 2- hydroxyethyl 2-methyl-2-propenoate and N- (hydroxymethyl)-2-propenamide | Ethanaminium, N,N-diethyl-N-methyl-2-[(2- methyl-1-oxo-2-propenyl)oxy]-, methyl sulfate, polymer with 2-ethylhexyl 2-methyl- 2-propenoate, α -fluoro- ω -[2-(2-methyl-1- oxo-2- propenyl)oxy]ethyl]poly(difluoromethylene), 2-hydroxyethyl 2-methyl-2-propenoate and N-(hydroxymethyl)-2-propenamide | | | x | 1,4 |
| 125328-29-2 | | 2-Propenoic acid, 2-methyl-, C ₁₀₋₁₆ -alkyl esters, polymers with 2-hydroxyethyl methacrylate, Me methacrylate and α - ω - perfluoro-C ₈₋₁₄ -alkyl acrylate | 2-Propenoic acid, 2-methyl-, C ₁₀₋₁₆ -alkyl esters, polymers with 2-hydroxyethyl methacrylate, Me methacrylate and perfluoro-C ₈₋₁₄ -alkyl acrylate | | | x | 1,3 |
| 129783-45-5 | | 2-Propenoic acid, 2-methyl-, C ₁₀₋₁₆ -alkyl esters, polymers with 2-hydroxyethyl methacrylate, Me methacrylate and γ - ω - perfluoro-C ₈₋₁₄ -alkyl acrylate | 2-Propenoic acid, 2-methyl-, C ₁₀₋₁₆ -alkyl esters, polymers with 2-hydroxyethyl methacrylate, Me methacrylate and γ - ω - perfluoro-C ₈₋₁₄ -alkyl acrylate | | | x | 1,3 |
| 34395-24-9 | | 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,14-pentacosfluorotetradecyl ester | 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,14-pentacosfluorotetradecyl ester | | | x | 1 |

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|-------------|------------|--|---|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 119973-85-2 | | 2-Propenoic acid, 2-methyl-, 3-chloro-2-hydroxypropyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosfluorododecyl 2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorododecyl 2-propenoate, N-(hydroxymethyl)-2-propenamide, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16-nonacosafuorohexadecyl 2-propenoate, octadecyl 2-propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafuorotetradecyl 2-propenoate | 2-Methyl-2-propenoic acid 3-chloro-2-hydroxypropyl ester polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafuorododecyl 2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorododecyl 2-propenoate, N-(hydroxymethyl)-2-propenamide, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16-nonacosafuorohexadecyl 2-propenoate, octadecyl 2-propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosafuorotetradecyl 2-propenoate) | | | x | 1,4 |
| 178233-67-5 | | 2-Propenoic acid, C ₁₂₋₁₄ -alkyl esters, polymers with Bu (1-oxo-2-propenyl)carbamate and δ-ω-perfluoro-C ₆₋₁₂ -alkyl acrylate | 2-Propenoic acid, C ₁₂₋₁₄ -alkyl esters, polymers with Bu (1-oxo-2-propenyl)carbamate and δ-ω-perfluoro-C ₆₋₁₂ -alkyl acrylate | | | x | 1 |
| 65605-59-6 | | 2-Propenoic acid, 2-methyl-, dodecyl ester, polymer with α-fluoro-ω-[2-[(2-methyl-1-oxo-2-propen-1-yl)oxy]ethyl]poly(difluoromethylene) and N-(hydroxymethyl)-2-propenamide | 2-Propenoic acid, 2-methyl-, dodecyl ester, polymer with α-fluoro-ω-[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene) and N-(hydroxymethyl)-2-propenamide | | | x | 1,4 |
| 65605-60-9 | | 2-Propenoic acid, 2-methyl-, dodecyl ester, polymer with α-fluoro-ω-[2-[(2-methyl-1-oxo-2-propen-1-yl)oxy]ethyl]poly(difluoromethylene), 2-hydroxyethyl 2-methyl-2-propenoate and N-(hydroxymethyl)-2-propenamide | 2-Propenoic acid, 2-methyl-, dodecyl ester, polymer with α-fluoro-ω-[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene), 2-hydroxyethyl 2-methyl-2-propenoate and N-(hydroxymethyl)-2-propenamide | | | x | 4 |
