



FLAME RETARDANT REFERENCE MATERIAL

Edition 2



FLAME RETARDANTS

Flame retardants, such as polybrominated diphenyl ethers (PBDEs), are abundant in modern society- from clothing and carpets to couches and computers - they are added to a wide range of every day products in an attempt to reduce flammability or delay combustion. The name implies that they convey safety, but to the contrary they have been associated with numerous adverse and bio-accumulative health effects, including endocrine disruption, infertility, birth defects, lowered IQs, behavioral problems, and cancers. Ironically, when alight the toxic soup of burning chemicals and byproducts released, such as dioxins, furans and formaldehyde, can be more hazardous than the fire itself.

Additionally, flame retardants persist in the environment – in water and soil – build up in wildlife, enter the food chain and are now global persistent organic pollutants (POPs) of concern. Despite of the environmental and toxicological concerns, they are, and will for some time remain abundant in many consumer goods. Since disclosure of their use is unregulated many consumers remain unaware of their existence or the hazards they pose.

Halogenated flame retardants, and particularly the brominated ones, have been used for decades, but concerns about their health risk have only been raised since the 2000's. The number of commercial flame retardants has been rather limited, less than 100 in total. New flame retardants containing various phosphor-containing compounds have been introduced after the concerns arose around the halogenated forms. Also, flame retardants bonded to various inorganic, insoluble or polymeric organic entities have entered market during the past years.



Nomenclature used in this catalogue

The nomenclature and the various abbreviations used in the literature over the years have been rather confusing, and partly misleading. Therefore, a new and common nomenclature rule was proposed by Bergmann et al.¹ in 2012 and is applied here:

- FR: Flame retardants
- BFRs: Brominated flame retardants, including those containing bromine and chlorine or bromine and phosphorous or all three
- CFR: Chlorinated flame retardants, including those with chlorine and phosphorous
- PFR: Phosphorous containing flame retardant. Those also containing bromine or chlorine are listed under BFRs or CFRs, respectively.

Bergmann further proposed “Practical Abbreviations” (PRABS) to be used as the common abbreviated form of known FRs, and those are the ones in use to here.

1) Åke Bergman, Andreas Rydén, Robin J. Law, Jacob de Boer, Adrian Covaci, Mehran Alaei, Linda Birnbaum, Myrto Petreas, Martin Rose, Shinichi Sakai, Neie van den Ende, Ike van der Veen. *Environmental International* 40 (2012) 57-82.

The scope of this catalogue

All most common flame retardants are listed. Chiron offers both technical products (techn.), purified or specifically synthesized standards, with purity normally above 98 %. Mixtures according to international methods or customer requests are also available. Please enquire for custom mixtures, custom synthesis or new compounds.

Internal standards

Chiron offer both deuterated standards and ¹³C labelled, as well as monofluorinated PBDEs, which were developed by Chiron AS*.

*The Chiron technology for producing monofluorinated PCBs and PBDEs is protected by US patent 8,481,327 B2 from July 9th, 2013.

Further reading:

Please consult the following issues of the Chiron BMFs (Biomarker Focus) which can be found on the Chiron webpage (www.chiron.no):

- BMF 10: PCAs
- BMF 15: PBDEs
- BMF 69: The RoHS directive
- BMF 79: Trixylyl phosphate
- BMF 80: RDP (Under production)



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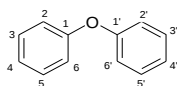
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Flame Retardant Single Standards

PBDEs, Polybrominated Diphenyl Ethers

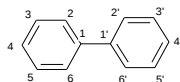


Catalogue No.	Description	Abbreviation	CAS No.	Conc.	Solvent	Quantity
Native PBDEs						
8948.12-100-IO	Phenyl ether	Diphenyl ether	101-84-8	100 µg/mL	isooctane	1 mL
9124.12-50-IO	2-Bromodiphenyl ether	BDE-1	7025-06-1	50 µg/mL	isooctane	1 mL
8747.12-50-IO	3-Bromodiphenyl ether	BDE-2	6876-00-2	50 µg/mL	isooctane	1 mL
8748.12-50-IO	4-Bromodiphenyl ether	BDE-3	101-55-3	50 µg/mL	isooctane	1 mL
9246.12-50-IO	2,4-Dibromodiphenyl ether	BDE-7	171977-44-9	50 µg/mL	isooctane	1 mL
8749.12-50-IO	3,4'-Dibromodiphenyl ether	BDE-13	83694-71-7	50 µg/mL	isooctane	1 mL
8750.12-50-IO	4,4'-Dibromodiphenyl ether	BDE-15	2050-47-7	50 µg/mL	isooctane	1 mL
8742.12-50-IO	2,2',4-Tribromodiphenyl ether	BDE-17	147217-75-2	50 µg/mL	isooctane	1 mL
1960.12-50-IO	2,3',4-Tribromodiphenyl ether	BDE-25	147217-77-4	50 µg/mL	isooctane	1 mL
1961.12-50-IO	2,4,4'-Tribromodiphenyl ether	BDE-28	41318-75-6	50 µg/mL	isooctane	1 mL
10267.12-50-IO	2',3,4-Tribromodiphenyl ether	BDE-33	147217-78-5	50 µg/mL	isooctane	1 mL
2116.12-50-IO	3,3',4-Tribromodiphenyl ether	BDE-35	147217-80-9	50 µg/mL	isooctane	1 mL
1962.12-50-IO	2,2',4,4'-Tetrabromodiphenyl ether	BDE-47	5436-43-1	50 µg/mL	isooctane	1 mL
1962.12-50-IOx10	2,2',4,4'-Tetrabromodiphenyl ether	BDE-47	5436-43-1	50 µg/mL	isooctane	1 mLx10
1962.12-50-IOx20	2,2',4,4'-Tetrabromodiphenyl ether	BDE-47	5436-43-1	50 µg/mL	isooctane	1 mLx20
1963.12-50-IO	2,2',4,5'-Tetrabromodiphenyl ether	BDE-49	243982-82-3	50 µg/mL	isooctane	1 mL
1964.12-50-IO	2,3',4,4'-Tetrabromodiphenyl ether	BDE-66	189084-61-5	50 µg/mL	isooctane	1 mL
1965.12-50-IO	2,3',4',6-Tetrabromodiphenyl ether	BDE-71	189084-62-6	50 µg/mL	isooctane	1 mL
1990.12-50-IO	2,4,4',6-Tetrabromodiphenyl ether	BDE-75	189084-63-7	50 µg/mL	isooctane	1 mL
1991.12-50-IO	3,3',4,4'-Tetrabromodiphenyl ether	BDE-77	93703-48-1	50 µg/mL	isooctane	1 mL
1966.12-50-IO	2,2',3,4,4'-Pentabromodiphenyl ether	BDE-85	182346-21-0	50 µg/mL	isooctane	1 mL
1967.12-50-IO	2,2',4,4',5-Pentabromodiphenyl ether	BDE-99	60348-60-9	50 µg/mL	isooctane	1 mL
1968.12-50-IO	2,2',4,4',6-Pentabromodiphenyl ether	BDE-100	189084-64-8	50 µg/mL	isooctane	1 mL
2867.12-50-IO	2,3',4,4',5-Pentachlorobiphenyl ether	BDE-118	446254-80-4	50 µg/mL	isooctane	1 mL
1969.12-50-IO	2,3',4,4',6-Pentabromodiphenyl ether	BDE-119	189084-66-0	50 µg/mL	isooctane	1 mL
1970.12-50-IO	2,2',3,4,4',5-Hexabromodiphenyl ether	BDE-138	182677-30-1	50 µg/mL	isooctane	1 mL
1971.12-50-IO	2,2',4,4',5,5'-Hexabromodiphenyl ether	BDE-153	68631-49-2	50 µg/mL	isooctane	1 mL
1972.12-50-IO	2,2',4,4',5,6'-Hexabromodiphenyl ether	BDE-154	207122-15-4	50 µg/mL	isooctane	1 mL
2652.12-50-IO	2,2',3,4,4',5,6-Heptabromodiphenyl ether	BDE-181	189084-67-1	50 µg/mL	isooctane	1 mL
1973.12-50-IO	2,2',3,4,4',6,6'-Heptabromodiphenyl ether	BDE-183	207122-16-5	50 µg/mL	isooctane	1 mL
11398.12-50-IO	2,2',3,4,4',5',6-Heptabromodiphenyl ether	BDE-184	117948-63-7	50 µg/mL	isooctane	1 mL
1992.12-50-IO	2,3,3',4,4',5,6-Heptabromodiphenyl ether	BDE-190	189084-68-2	50 µg/mL	isooctane	1 mL
11399.12-50-IO	2,3,3',4,4',5',6-Heptabromodiphenyl ether	BDE-191	445255-30-7	50 µg/mL	isooctane	1 mL
2486.12-50-IO	2,2',3,3',4,4',5,6-Octabromodiphenyl ether	BDE-195	446255-38-5	50 µg/mL	isooctane	1 mL
9135.12-50-IO	2,2',3,3',4,4',5,6'-Octabromodiphenyl ether	BDE-196	446255-39-6	50 µg/mL	isooctane	1 mL
1975.12-50-IO	2,2',3,4,4',5,5',6-Octabromodiphenyl ether	BDE-203	337513-72-1	50 µg/mL	isooctane	1 mL
2647.12-50-IO	2,3,3',4,4',5,5',6-Octabromodiphenyl ether	BDE-205	446255-56-7	50 µg/mL	isooctane	1 mL
10298.12-10MG	Octabromodiphenyl ether, techn.		32536-52-0	neat	neat	10 mg
9033.12-50-IO	2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether	BDE-206	63387-28-0	50 µg/mL	isooctane	1 mL
9034.12-50-IO	2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether	BDE-207	437701-79-6	50 µg/mL	isooctane	1 mL
9035.12-50-IO	2,2',3,3',4,4',5,5',6,6'-Nonabromodiphenyl ether	BDE-208	437701-78-5	50 µg/mL	isooctane	1 mL
1811.12-50-T	Decabromodiphenyl ether	BDE-209	1163-19-5	50 µg/mL	toluene	1 mL
1811.12-5MG	Decabromodiphenyl ether	BDE-209	1163-19-5	neat	neat	5 mg
2653.9-KIT	Lake Michigan Study' PBDE Kit (Including 1961.12-50-IO, 1962.12-50-IO, 1964.12-50-IO, 1966.12-50-IO, 1967.12-50-IO, 1968.12-50-IO, 1970.12-50-IO, 1971.12-50-IO, 1972.12-50-IO)			50 µg/mL	isooctane	kit
8573.8-KIT	ISO 22032 PBDE Kit (Including 1811.12-50-T, 2647.12-50-IO, 1973.12-50-IO, 1971.12-50-IO, 1968.12-50-IO, 1967.12-50-IO, 1962.12-50-IO)			50 µg/mL	assorted	kit
8575.8-KIT	EPA 1614 PBDE Kit (Including 1961.12-50-IO, 1962.12-50-IO, 1967.12-50-IO, 1968.12-50-IO, 1971.12-50-IO, 1972.12-50-IO, 1973.12-50-IO, 1811.12-50-T)			50 µg/mL	assorted	kit

Catalogue No.	Description	Abbreviation	CAS No.	Conc.	Solvent	Quantity
F-PBDE® Internal Standards						
1604.12-50-IO	2-Fluorodiphenyl ether	2-F-BDE-0	124330-20-7	50 µg/mL	isooctane	1 mL
1605.12-50-IO	4-Fluorodiphenyl ether	4-F-BDE-0	330-84-7	50 µg/mL	isooctane	1 mL
2178.12-K-IO	2,4'-Difluorodiphenyl ether	2,4'-F2-BDE-0	863315-03-1	1000 µg/mL	isooctane	1 mL
3620.12-K-IO	3,3'-Difluorodiphenyl ether	3,3'-F2-BDE-0	1800-48-2	1000 µg/mL	isooctane	1 mL
1608.12-50-IO	3-Bromo-4'-fluorodiphenyl ether	3-F-BDE-2	50904-38-6	50 µg/mL	isooctane	1 mL
2258.12-50-IO	3'-Fluoro-2,4-dibromodiphenyl ether	3'-F-BDE-7	N/A	50 µg/mL	isooctane	1 mL
2257.12-50-IO	3'-Fluoro-3,4-dibromodiphenyl ether	3'-F-BDE-12	N/A	50 µg/mL	isooctane	1 mL
1926.12-50-IO	4'-Fluoro-2,3',4-tribromodiphenyl ether	4'-F-BDE-25	863314-85-6	50 µg/mL	isooctane	1 mL
1927.12-50-IO	4'-Fluoro-2,3',6-tribromodiphenyl ether	4'-F-BDE-27	863314-86-7	50 µg/mL	isooctane	1 mL
2160.12-50-T	2'-Fluoro-2,4,4'-tribromodiphenyl ether	2'-F-BDE-28	876310-22-4	50 µg/mL	toluene	1 mL
2160.12-50-IO	2'-Fluoro-2,4,4'-tribromodiphenyl ether	2'-F-BDE-28	876310-22-4	50 µg/mL	isooctane	1 mL
2161.12-50-T	6-Fluoro-2,2',4,4'-tetrabromodiphenyl ether	6-F-BDE-47	876310-23-4	50 µg/mL	toluene	1 mL
2161.12-50-IO	6-Fluoro-2,2',4,4'-tetrabromodiphenyl ether	6-F-BDE-47	876310-23-4	50 µg/mL	isooctane	1 mL
2506.12-50-T	5,5'-Difluoro-2,2',4,4'-tetrabromodiphenyl ether (2,2',4,4'-Tetrabromo-5,5'-difluorodiphenyl ether)	5,5'-F2-BDE-47	886748-32-9	50 µg/mL	toluene	1 mL
2506.12-50-IO	5,5'-Difluoro-2,2',4,4'-tetrabromodiphenyl ether (2,2',4,4'-Tetrabromo-5,5'-difluorodiphenyl ether)	5,5'-F2-BDE-47	886748-32-9	50 µg/mL	isooctane	1 mL
2162.12-50-IO	6-Fluoro-2,3',4,4'-tetrabromodiphenyl ether	6-F-BDE-66	87310-24-6	50 µg/mL	isooctane	1 mL
1928.12-50-IO	4'-Fluoro-2,3',4,6-tetrabromodiphenyl ether	4'-F-BDE-69	863314-87-8	50 µg/mL	isooctane	1 mL
2503.12-50-IO	5,6-Difluoro-2,2',3,4,4'-pentabromodiphenyl ether (2,2',3,4,4'-Pentabromo-5,6-difluorodiphenyl ether)	5,6-F2-BDE-85	886748-33-0	50 µg/mL	isooctane	1 mL
2505.12-50-IO	3,6-Difluoro-2,2',4,4',5-pentabromodiphenyl ether (2,2',4,4',5-Pentabromo-3,6-difluorodiphenyl ether)	3,6-F2-BDE-99	886748-34-1	50 µg/mL	isooctane	1 mL
2163.12-50-T	3-Fluoro-2,2',4,4',6-pentabromodiphenyl ether	3-F-BDE-100	887401-80-1	50 µg/mL	toluene	1 mL
2163.12-50-IO	3-Fluoro-2,2',4,4',6-pentabromodiphenyl ether	3-F-BDE-100	887401-80-1	50 µg/mL	isooctane	1 mL
2164.12-50-IO	3-Fluoro-2,3',4,4',6-pentabromodiphenyl ether	3-F-BDE-119	876310-26-8	50 µg/mL	isooctane	1 mL
2504.12-50-IO	3,5-Difluoro-2,3',4,4',6-pentabromodiphenyl ether (2,3',4,4',6-Pentabromo-3,5-difluorodiphenyl ether)	3,5-F2-BDE-119	886748-35-2	50 µg/mL	isooctane	1 mL
1929.12-50-T	4'-Fluoro-2,3,3',4,5,6-hexabromodiphenyl ether	4'-F-BDE-160	863314-88-9	50 µg/mL	toluene	1 mL
1929.12-50-IO	4'-Fluoro-2,3,3',4,5,6-hexabromodiphenyl ether	4'-F-BDE-160	863314-88-9	50 µg/mL	isooctane	1 mL
2166.12-50-T	3-Fluoro-2,2',4,4',5,5',6-heptabromodiphenyl ether	3-F-BDE-183	876310-28-0	50 µg/mL	toluene	1 mL
2167.12-50-T	4',6-Difluoro-2,2',3,3',4,5,5',6'-octabromodiphenyl ether	4',6-F2-BDE-199	863314-96-9	50 µg/mL	toluene	1 mL
2168.12-50-IO	4'-Fluoro-2,2',3,3',4,5,5',6,6'-nonabromodiphenyl ether	4'-F-BDE-208	876310-29-1	50 µg/mL	isooctane	1 mL
2168.12-50-T	4'-Fluoro-2,2',3,3',4,5,5',6,6'-nonabromodiphenyl ether	4'-F-BDE-208	876310-29-1	50 µg/mL	toluene	1 mL
9751.7-KIT	Lake Michigan Study F-PBDEs® Kit (including 2160.12-50-T, 2161.12-50-T, 2162.12-50-IO, 2503.12-50-IO, 2505.12-50-IO, 2163.12-50-T, 1926.12-50-T)			50 µg/mL	assorted	kit
8574.8-KIT	ISO 22032 F-PBDE® Kit (Including: 2160.12-50-T, 2161.12-50-IO, 2505.12-50-IO, 2163.12-50-T, 1929.12-50-T, 2166.12-50-T, 2167.12-50-T, 2168.12-50-T)			50 µg/mL	assorted	kit