| 68239-43-0 | | 2-Propenoic acid, 2-methyl-, 2-ethylhexyl ester, polymer with α-fluoro-ω-[2-[(2-methyl-1-oxo-2-propen-1-yl)oxy]ethyl]poly(difluoromethylene), 2-hydroxyethyl 2-methyl-2-propenoate and N-(hydroxymethyl)-2-propenamide | 2-Propenoic acid, 2-methyl-, 2-ethylhexyl ester, polymer with α-fluoro-ω-[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene), 2-hydroxyethyl 2-methyl-2-propenoate and N-(hydroxymethyl)-2-propenamide | | | x | 1,4 |
| 150135-57-2 | | 2-Propenoic acid, 2-methyl-, 2-(dimethylamino)ethyl ester, polymers with Bu acrylate, γ-ω-perfluoro-C ₈₋₁₄ -alkyl acrylate and polyethylene glycol monomethacrylate, 2,2'-(1,2-diazenediyi)bis[2,4-dimethylpentanenitrile]-initiated | 2-Propenoic acid, 2-methyl-, 2-(dimethylamino)ethyl ester, polymers with Bu acrylate, γ-ω-perfluoro-C ₈₋₁₄ -alkyl acrylate and polyethylene glycol monomethacrylate, 2,2'-azobis[2,4-dimethylpentanenitrile]-initiated | | | x | 4 |

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|--------------|------------|---|--|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 203743-03-7 | | 2-Propenoic acid, 2-methyl-, hexadecyl ester, polymers with 2-hydroxyethyl methacrylate, $\gamma\omega$ -perfluoro-C ₁₀₋₁₆ -alkyl acrylate and stearyl methacrylate | 2-propenoic acid, 2-methyl-, hexadecyl ester, polymers with 2-hydroxyethyl methacrylate, $\gamma\omega$ -perfluoro-C ₁₀₋₁₆ -alkyl acrylate and stearyl methacrylate | | | x | 2,4 |
| 196316-34-4 | | 2-Propenoic acid, 2-methyl-, 2-(dimethylamino)ethyl ester, polymers with $\gamma\omega$ -perfluoro-C ₁₀₋₁₆ -alkyl acrylate and vinyl acetate, acetates | 2-Propenoic acid, 2-methyl-, 2-(dimethylamino)ethyl ester, polymers with $\gamma\omega$ -perfluoro-C ₁₀₋₁₆ -alkyl acrylate and vinyl acetate, acetates | | | x | 4 |
| 1094598-90-9 | | 2-Propenoic acid, 2-methyl-, 3-chloro-2-hydroxypropyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosfluorododecyl 2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyl 2-propenoate, N-(hydroxymethyl)-2-propenamide, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,16-nonacosfluorohexadecyl 2-propenoate, octadecyl 2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosfluorotetradecyl 2-propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoroctyl 2-propenoate | 2-Propenoic acid, 2-methyl-, 3-chloro-2-hydroxypropyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosfluorododecyl 2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10-heptadecafluorodecyl 2-propenoate, N-(hydroxymethyl)-2-propenamide, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,16,16,16-nonacosfluorohexadecyl 2-propenoate, octadecyl 2-propenoate, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,14-pentacosfluorotetradecyl 2-propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluoroctyl 2-propenoate | | | x | 4 |