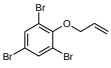
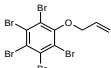
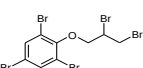
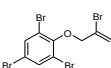
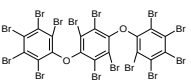
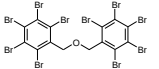
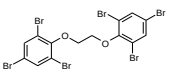
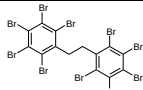
Other						
2764.12-100-AN	4,4'-Diaminodiphenyl ether		101-80-4	100 µg/mL	acetonitrile	1 mL
2764.12-1ML	4,4'-Diaminodiphenyl ether		101-80-4	neat	neat	1 mL

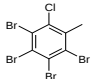
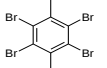
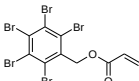
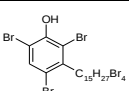
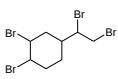
PBBs, Polybrominated Biphenyls

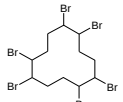
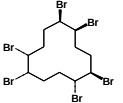


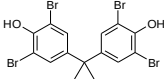
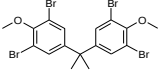
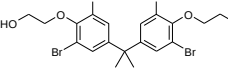
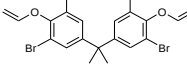
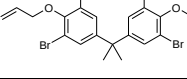
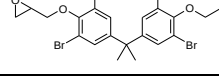
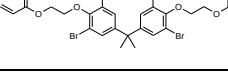
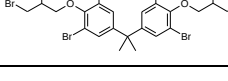
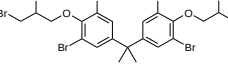
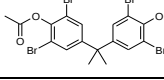
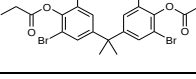
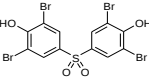
Catalogue No.	Description	Abbreviation	CAS No.	Conc.	Solvent	Quantity
Native PBBs (Polybromobiphenyls)						
3089.12-50-IO	2-Bromobiphenyl	BB-1	2052-07-5	50 µg/mL	isooctane	1 mL
3090.12-50-IO	3-Bromobiphenyl	BB-2	2113-57-7	50 µg/mL	isooctane	1 mL
3091.12-50-IO	4-Bromobiphenyl	BB-3	92-66-0	50 µg/mL	isooctane	1 mL
3092.12-50-IO	2,2'-Dibromobiphenyl	BB-4	13029-09-9	50 µg/mL	isooctane	1 mL
3093.12-50-IO	2,4-Dibromobiphenyl	BB-7	53592-10-2	50 µg/mL	isooctane	1 mL
3094.12-50-IO	2,5-Dibromobiphenyl	BB-9	57422-77-2	50 µg/mL	isooctane	1 mL
3095.12-50-IO	2,6-Dibromobiphenyl	BB-10	59080-32-9	50 µg/mL	isooctane	1 mL
3096.12-50-IO	4,4'-Dibromobiphenyl	BB-15	92-86-4	50 µg/mL	isooctane	1 mL
3097.12-50-IO	2,2',5-Tribromobiphenyl	BB-18	59080-34-1	50 µg/mL	isooctane	1 mL
3098.12-50-IO	2,3',5-Tribromobiphenyl	BB-26	59080-35-2	50 µg/mL	isooctane	1 mL
2664.12-50-IO	2,4,5-Tribromobiphenyl	BB-29	115245-07-3	50 µg/mL	isooctane	1 mL
2744.12-35-IO	2,4,6-Tribromobiphenyl	BB-30	59080-33-0	35µg/mL	isooctane	1 mL
2744.12-50-IO	2,4,6-Tribromobiphenyl	BB-30	59080-33-0	50 µg/mL	isooctane	1 mL
3099.12-50-IO	2,4',5-Tribromobiphenyl	BB-31	59080-36-3	50 µg/mL	isooctane	1 mL
3101.12-50-IO	3,4,5-Tribromobiphenyl	BB-38	115245-08-4	50 µg/mL	isooctane	1 mL
3102.12-50-IO	2,2',4,5'-Tetrabromobiphenyl	BB-49	60044-24-8	50 µg/mL	isooctane	1 mL
3103.12-50-IO	2,2',5,5'-Tetrabromobiphenyl	BB-52	59080-37-4	50 µg/mL	isooctane	1 mL
3104.12-50-IO	2,2',5,6'-Tetrabromobiphenyl	BB-56	60044-25-9	50 µg/mL	isooctane	1 mL
10266.12-50-IO	3,3',4,4'-Tetrabromobiphenyl	BB-77	77102-82-0	50 µg/mL	isooctane	1 mL
3105.12-50-IO	3,3',5,5'-Tetrabromobiphenyl	BB-80	16400-50-3	50 µg/mL	isooctane	1 mL
3106.12-50-IO	2,2',4,5,5'-Pentabromobiphenyl	BB-101	67888-96-4	50 µg/mL	isooctane	1 mL
3107.12-50-IO	2,2',4,5',6-Pentabromobiphenyl	BB-103	59080-39-6	50 µg/mL	isooctane	1 mL
10123.12-50-IO	3,3',4,5,5'-Pentabromobiphenyl	BB-126	81902-33-2	50 µg/mL	isooctane	1 mL
3108.12-50-HX	2,2',4,4',5,5'-Hexabromobiphenyl	BB-153	59080-40-9	50 µg/mL	n- hexane	1 mL
3110.12-50-IO	2,2',4,4',6,6'-Hexabromobiphenyl	BB-155	59261-08-4	50 µg/mL	isooctane	1 mL
3109.12-10-CY	3,3',4,4',5,5'-Hexabromobiphenyl	BB-169	60044-26-0	10 µg/mL	cyclohexane	1 mL
3109.12-10-ME	3,3',4,4',5,5'-Hexabromobiphenyl	BB-169	60044-26-0	10 µg/mL	methanol with 1% DCM	1 mL
10174.12-10-IO	2,2',3,4,4',5,5'-Heptabromobiphenyl	BB-180	67733-52-2	10 µg/mL	isooctane	1 mL
9534.12-50-IO	2,3,3',4,4',5,5'-Heptabromobiphenyl	BB-189	88700-06-5	50 µg/mL	isooctane	1 mL
9716.12-50-IO	2,2',3,3',4,4',5,5'-Octabromobiphenyl	BB-194	67889-00-3	50 µg/mL	isooctane	1 mL
2679.12-50-IO	Octabromobiphenyl, techn. (hepta+octa+nona)	BB-mix	27858-07-7	50 µg/mL	isooctane	1 mL
9536.12-50-IO	2,2',3,3',4,4',5,5',6-Nonabromobiphenyl	BB-206	69278-62-2	50 µg/mL	isooctane	1 mL
2677.12-50-IO	Decabromobiphenyl	BB-209	13654-09-6	50 µg/mL	isooctane	1 mL
2677.12-100MG	Decabromobiphenyl	BB-209	13654-09-6	neat	neat	100 mg
F-PBBs (Fluorinated Bromobiphenyl Internal Standards)						
2891.12-100-IO	4,4'-Dibromooctafluorobiphenyl	F-BB, DBOFB	10386-84-2	100 µg/mL	isooctane	1 mL
2891.12-2K-DC	4,4'-Dibromooctafluorobiphenyl	F-BB, DBOFB	10386-84-2	2000µg/mL	dichloromethane	1 mL

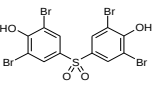
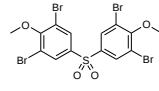
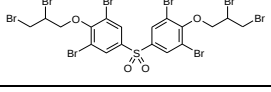
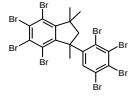
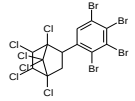
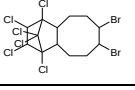
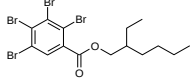
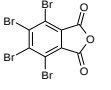
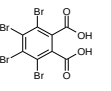
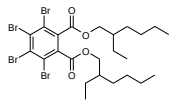
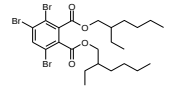
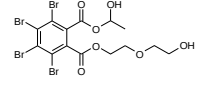
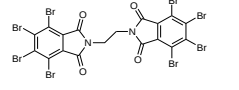
Brominated Flame Retardants (BFRs) other than PBDEs and PBBs

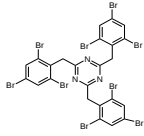
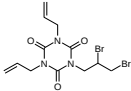
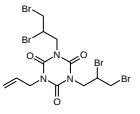
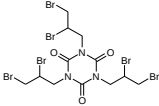
Catalogue No.	Structure	Description (Abbreviation)	CAS No.	Conc.	Solvent	Quantity
Phenyl-, Benzyl Ethers						
8882.9-50-IO		2,4,6-Tribromophenylallyl ether (TBP-AE)	3278-89-5	50 µg/mL	isooctane	1 mL
11105.9-50-IO		Pentabromophenylallyl ether (PBP-AE)	3555-11-1	50 µg/mL	isooctane	1 mL
8883.9		2,3-Dibromopropyl-2,4,6-tribromophenyl ether (TBP-DBPE)	35109-60-5	Please enquire		
10776.9		2-Bromoallyl-2,4,6-tribromophenyl ether (BATE)	99717-56-3	Please enquire		
1812.18-50-CY		Tetradecabromo-1,4-diphenoxybenzene (4'-PeBPOBDE208)	58965-66-5	50 µg/mL	cyclohexane	1 mL
11106.14		Decabromodibenzyl ether (DBDBE, DBDE-209)	497107-13-8	Please enquire		
8757.14-50-T		1,2-Bis(2,4,6-tribromophenoxy)ethane (BTBPE)	37853-59-1	50 µg/mL	toluene	1 mL
Phenylethanes, PAHs						
2670.14-50-CB		Decabromodiphenylethane (DBDPE; BDPE-209)	84852-53-9	50 µg/mL	chlorobenzene	1 mL
11351.16-10MG		1,3,6,8-Tetrabromopyrene	128-63-2	neat	neat	10 mg
Phenols						
2061.6-K-IP		2,4-Dibromophenol (DBP)	615-58-7	1000 µg/mL	isopropanol	1 mL
2060.6-K-IP		2,4,6-Tribromophenol (TBP)	118-79-6	1000 µg/mL	isopropanol	1 mL
2672.6-50-IO		2,3,4,5,6-Pentabromophenol (PBP)	608-71-9	50 µg/mL	isopropanol	1 mL
Alcohols						
2671.5-50-IP		2,2-Bisbromomethyl-1,3-propanediol; Dibromoneopentylglycol (DBNPG)	3296-90-0	50 µg/mL	isopropanol	1 mL
11107.5-50-T		3-Bromo-2,2-bisbromomethyl-1-propanol (TBNPA)	1522-92-5	Please enquire		

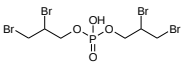
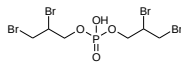
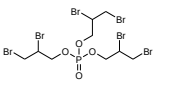
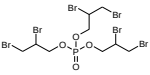
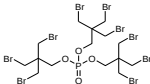
Benzene-Derivatives						
10777.8		Dibromostyrene (unspecified bromination) (DBS)	31780-26-4	Please enquire		
10778.8		2,2-Dibromostyrene	7436-90-0	Please enquire		
10779.8-K-IO		1,2-Dibromoethylbenzene	93-52-7	1000 µg/mL	isooctane	1 mL
11108.7		1,2,3,4-Tetrabromo-5-chloro-6-methylbenzene (TBCT)	39569-21-6	Please enquire		
10449.8		1,2,4,5-Tetrabromo-3,6-dimethylbenzene (TBX)	23488-38-2	Please enquire		
2673.7-50-IO		Pentabromotoluene (PBT)	87-83-2	50 µg/mL	isooctane	1 mL
8881.8-50-IO		Pentabromoethylbenzene (PBEB)	85-22-3	50 µg/mL	isooctane	1 mL
11109.7		Pentabromobenzylchloride (PBBC)	58495-09-3	Please enquire		
11138.6-50-ME		1,2,3,4,5-Pentabromobenzene (PBBZ)	608-90-2	50 µg/mL	methanol	1 mL
2678.6-50-IO		Hexabromobenzene (HBB)	87-82-1	50 µg/mL	isooctane	1 mL
11110.7-100MG		Pentabromobenzylbromide (PBBB)	38521-51-6	neat	neat	100 mg in sealed ampoule
11111.10-50-ME		Pentabromobenzyl acrylate (PBB-Acr)	59447-55-1	50 µg/mL	methanol	1 mL
11112.21		2,4,6-Tribromo-3-(tetrabromopentadecyl)phenol (TBPD-TBP)	168434-45-5	Please enquire		
Cycloalkanes						
1894.6-50-IO		1,2,3,4,5,6-Hexabromocyclohexane (HBCH)	1837-91-8	50 µg/mL	isooctane	1 mL
11113.8		1,2-Dibromo-4-(1,2-dibromomethyl)cyclohexane (DBE-DBCH)	3322-93-8	Please enquire		
11114.8		1,2,5,6-Tetrabromocyclooctane (TBCD)	3194-57-8	Please enquire		

Cycloalkanes continued...						
11115.8		Hexabromocyclodecane (HBCYD)	25495-98-1	Please enquire		
1893.12-K-T		1,2,5,6,9,10-Hexabromocyclododecane, isomer mixture (HBCDD, Isomer mixture)	3194-55-6	1000 µg/mL	toluene	1 mL
10018.12		α-Hexabromocyclododecane (α-HBCDD)	134237-50-6	Please enquire		

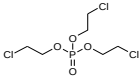
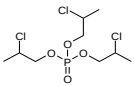
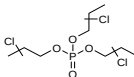
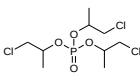
Bisphenols						
2674.15-50-IO		3,3',5,5'-Tetrabromobisphenol A (TBBPA)	79-94-7	50 µg/mL	isooctane	1 mL
2675.17-50-IO		3,3',5,5'-Tetrabromobisphenol A dimethyl ether (TBBPA-BME)	37853-61-5	50 µg/mL	isooctane	1 mL
8772.19-50-IO		3,3',5,5'-Tetrabromobisphenol A bis(2-hydroxyethyl) ether (TBBPA-BHEE)	4162-45-2	50 µg/mL	isooctane	1 mL
8887.21-50-T		3,3',5,5'-Tetrabromobisphenol A diallyl ether (TBBPA-BAE)	25327-89-3	50 µg/mL	toluene	1 mL
11116.21-50-T		3,3',5,5'-Tetrabromobisphenol A bisacrylate (TBPPA-BA)	55205-38-4	50 µg/mL	toluene	1 mL
10589.21-50-T		3,3',5,5'-Tetrabromobisphenol A diglycidyl ether (TBBPA-BGE)	3072-84-2	50 µg/mL	toluene	1 mL
11117.25		3,3',5,5'-Tetrabromobisphenol A bis(2-hydroxyethyl) ether bisacrylate (TBBPA-BHEEBA)	66710-97-2	Please enquire		
8751.21-50-T		2,2-Bis[3,5-dibromo-4-(2,3-dibromopropoxy)phenyl]propane, purified (BDBPT; Tetrabromobisphenol A Bis(2,3-dibromopropyl) ether)	21850-44-2	50 µg/mL	toluene	1 mL
8751.21-K-T		2,2-Bis[3,5-dibromo-4-(2,3-dibromopropoxy)phenyl]propane (BDBPT; Tetrabromobisphenol A Bis(2,3-dibromopropyl) ether)	21850-44-2	1000 µg/mL	toluene	1 mL
10454.21-100MG		2,2-Bis[3,5-dibromo-4-(2,3-dibromopropoxy)phenyl]propane, techn. (BDBPT; Tetrabromobisphenol A Bis(2,3-dibromopropyl) ether)	21850-44-2	neat	neat	100 mg
11118.19		3,3',5,5'-Tetrabromobisphenol A diacetate (TBBPA-BOAc)	33798-02-6	Please enquire		
11119.21		3,3',5,5'-Tetrabromobisphenol A bispropionate (TBBPA-BP)	37419-42-4	Please enquire		
8768.X-1G		2,4,6-Tribromophenylterminated tetrabromobisphenol-A carbonate oligomer	71342-77-3	neat	neat	1 g
8767.22-1G		Phenoxyterminated carbonate oligomer of tetrabromobisphenol A	94334-64-2	neat	neat	1 g
10481.12-50-T		3,3',5,5'-Tetrabromobisphenol S, 98% (TBBPS; 4,4'-Sulfonylbis(2,6-dibromophenol))	39635-79-5	50 µg/mL	toluene	1 mL