| 325966-78-7 | | 2-Propenoic acid, 2-methyl-, 3-chloro-2-hydroxypropyl ester, polymers with N-(1,1-dimethyl-3-oxobutyl)-2-propenamide, 2-ethylhexyl acrylate, $\gamma\omega$ -perfluoro-C ₈₋₁₆ -alkyl acrylate, stearyl acrylate and vinyl chloride, 2,2'-azobis[2-methylpropanimidamide] dihydrochloride-initiated | 2-Propenoic acid, 2-methyl-, 3-chloro-2-hydroxypropyl ester, polymers with N-(1,1-dimethyl-3-oxobutyl)-2-propenamide, 2-ethylhexyl acrylate, $\gamma\omega$ -perfluoro-C ₈₋₁₆ -alkyl acrylate, octadecyl 2-propenoate and vinyl chloride, 2,2'-azobis[2-methylpropanimidamide] dihydrochloride-initiated | | | x | 4 |

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|-------------|------------|--|--|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 119973-84-1 | | 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 12-heneicosfluorododecyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10- heptadecafluorododecyl 2-propenoate, α -(2- methyl-1-oxo-2-propenyl)- ω -[(2-methyl-1- oxo-2-propenyl)oxy]poly(oxy-1,2- ethanediyl), 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,15,15,16,16,16- nonacosfluorohexadecyl 2-propenoate, octadecyl 2-propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,14-pentacosfluorotetradecyl 2- propenoate | 2-Propenoic acid, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 12-heneicosfluorododecyl ester, polymer with 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10- heptadecafluorododecyl 2-propenoate, α -(2- methyl-1-oxo-2-propenyl)- ω -[(2-methyl-1- oxo-2-propenyl)oxy]poly(oxy-1,2- ethanediyl),3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10, 11,11,12,12,13,13,14,14,15,15,16,16,16- nonacosfluorohexadecyl 2-propenoate, octadecyl 2-propenoate and 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12, 13,13,14,14,14-pentacosfluorotetradecyl 2- propenoate | | | x | 4 |
| 220713-37-1 | | 2-Propenoic acid, 2-methyl-, 2-aziridinyl ester, polymer with α -fluoro- ω -[2-[(1-oxo-2- propenyl)oxy]ethyl]poly(difluoromethylene) and phenylmethyl 2-methyl-2-propenoate | 2-Propenoic acid, 2-methyl-, 2-aziridinyl ester, polymer with α -fluoro- ω -[2-[(1-oxo-2- propenyl)oxy]ethyl]poly(difluoromethylene) and phenylmethyl-2-methyl-2-propenoate | | | x | 4 |
| 374928-93-5 | | 2-Propenenitrile, polymer with α -fluoro- ω - [2-[(2-methyl-1-oxo-2- propenyl)oxy]ethyl]poly(difluoromethylene), α -(2-methyl-1-oxo-2-propenyl)- ω - methoxypoly(oxy-1,2-ethanediyl) and α -(2- methyl-1-oxo-2-propenyl)- ω -[(2-methyl-1- oxo-2-propenyl)oxy]poly(oxy-1,2- ethanediyl) | 2-Propenenitrile, polymer with α -fluoro- ω - [2-[(2-methyl-1-oxo-2- propenyl)oxy]ethyl]poly(difluoromethylene), α -(2-methyl-1-oxo-2-propenyl)- ω - methoxypoly(oxy-1,2-ethanediyl) and α -(2- methyl-1-oxo-2-propenyl)- ω -[(2-methyl-1- oxo-2-propenyl)oxy]poly(oxy-1,2- ethanediyl) | | | x | 4 |
| 97136-02-2 | | 2-Propenoic acid, 2-methyl-, 2-ethylhexyl ester, polymer with α -fluoro- ω -[2-[(2- methyl-1-oxo-2- propenyl)oxy]ethyl]poly(difluoromethylene) | 2-Propenoic acid, 2-methyl-, 2-ethylhexyl ester, polymer with α -fluoro- ω -[2-[(2- methyl-1-oxo-2- propenyl)oxy]ethyl]poly(difluoromethylene) | | | x | 4 |
| 101896-32-6 | | 2-Propenoic acid, 2-methyl-, 3-chloro-2- hydroxypropyl ester, polymer with α -fluoro- ω -[2-[(2-methyl-1-oxo-2-propenyl)- oxy]ethyl]poly(difluoromethylene) | 2-Propenoic acid, 2-methyl-, 3-chloro-2- hydroxypropyl ester, polymer with α -fluoro- ω -[2-[(2-methyl-1-oxo-2- propenyl)oxy]ethyl]poly(difluoromethylene) | | | x | 4 |