Bisphenols continued...						
10457.12-K-T		3,3',5,5'-Tetrabromobisphenol S, techn. (TBBPS; 4,4'-Sulfonylbis(2,6-dibromophenol))	39635-79-5	1000 µg/mL	toluene	1 mL
10457.12-10MG		3,3',5,5'-Tetrabromobisphenol S, techn. (TBBPS; 4,4'-Sulfonylbis(2,6-dibromophenol))	39635-79-5	neat	neat	1 mL
10590.14-50-T		3,3',5,5'-Tetrabromobisphenol S dimethyl ether (TBBPS-BME)	70156-79-5	50 µg/mL	toluene	1 mL
10451.18-100MG		3,3',5,5'-Tetrabromobisphenol S bis(2,3-dibromopropyl ether) (TBBPS-BDBPE)	42757-55-1	neat	neat	100 mg
Indanes/Bornanes						
11120.18		Octabromotrimethylphenylindane (OBTMPI)	1084889-51-9	Please enquire		
10081.13-50-T		1,2,3,4,7,7-Hexachloro-5-(tetrabromophenyl)-2-bornane (HCTBPH)	34571-16-9	50 µg/mL	toluene	1 mL
11121.14		7,8-Dibromo-1,2,3,4,11,11-hexachloro-1,4,4a,5,6,7,8,9,10,10a-decahydro-1,4-methanobenzocyclooctane (DBHCTD)	51936-55-1	Please enquire		
Phthalates						
8886.15-K-T		2-Ethylhexyl-2,3,4,5-tetrabromobenzoate (EH-TBB)	183658-27-7	1000 µg/mL	toluene	1 mL
2676.8-50-IO		3,4,5,6-Tetrabromophthalic anhydride (TEBP-Anh)	632-79-1	50 µg/mL	isooctane	1 mL
2676.8-10MG		3,4,5,6-Tetrabromophthalic anhydride (TEBP-Anh)	632-79-1	neat	neat	10 mg
2676.8-100MG		3,4,5,6-Tetrabromophthalic anhydride (TEBP-Anh)	632-79-1	neat	neat	100 mg
2676.8-250MG		3,4,5,6-Tetrabromophthalic anhydride (TEBP-Anh)	632-79-1	neat	neat	250 mg
10450.8-10MG		3,4,5,6-Tetrabromophthalic acid (TEBP)	13810-83-8	neat	neat	10 mg
10450.8-100MG		3,4,5,6-Tetrabromophthalic acid (TEBP)	13810-83-8	neat	neat	100 mg
10450.8-250MG		3,4,5,6-Tetrabromophthalic acid (TEBP)	13810-83-8	neat	neat	250 mg
8885.24-10MG		Bis(2-ethylhexyl)tetrabromo phthalate (BEH-TEBP)	26040-51-7	neat	neat	10 mg
8885.24-100MG		Bis(2-ethylhexyl)tetrabromo phthalate (BEH-TEBP)	26040-51-7	neat	neat	100 mg
10775.24		Bis(2-ethylhexyl)-3,4,6-tribromo phthalate (BEH-TBP)	122857-50-5	Please enquire		
11122.14		2-(2-Hydroxyethoxy)ethyl 2-hydroxypropyltetrabromo phthalate (HEEMP-TEBP)	20566-35-2	Please enquire		
8884.18-10MG		N,N'-Ethylene bis(tetrabromophthalamide) (EBTEBPI)	32588-76-4	neat	neat	10 mg

Triazines						
11123.24-50-T		2,4,6-Tris(2,4,6-Tribromophenoxy)-1,3,5-triazine (TTBP-TAZ)	25713-60-4	50 µg/mL	toluene	1 mL
11124.12-50-T		1-(2,3-Dibromopropyl)-3,5-di-2-propene-1-yl-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (DBP-TAZTO)	57829-89-7	50 µg/mL	toluene	1 mL
11125.12		1,3-Bis(2,3-dibromopropyl)-5-(2-propene-1-yl)-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (BDBP-TATZO)	75795-16-3	Please enquire		
11126.12-50-T		1,3,5-Tris(2,3-dibromopropyl)-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (TDBP-TATZO)	52434-90-9	50 µg/mL	toluene	1 mL

Phosphates						
8764.6-50-IO		Bis(2,3-dibromopropyl) phosphate, techn. (BDBPP)	5412-25-9	50 µg/mL	isooctane	1 mL
8764.6-10MG		Bis(2,3-dibromopropyl) phosphate, techn. (BDBPP)	5412-25-9	neat	neat	10 mg
10108.6-50-IO		Bis(2,3-dibromopropyl) phosphate, 99% (purified) (BDBPP)	5412-25-9	50 µg/mL	isooctane	1 mL
10108.6-10MG		Bis(2,3-dibromopropyl) phosphate, 99% (BDBPP)	5412-25-9	neat	neat	10 mg
10107.9-50-ME		Tris(2,3-dibromopropyl) phosphate, 98% (TDBPP)	126-72-7	50 µg/mL	methanol	1 mL
10107.9-10MG		Tris(2,3-dibromopropyl) phosphate, 98% (TDBPP)	126-72-7	neat	neat	10 mg
8586.9-50-ME		Tris(2,3-dibromopropyl) phosphate, techn. (TDBPP)	126-72-7	50 µg/mL	methanol	1 mL
8586.9-100MG		Tris(2,3-dibromopropyl) phosphate, techn. (TDBPP)	126-72-7	neat	neat	100 mg
8586.9-1G		Tris(2,3-dibromopropyl) phosphate, techn. (TDBPP)	126-72-7	neat	neat	1 g
11127.15		3-Bromo-2,2-bis(bromomethyl)-1-propanol 1,1,1"- phosphate (TTBNPP)	N/A	Please enquire		

Chlorinated Flame Retardants (CFRs) other than PCAs

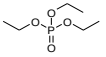
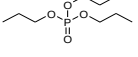
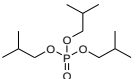
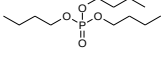
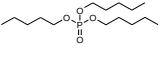
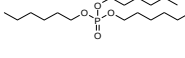
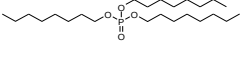
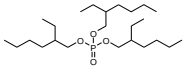
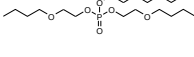
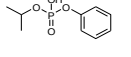
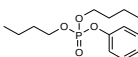
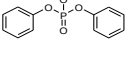
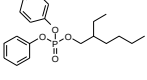
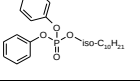
Catalogue No.	Structure	Description (Abbreviation)	CAS No.	Conc.	Solvent	Quantity
Phosphates						
8436.6-1G		Tris(2-chloroethyl) phosphate (TCEP)	115-96-8	neat	neat	1 g
8774.9-50-T		Tris(2-chloropropyl) phosphate (TDCPP)	78-43-3	50 µg/mL	toluene	1 mL
8774.9-10MG		Tris(2-chloropropyl) phosphate (TDCPP)	78-43-3	neat	neat	10 mg
8457.9-1G		Tris(monochloropropyl) phosphate, isomer mixture (TCPP, isomer mixture)	26248-87-3	neat	neat	1 g
11128.9		Tris(2-chloroisopropyl) phosphate (TCIPP)	13674-84-5	Please enquire		

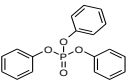
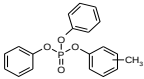
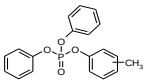
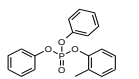
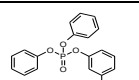
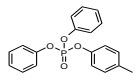
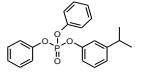
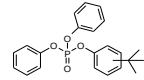
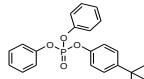
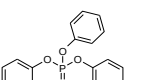
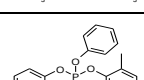
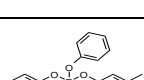
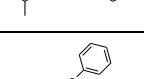
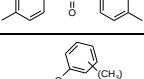
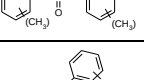
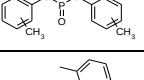
Phosphates continued...						
8775.9-K-ME		Tris(2,3-dichloropropyl) phosphate (TDCPP)	78-43-3	1000 µg/mL	methanol	1 mL
8775.9-100MG		Tris(2,3-dichloropropyl) phosphate (TDCPP)	78-43-3	neat	neat	100 mg
8505.9-1G		Tris(1,3-dichloro-2-propyl) phosphate (TDCIPP)	13674-87-8	neat	neat	1 g
11129.11		2,2-Bis(chloromethyl)-1,3-propandiol bis[bis(2-chloroethyl) phosphate] (BMCP-BCEP)	38051-10-4	Please enquire		
11130.15		2,2-Bis(chloromethyl)-1,3-propandiol bis[bis(2-chloroethyl) phosphate] (BMCMP-BCMEP)	1047637-37-5	Please enquire		