| 220713-74-6 | | 2-Propenoic acid, 2-methyl-, 2-aziridinyl ester, polymer with α -fluoro- ω -[(2-methyl- 1-oxo-2- propenyl)oxy]methyl]poly(difluoromethylen e) and octadecyl 2-methyl-2-propenoate | 2-Propenoic acid, 2-methyl-, 2-aziridinyl ester, polymer with α -fluoro- ω -[(2-methyl- 1-oxo-2- propenyl)oxy]methyl]poly(difluoromethylen e) and octadecyl 2-methyl-2-propenoate | | | x | 4 |

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|-------------|------------|--|---|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 220713-85-9 | | 2-Propenoic acid, 2-methyl-, 2-aziridinyl ester, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate and α -fluoro- ω -[(2-methyl-1-oxo-2-propenyl)oxy]methyl]poly(difluoromethylene) | 2-Propenoic acid, 2-methyl-, 2-aziridinyl ester, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate and α -fluoro- ω -[(2-methyl-1-oxo-2-propenyl)oxy]methyl]poly(difluoromethylene) | | | x | 4 |
| 374928-92-4 | | 2-Butenedioic acid (2Z)-, dioctyl ester, polymer with chloroethene and α -fluoro- ω -[2-[(1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene) | 2-Butenedioic acid (2Z)-, dioctyl ester, polymer with chloroethene and α -fluoro- ω -[2-[(1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene) | | | x | 4 |
| 459415-06-6 | | 2-Propenoic acid, 2-methyl-, 2-methylpropyl ester, polymer with butyl 2-propenoate and 2,5-furandione, γ - ω -perfluoro-C ₈₋₁₄ -alkyl esters, <i>tert</i> -Bu benzenecarboperoxoate-initiated | 2-Propenoic acid, 2-methyl-, 2-methylpropyl ester, polymer with butyl 2-propenoate and 2,5-furandione, γ - ω -perfluoro-C8-14-alkyl esters, <i>tert</i> -Bubzenecarboperoxoate-initiated | | | x | 4 |
| 524729-93-9 | | 2-Propenoic acid, polymer with butyl 2-propenoate and 2,5-furandione, γ - ω -perfluoro-C ₈₋₁₄ -alkyl esters, potassium salts, <i>tert</i> -Bu benzenecarboperoxoate-initiated | 2-Propenoic acid, polymer with butyl 2-propenoate and 2,5-furandione, γ - ω -perfluoro-C8-14-alkyl esters, potassium salts, <i>tert</i> -Bu benzenecarboperoxoate-initiated | | | x | 4 |
| 500701-62-2 | | 2-Propenoic acid, 2-methyl-, 2-(diethylamino)ethyl ester, polymer with α -fluoro- ω -[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene), acetate (salt) | 2-Propenoic acid, 2-methyl-, 2-(diethylamino)ethyl ester, polymer with α -fluoro- ω -[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene), acetate (salt) | | | x | 4 |
| 68891-05-4 | | Ethene, tetrafluoro-, homopolymer, α -fluoro- ω -(2-hydroxyethyl)-, citrate, reaction products with 1,6-diisocyanatohexane | Ethene, tetrafluoro-, homopolymer, α -fluoro- ω -(2-hydroxyethyl)-, citrate, reaction products with 1,6-diisocyanatohexane | | | x | 4 |
| 376364-33-9 | | Alcohols, C ₈₋₁₄ , γ - ω -perfluoro, polymers with α -fluoro- ω -[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene), methanol, stearyl acrylate, stearyl methacrylate, 2,4-TDI and vinyl chloride | Alcohols, C8-14, γ - ω -perfluoro, polymers with α -fluoro- ω -[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene), methanol, stearyl acrylate, stearyl methacrylate, 2,4-TDI and vinyl chloride | | | x | 4 |
| 135228-60-3 | | Hexane, 1,6-diisocyanato-, homopolymer, γ - ω -perfluoro-C6-20-alc.-blocked | Hexane, 1,6-diisocyanato-, homopolymer, γ - ω -perfluoro-C6-20-alc.-blocked | | | x | 4 |