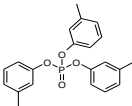
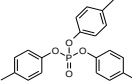
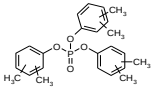
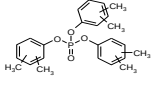
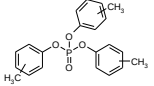
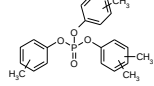
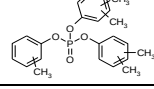
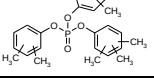
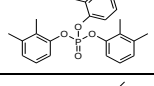
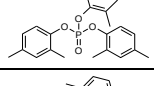
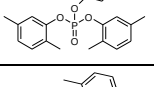
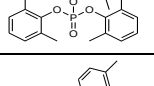
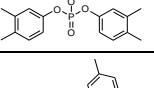
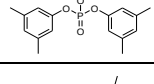
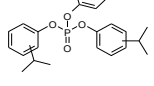
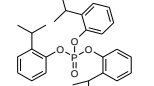
Bornanes:						
11139.15-50-T		1,4,5,6,7,7-Hexachlorobicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic anhydride (HCBCH-DCAh)	115-27-5	50 µg/mL	toluene	1 mL
11140.9-50-T		1,4,5,6,7,7-Hexachlorobicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic acid (HCBCH-DCA)	115-28-6	50 µg/mL	toluene	1 mL
11131.14-50-T		1,2,3,4,6,7,8,9,10,10,11,11-Dodecachloro-14,4a,5a,6,9,9a,9b-octahydro-1,4,6,9-dimethanodibenzofuran (DDC-DBF)	31107-44-5	50 µg/mL	toluene	1 mL
8770.18-50-T		Dechlorane Plus; 1,2,3,4,5,6,7,8,12,12,13,13-Dodecachloro-1,4,4a,5,8,8a,9,9a,10,10a-decahydro-1,4:5,8:9,10-tetramethanoanthracene (DDC-CO)	13560-89-9	50 µg/mL	toluene	1 mL
11141.18-50-T		syn-Dechlorane Plus (syn DDC-CO)	135821-03-3	50 µg/mL	toluene	1 mL
11142.18-50-T		anti-Dechlorane Plus (anti DDC-CO)	135821-74-8	50 µg/mL	toluene	1 mL
11132.17		1,2,3,4,5,6,7,8,12,12,13,13-Dodecachloro-1,4,4a,5,8,8a,9,9a,10,10a-decahydro-1,2,4:5,8:9,10-trimethanoanthracene (DDC-Ant)	13560-92-4	Please enquire		
3457.10-100-AN		Perchloropentacyclodecane (MIREX)	2385-85-5	100 µg/mL	acetonitrile	1 mL
3457.10-10MG		Perchloropentacyclodecane (MIREX)	2385-85-5	neat	neat	10 mg

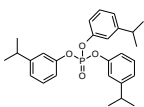
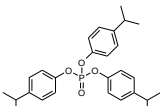
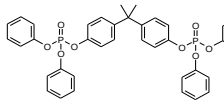
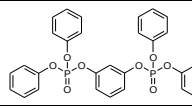
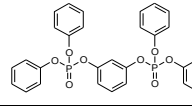
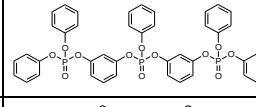
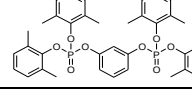
Other CFCs						
11133.8-10MG		Tetrachlorophthalic anhydride (TECP-Anh)	117-08-8	neat	neat	10 mg
11134.5		Hexachlorocyclopentadiene (HCCPD)	77-47-4	Please enquire		

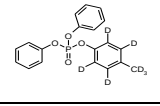
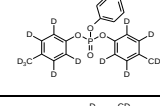
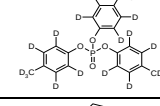
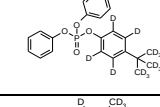
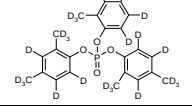
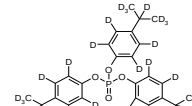
Phosphor-Phosphate-Based Flame Retardants, PFCs

Catalogue No.	Structure	Description (Abbreviation)	CAS No.	Conc.	Solvent	Quantity
1400.3-K-IO		Trimethyl phosphate (TMP)	512-56-1	1000 µg/mL	isooctane	1 mL
8026.6-K-IO		Triethyl phosphate (TEP)	78-40-0	1000 µg/mL	methanol	1 mL
8027.9-K-IO		Tri-n-propyl phosphate (TPP)	513-08-6	1000 µg/mL	methanol	1 mL
3966.12-K-IO		Triisobutyl phosphate (TIBP)	126-71-6	1000 µg/mL	methanol	1 mL
1399.12-K-IO		Tri-n-butyl phosphate (TBP)	126-73-8	1000 µg/mL	methanol	1 mL
11236.15-K-ME		Tri-n-pentyl phosphate (TPeP)	2528-38-3	1000 µg/mL	methanol	1 mL
10781.18-K-ME		Tri-n-hexyl phosphate (THP)	2528-39-4	1000 µg/mL	methanol	1 mL
10782.24		Tri-n-octyl phosphate (see also 9489.24) (TOP)	1806-54-8	Please enquire		
9489.24-K-ME		Tris(2-ethylhexyl) phosphate (TEHP)	78-42-2	1000 µg/mL	methanol	1 mL
9496.18-1G		Tris(2-butoxyethyl) phosphate (TBOEP)	78-51-3	neat	neat	1 g
11135.9		Isopropylphenyl phosphate (IPPP)	46355-07-1	Please enquire		
9562.14-K-IO		Dibutylphenyl phosphate (DBPhP)	2528-36-1	1000 µg/mL	isooctane	1 mL
10110.12-50-IO		9,10-Dihydro-9-oxa-10-phosphaphenanthrene-10-oxide (DOPO)	35948-25-5	50 µg/mL	isooctane	1 mL
10110.12-10MG		9,10-Dihydro-9-oxa-10-phosphaphenanthrene-10-oxide (DOPO)	35948-25-5	neat	neat	10 mg
9561.16-K-IO		Butyldiphenyl phosphate (DPhBP)	2752-95-6	1000 µg/mL	isooctane	1 mL
9490.20-1G		2-Ethylhexyldiphenyl phosphate (EHDP)	1241-94-7	neat	neat	1 g
11235.22-50-IO		Isodecyldiphenyl phosphate	29761-21-5	50 µg/mL	isooctane	1 mL

Phosphor-Phosphate-Based Flame Retardants continued...						
2138.18-K-IO		Triphenyl phosphate (TPHP)	115-86-6	1000 µg/mL	isooctane	1 mL
10453.19-100MG		Diphenyltolyl phosphate, techn. ("Cresyldiphenyl phosphate") (DPMP, Diphenyl methylphenyl phosphate, "CDP")	26444-49-5	neat	neat	100 mg
3967.19-50-T		Diphenyltolyl phosphate - purified technical mixture of o-,m-,p-tolyl isomers (DPMP, "CDP")	26444-49-5	50 µg/mL	toluene	1 mL
11438.19-100-IO		Diphenyl-o-tolyl phosphate (o-DPMP, Diphenyl-2-tolyl phosphate)	5254-12-6	100 µg/mL	isooctane	1 mL
11437.19-100-IO		Diphenyl-m-tolyl phosphate (m-DPMP, Diphenyl-3-tolyl phosphate)	69500-28-3	100 µg/mL	isooctane	1 mL
11436.19-100-IO		Diphenyl-p-tolyl phosphate (p-DPMP, Diphenyl-4-tolyl phosphate)	78-31-9	100 µg/mL	isooctane	1 mL
11445.21-100-IO		Diphenyl-3-isopropylphenyl phosphate (3-IPDP (DIIPP))	69515-46-4	100 µg/mL	isooctane	1 mL
10452.22-100MG		tert-Butylphenyldiphenyl phosphate, techn. Isomer mixture (BPD)	56803-37-3	neat	neat	100 mg
10780.22-100-IO		4-tert-Butylphenyldiphenyl phosphate (4-BPD)	981-40-8	100 µg/mL	isooctane	1 mL
8738.20-K-IO		Ditolylphenyl phosphate - Mixture of o-,m-,p-tolyl isomers	N/A	1000 µg/mL	isooctane	1 mL
11438.19-100-IO		Diphenyl-o-tolyl phosphate (o-DPMP, Diphenyl-2-tolyl phosphate)	5254-12-6	100 µg/mL	isooctane	1 mL
11437.19-100-IO		Diphenyl-m-tolyl phosphate (m-DPMP, Diphenyl-3-tolyl phosphate)	69500-28-3	100 µg/mL	isooctane	1 mL
11436.19-100-IO		Diphenyl-p-tolyl phosphate (p-DPMP, Diphenyl-4-tolyl phosphate)	78-31-9	100 µg/mL	isooctane	1 mL
8739.19-100MG		Phenyl/Tolyl phosphates - Mixture of analogues - with detailed CoA	N/A	neat	neat	100 mg
2137.21-K-IO		Tritolyl phosphate (isomer mixture of ortho, meta, and para) (TMPP)	1330-78-5	1000 µg/mL	isooctane	1 mL
2135-K-IO		Tri-o-tolyl phosphate (ToTP)	78-30-8	1000 µg/mL	isooctane	1 mL

Phosphor-Phosphate-Based Flame Retardants continued...						
2134.21-K-IO		Tri-m-tolyl phosphate (TmTP)	563-04-2	1000 µg/mL	isooctane	1 mL
2136.21-K-IO		Tri-p-tolyl phosphate (TpTP)	78-32-0	1000 µg/mL	isooctane	1 mL
10265.24-K-IO		Trixylyl phosphate, technical mixture (TXP)	25155-23-1	1000 µg/mL	isooctane	1 mL
10265.24-50MG		Trixylyl phosphate, technical mixture (TXP)	25155-23-1	neat	neat	50 mg
10279.24-100-IO		Trixylyl phosphate, purified Ion m/z 410 (hexamethyl = TXP) (TXP)	25155-23-1	100 µg/mL	isooctane	1 mL
11214.21-100-IO		Trixylyl phosphate, purified Ion m/z 368 (trimethyl) (TXP-3xMethyl)	N/A	100 µg/mL	isooctane	1 mL
11215.22-100-IO		Trixylyl phosphate, purified Ion m/z 382 (tetramethyl) (TXP-2xMethyl)	N/A	100 µg/mL	isooctane	1 mL
11216.23-100-IO		Trixylyl phosphate, purified Ion m/z 396 (pentamethyl) (TXP-1xMethyl)	N/A	100 µg/mL	isooctane	1 mL
11217.25-100-IO		Trixylyl phosphate, purified Ion m/z 424 (heptamethyl) (TXP+1xMethyl)	N/A	100 µg/mL	isooctane	1 mL
11143.24-K-IO		Tris(2,3-dimethylphenyl) phosphate (2,3-TXP)	65695-97-8	1000 µg/mL	isooctane	1 mL
11144.24-K-IO		Tris(2,4-dimethylphenyl) phosphate (2,4-TXP)	3862-12-2	1000 µg/mL	isooctane	1 mL
11145.24-K-IO		Tris(2,5-dimethylphenyl) phosphate (2,5-TXP)	19074-59-0	1000 µg/mL	isooctane	1 mL
11146.24-K-IO		Tris(2,6-dimethylphenyl) phosphate (2,6-TXP)	121-06-2	1000 µg/mL	isooctane	1 mL
11147.24-K-IO		Tris(3,4-dimethylphenyl) phosphate (3,4-TXP)	3862-11-1	1000 µg/mL	isooctane	1 mL
11148.24-K-IO		Tris(3,5-dimethylphenyl) phosphate (3,5-TXP)	25653-16-1	1000 µg/mL	isooctane	1 mL
8777.27-100-IO		Isopropylated trisphenyl phosphate (Phenol, isopropylated, phosphate) (TIPPP)	68937-41-7	100 µg/mL	isooctane	1 mL
8777.27-1G		Isopropylated trisphenyl phosphate (Phenol, isopropylated, phosphate) (TIPPP)	68937-41-7	neat	neat	1 g
11234.27-100-IO		Tris(2-isopropylphenyl) phosphate (2-TIPPP)	64532-95-2	100 µg/mL	isooctane	1 mL

Phosphor-Phosphate-Based Flame Retardants continued...					
11441.27-100-IO		Tris(3-isopropylphenyl) phosphate (3-TIPPP)	72668-27-0	100 µg/mL	isooctane 1 mL
11136.27-100-IO		Tris(4-isopropylphenyl) phosphate (4-TIPPP)	2502-15-0	100 µg/mL	isooctane 1 mL
10084.39-50-ME		Bisphenol A bis(diphenyl) phosphate, 99% (BPA-BDPP; BDP)	5945-33-5	50 µg/mL	methanol 1 mL
8756.X-100MG		Bisphenol A bis(diphenyl) phosphate, techn. (BPA-BDPP; BDP, techn.)	5945-33-5 / 181028-79-5 (techn.)	neat	neat 100 mg
10458.30-50-ME		Tetraphenylrecorcinol bis(diphenyl phosphate), 99% (LC) (PBDPP; RDP)	57583-54-7	50 µg/mL	methanol 1 mL
10109.30-50-ME		Tetraphenylrecorcinol bis(diphenyl phosphate), techn. (PBDPP; RDP)	57583-54-7	50 µg/mL	methanol 1 mL
10109.30-10MG		Tetraphenylrecorcinol bis(diphenylphosphate), Techn. (PBDPP; RDP)	57583-54-7	neat	neat 10 mg
10459.42-50-ME		PBDPP (RDP)-homologue (Byproduct in PBDPP (RDP))	N/A	50 µg/mL	methanol 1 mL
11137.38-50-T		1,3-Phenylene tetrakis(2,6-dimethylphenyl) diphosphate (PBDMP)	139189-30-3	50 µg/mL	toluene 1 mL
8798.0-1G		Ammonium polyphosphate (Phase II n>1000) (Reflam APP)	68333-79-9	neat	neat 1 g

Labelled Phosphor-Phosphate Based Flame Retardants					
9493.3-100-IO		Trimethyl phosphate-d9 (TMP-d9)	32176-12-8	100 µg/mL	isooctane 1 mL
9492.6-100-IO		Triethyl phosphate-d15 (TEP-d15)	135942-11-9	100 µg/mL	isooctane 1 mL
9495.9-100-IO		Tri-n-propyl phosphate-d21 (TPP-d21)	1219794-92-9	100 µg/mL	isooctane 1 mL
9491.12-100-IO		Tri-n-butyl phosphate-d27 (TBP-d27)	61196-26-7	100 µg/mL	isooctane 1 mL
9491.12-K-IO		Tri-n-butyl phosphate-d27 (TBP-d27)	61196-26-7	1000 µg/mL	isooctane 1 mL
9491.12-10MG		Tri-n-butyl phosphate-d27 (TBP-d27)	61196-26-7	neat	neat 10 mg
9494.18-100-IO		Triphenyl phosphate-d15 (TPHP-d15)	1173020-30-8	100 µg/mL	isooctane 1 mL
9494.18-K-IO		Triphenyl phosphate-d15 (TPHP-d15)	1173020-30-8	1000 µg/mL	isooctane 1 mL
9494.18-10MG		Triphenyl phosphate-d15 (TPHP-d15)	1173020-30-8	neat	neat 10 mg
11439.19-100-IO		Diphenyl-p-tolyl phosphate-d7 (p-tolyl-d7) (Diphenyl-p-tolyl phosphate-d7)	N/A	100 µg/mL	isooctane 1 mL
11435.20-100-IO		Di-p-tolylphenyl phosphate-d14 (p-tolyl-d7) (Phenyldi-p-tolyl phosphate-d14)	N/A	100 µg/mL	isooctane 1 mL
11443.21-100-IO		Tris-p-tolyl phosphate-d21 (p-TMPP-d21)	N/A	100 µg/mL	isooctane 1 mL
11440.22-100-IO		4-tert-Butylphenyldiphenyl phosphate-d13 (4-BDPP-d13)	N/A	100 µg/mL	isooctane 1 mL
11444.24-100-IO		Tris(2,4-dimethylphenyl) phosphate-d27 (2,4-TXP-d27)	N/A	100 µg/mL	isooctane 1 mL
11442.27-100-IO		Tris(4-isopropylphenyl) phosphate-d33 (p-TIPPP-d33)	N/A	100 µg/mL	isooctane 1 mL