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|-------------|------------|--|--|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 144468-32-6 | | 1,3-Propanediol, 2,2-bis(bromomethyl)-, reaction products with ethanethiol-tetrafluoroethylene telomer, polymers with 1,6-diisocyanato-2,2,4(<i>or</i> 2,4,4)-trimethylhexane, 2-heptyl-3,4-bis(9-isocyanatononyl)-1-pentylcyclohexane and 2,2'-(methylimino)bis[ethanol] | 1,3-Propanediol, 2,2-bis(bromomethyl)-, reaction products with ethanethiol tetrafluoroethylene telomer, polymers with 1,6-diisocyanato-2,2,4(<i>or</i> 2,4,4)-trimethylhexane, 2-heptyl-3,4-bis(9-isocyanatononyl)-1-pentylcyclohexane and 2,2'-(methylimino)bis[ethanol] | | | x | 4 |
| 118102-37-7 | | Alcohols, C ₈₋₁₄ , γ-ω-perfluoro, reaction products with epichlorohydrin, polyethylene glycol mono-Me ether and N,N',2-tris(6-isocyanatohexyl)imidodicarbonic diamide | Alcohols, C8-14, γ- ω --perfluoro, reaction products with epichlorohydrin, polyethylene glycol monomethyl ether and N,N',2-tris(6-isocyanatohexyl)imidodicarbonic diamide | | | x | 1,4 |
| 332076-28-5 | | 2-Oxepanone, homopolymer, decyl perfluoro-C ₈₋₁₄ -alkyl esters, reaction products with 1 <i>H</i> -imidazole-1-propanamine, polyethylene-polypropylene glycol and TDI homopolymer | 2-Oxepanone, homopolymer, decyl perfluoro-C8-14-alkyl esters, reaction products with 1 <i>H</i> -imidazole-1-propanamine, polyethylene-polypropylene glycol and TDI homopolymer | | | x | 1,4 |
| 332076-33-2 | | 2-Oxepanone, homopolymer, decyl perfluoro-C ₈₋₁₄ -alkyl esters, reaction products with 1 <i>H</i> -imidazole-1-propanamine and TDI homopolymer | 2-Oxepanone, homopolymer, decyl perfluoro-C8-14-alkyl esters, reaction products with 1 <i>H</i> -imidazole-1-propanamine and TDI homopolymer | | | x | 4 |
| 332076-34-3 | | 2-Oxepanone, homopolymer, decyl perfluoro-C ₈₋₁₄ -alkyl esters, reaction products with 1 <i>H</i> -imidazole-1-propanamine, polyethylene glycol and TDI homopolymer | 2-Oxepanone, homopolymer, decyl perfluoro-C8-14-alkyl esters, reaction products with 1 <i>H</i> -imidazole-1-propanamine, polyethylene-polypropylene glycol and TDI homopolymer | | | x | 4 |
| 68990-40-9 | | Fatty acids, C18-unsatd., dimers, diisocyanates, polymers with 2,3-bis(γ-ω-perfluoro-C4-18-alkyl)-1,4-butanediol, 1,6-diisocyanato-2,2,4(<i>or</i> 2,4,4)-trimethylhexane and 2,2'-(methylimino)bis[ethanol] | Fatty acids, C18-unsaturated, dimers, diisocyanates, polymers with 2,3-bis(γ-ω-perfluoro-C4-18-alkyl)-1,4-butanediol, 1,6-diisocyanato-2,2,4(<i>or</i> 2,4,4)-trimethylhexane and 2,2'-(methylimino)bis[ethanol] | | | x | 4 |
| 118102-38-8 | | Alcohols, C ₈₋₁₄ , γ-ω-perfluoro, reaction products with epichlorohydrin, tetrahydrofuran homopolymer and N,N',2-tris(6-isocyanatohexyl)imidodicarbonic diamide | Alcohols, C8-14, γ- ω --perfluoro, reaction products with epichlorohydrin, tetrahydrofuran homopolymer and N,N',2-tris(6-isocyanatohexyl)imidodicarbonic diamide | | | x | 1,4 |
| 253873-70-0 | | Alcohols, C ₈₋₁₄ , γ-ω-perfluoro, polymers with 1,6-diisocyanatohexane, ethylene glycol, glycidol and 2,4-TDI | Alcohols, C8-14, γ-ω-perfluoro, polymers with 1,6-diisocyanatohexane, ethylene glycol, glycidol and 2,4-TDI | | | x | 4 |

| CAS No. | Acronym(s) | Designation (CAS Name ¹) | Designation (as cited in the reference) | (i) ^a | (ii) ^a | (iii) ^b | Ref |
|-------------|------------|--|--|------------------|------------------------|------------------------------------|-----|
| | | | | Long-chain PFCAs | Long-chain PFCAs salts | Long-chain PFCAs related compounds | |
| 329201-80-1 | | Imidodicarbonic diamide, N,N',2-tris(6-isocyanatohexyl)-, reaction products with ethylene glycol, α -fluoro- ω -[2-(1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene), glycidol and 2,4-TDI | Imidodicarbonic diamide, N,N'2-tris(6-isocyanatohexyl)-, reaction products with ethylene glycol, α -fluoro-, ω -[2-(1-oxo-2-propenyl)oxy]ethyl]poly(difluoromethylene), glycidol and 2,4-TDI | | | x | 4 |
| 254889-72-0 | | Imidodicarbonic diamide, N,N',2-tris(6-isocyanatohexyl)-, reaction products with 3-chloro-1,2-propanediol, ethylene, iodoethane and tetrafluoroethylene | Imidodicarbonic diamide, N,N',2-tris(6-isocyanatohexyl)-, reaction products with 3-chloro-1,2-propanediol, ethylene, iodoethane and tetrafluoroethylene | | | x | 4 |
| 254889-79-7 | | Methanol, reaction products with 1,6-diisocyanatohexane, ethylene, ethylene oxide, iodoethane and tetrafluoroethylene | Methanol, reaction products with 1,6-diisocyanatohexane, ethylene, ethylene oxide, iodoethane and tetrafluoroethylene | | | x | 4 |
| 428842-38-0 | | Hexane, 1,6-diisocyanato-, homopolymer, α -fluoro- ω -(hydroxyethyl)poly(difluoromethylene)- and Me Et ketone oxime- and polyethylene glycol mono-Me ether-blocked | Hexane, 1,6-diisocyanato-, homopolymer, α -fluoro- ω -(hydroxyethyl)poly(difluoromethylene)- and Me Et ketone oxime- and polyethylene glycol mono-Me ether blocked | | | x | 4 |
| 178535-23-4 | | Fatty acids, linseed-oil, γ - ω -perfluoro-C8-14-alkyl esters | Fatty acids, linseed oil, γ - ω -perfluoro-C8-14-alkyl esters | | | x | 1 |
| 126927-97-7 | | Hexane, 1,6-diisocyanato-, homopolymer, reaction products with α -fluoro- ω -(2-hydroxyethyl)poly(difluoromethylene) | Hexane, 1,6-diisocyanato-, homopolymer, reaction products with α -fluoro- ω -(2-hydroxyethyl)poly (difluoromethylene) | | | x | 1 |
| 70969-47-0 | | Thiols, C8-20, γ - ω -perfluoro, telomers with acrylamide | Thiols, C8-20, γ - ω -perfluoro, telomers with acrylamide | | | x | 4 |
| 113089-67-1 | | Thiols, C ₄₋₂₀ , γ - ω -perfluoro, reaction products with methylated formaldehyde-1,3,5-triazine-2,4,6-triamine polymer | Thiols, C4-20, γ - ω -perfluoro, reaction products with methylated formaldehyde-1,3,5-triazine-2,4,6-triamine polymer | | | x | 4 |
| 185630-70-0 | | Alcohols, C ₈₋₁₄ , γ - ω -perfluoro, reaction products with epichlorohydrin and propylene oxide, trimethylamine-quaternized | Alcohols, C8-14, γ - ω -perfluoro, reaction products with epichlorohydrin and propylene oxide, trimethylamine-quaternized | | | x | 4 |
| 65530-58-7 | | Poly(difluoromethylene), α -fluoro- ω -(2-hydroxyethyl)-, ester with 2,15-bis(carboxymethyl)-4,13-dioxo-3,14-dioxa-5,12-diazahexadecane-1,2,15,16-tetracarboxylic acid (6:1) | Poly(difluoromethylene), α -fluoro- ω -(2-hydroxyethyl)-, ester with 2,15-bis(carboxymethyl)-4,13-dioxo-3,14-dioxa-5,12-diazahexadecane-1,2,15,16-tetracarboxylic acid (6:1) | | | x | 4 |

Abbreviations: n/a, not applicable; CAS, Chemical Abstracts Service.

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