Other Melamine (Triazine)-Based Flame Retardants						
8754.3-1G		Melamine cyanurate (Reflam MCA)	N/A	neat	neat	1 g
8755.X-1G		Melamine micronized (Reflam MA)	N/A	neat	neat	1 g
8753.X-1G		Melamine polyphosphate (Reflam MPP)	N/A	neat	neat	1 g
Other Relevant Phosphor-containing Compounds						
2209.6-100-ME		Tris-(aziridinyl)-phosphineoxide (TEPA, Aphoxide)	545-55-1	100 µg/mL	methanol	1 mL
2209.6-10MG		Tris-(aziridinyl)-phosphineoxide (TEPA, Aphoxide)	545-55-1	neat	neat	10 mg
3968.6-10MG		1,1,1-Trimethylolpropanephosphate (Etbicyphat, Trimethylpropanephosphate)	1005-93-2	neat	neat	10 mg
10403.2-K-ME		O,O-Dimethyl hydrogenphosphate (DMP)	813-78-5	1000 µg/mL	methanol	1 mL
10403.2-50MG		O,O-Dimethyl hydrogenphosphate (DMP)	813-78-5	neat	neat	50 mg
10761.2-K-ME		O,O-Dimethyl phosphate, sodium salt (DMP Na)	32586-82-6	100 µg acid/mL	methanol	1 mL
10614.2-100-ME		O,O-Dimethyl phosphate-13C2, sodium salt (DMP-13C2 Na)	157487-95-1	100 µg acid/mL	methanol	1 mL
10614.2-100-MEx5		O,O-Dimethyl phosphate-13C2, sodium salt (DMP-13C2 Na)	157487-95-1	100 µg acid/mL	methanol	1 mL
10404.4-K-ME		O,O-Diethyl hydrogenphosphate (DEP)	598-02-7	1000 µg/mL	methanol	1 mL
10404.4-50MG		O,O-Diethyl hydrogenphosphate (DEP)	598-02-7	neat	neat	50 mg
10762.4-K-ME		O,O-Diethyl phosphate, sodium salt (DEP Na)	2870-30-6	1000 µg acid/mL	methanol	1 mL
10707.4-100-ME		O,O-Diethyl phosphate-13C2, sodium salt (DEP-13C2 Na)	1329513-90-2	100 µg acid/mL	methanol	1 mL
10707.4-100-MEx5		O,O-Diethyl phosphate-13C2, sodium salt (DEP-13C2 Na)	1329513-90-2	100 µg acid/mL	methanol	1 mLx5
10437.2-K-ME		O,O-Dimethyl thiophosphate, sodium salt (DMTP Na)	23754-87-2	1000 µg acid/mL	methanol	1 mL
10437.2-5MG		O,O-Dimethyl thiophosphate, sodium salt (DMTP Na)	23754-87-2	neat	neat	5 mg
10708.2-100-ME		O,O-Dimethyl thiophosphate-13C2, sodium salt (DMTP-13C2 Na)	1330274-66-2 (for the acid)	100 µg acid/mL	methanol	1 mL
10708.2-100-MEx5		O,O-Dimethyl thiophosphate-13C2, sodium salt (DMTP-13C2 Na)	1330274-66-2 (for the acid)	100 µg acid/mL	methanol	1 mLx5
10405.4-K-ME		O,O-Diethyl thiophosphate, potassium salt (DETP K)	5871-17-0	1000 µg acid/mL	methanol	1 mL
10405.4-50MG		O,O-Diethyl thiophosphate, potassium salt (DETP K)	5871-17-0	neat	neat	50 mg
10759.4-K-ME		O,O-Diethyl thiophosphate, sodium salt (DETP Na)	5852-63-1	1000 µg acid/mL	methanol	1 mL
10709.4-100-ME		O,O-Diethylthiophosphate-13C2, sodium salt (DETP-13C2 Na)	1330276-86-2 (for the acid)	100 µg acid/mL	methanol	1 mL
10709.4-100-MEx5		O,O-Diethylthiophosphate-13C2, sodium salt (DETP-13C2 Na)	1330276-86-2 (for the acid)	100 µg acid/mL	methanol	1 mLx5
10406.2-100-ME		O,O-Dimethyldithiophosphate, sodium salt (DMDTP Na)	26377-29-7	100 µg acid/mL	methanol	1 mL
10406.2-5MG		O,O-Dimethyldithiophosphate, sodium salt (DMDTP Na)	26377-29-7	neat	neat	5 mg

Other Relevant Phosphor-containing Compounds continued...						
10411.2-50MG		O,O-Dimethylhydrogendithiophosphate (DMDTP)	756-80-9	neat	neat	50 mg
10410.2-50MG		O,O-Dimethyl dithiophosphate, ammonium salt (DMDTP NH4)	1066-97-3	neat	neat	50 mg
10710.2-100-ME		O,O-Dimethyl dithiophosphate-13C2, sodium salt (DMDTP-13C2 Na)	1329745-95-0 (for the acid)	100 µg acid/mL	methanol	1 mL
10710.2-100-MEx5		O,O-Dimethyl dithiophosphate-13C2, sodium salt (DMDTP-13C2 Na)	1329745-95-0 (for the acid)	100 µg acid/mL	methanol	1 mLx5
10407.4-K-ME		O,O-Diethyl dithiophosphate, ammonium salt (DEDTP NH4)	1068-22-0	1000 µg acid/mL	methanol	1 mL
10407.4-50MG		O,O-Diethyl dithiophosphate, ammonium salt (DEDTP NH4)	1068-22-0	neat	neat	50 mg
10760.4-K-ME		O,O-Diethyl dithiophosphate, sodium salt (DEDTP Na)	3338-24-7	1000 µg acid/mL	methanol	1 mL
10408.4-100-ME		O,O-Diethyl dithiophosphate-13C4, ammonium salt (DEDTP-13C4 NH4)	1329641-22-6	100 µg acid/mL	methanol	1 mL
10408.4-100-MEx5		O,O-Diethyl dithiophosphate-13C4, ammonium salt (DEDTP-13C4 NH4)	1329641-22-6	100 µg acid/mL	methanol	1 mLx5
10408.4-5MG		O,O-Diethyl dithiophosphate-13C4, ammonium salt (DEDTP-13C4 NH4)	1329641-22-6	neat	neat	5 mg
10711.4-100-ME		O,O-Diethyl dithiophosphate-13C4, sodium salt (DEDTP-13C4 Na)	1329746-81-7 (for the acid)	100 µg acid/mL	methanol	1 mL
10711.4-100-MEx5		O,O-Diethyl dithiophosphate-13C4, sodium salt (DEDTP-13C4 Na)	1329746-81-7 (for the acid)	100 µg acid/mL	methanol	1 mLx5

Polychlorinated Paraffines (PCAs)

Catalogue No.	Description	CAS No.	Concn.	Solvent	Quantity
C8-C9 PCAs					
1664.8-K-IO	1,2-Dichlorooctane	21948-46-9	1000 µg/mL	isooctane	1 mL
1660.8-K-IO	1,1,1,3-Tetrachlorooctane	18088-13-6	1000 µg/mL	isooctane	1 mL
1672.8-K-IO	1,2,7,8-Tetrachlorooctane	865306-19-0	1000 µg/mL	isooctane	1 mL
1657.8	1,1,1,3,7,8-Hexachlorooctane	1379331-17-5	Please enquire		
1656.8-K-IO	1,1,1,3,6,8,8-Octachlorooctane	61856-19-7	1000 µg/mL	isooctane	1 mL
1665.9-K-IO	1,2-Dichlorononane	56375-96-3	1000 µg/mL	isooctane	1 mL
1661.9-K-IO	1,1,1,3-Tetrachlorononane	1070-27-5	1000 µg/mL	isooctane	1 mL
1673.9-K-IO	1,2,8,9-Tetrachlorononane	865306-20-3	1000 µg/mL	isooctane	1 mL
1658.9-K-IO	1,1,1,3,8,9-Hexachlorononane	865306-21-4	1000 µg/mL	isooctane	1 mL
1883.8-KIT	C8-C9 PCA Kit (Includes: 1664.8-K-IO, 1660.8-K-IO, 1672.8-K-IO, 1656.8-K-IO, 1665.9-K-IO, 1661.9-K-IO, 1673.9-K-IO, 1658.9-K-IO (Not including 1657.8 and 1655.9))		1000 µg/mL	isooctane	kit

C10-C13 PCAs (SCCPs)					
1666.10-100-IO	1,2-Dichlorodecane	34619-32-4	100 µg/mL	isooctane	1 mL
1662.10-100-IO	1,1,1,3-Tetrachlorodecane	51755-60-3	100 µg/mL	isooctane	1 mL
1671.10-100-IO	1,2,9,10-Tetrachlorodecane	205646-11-3	100 µg/mL	isooctane	1 mL
1659.10-100-IO	1,1,1,3,9,10-Hexachlorodecane	601523-26-6	100 µg/mL	isooctane	1 mL
1622.10-100-IO	1,1,1,3,8,10,10,10-Octachlorodecane	601523-23-3	100 µg/mL	isooctane	1 mL
1667.11-100-IO	1,2-Dichloroundecane	81246-86-8	100 µg/mL	isooctane	1 mL
1649.11-100-IO	1,1,1,3-Tetrachloroundecane	56686-55-6	100 µg/mL	isooctane	1 mL
1674.11-100-IO	1,2,10,11-Tetrachloroundecane	210049-49-3	100 µg/mL	isooctane	1 mL
1650.11-100-IO	1,1,1,3,10,11-Hexachloroundecane	601523-28-8	100 µg/mL	isooctane	1 mL
1650.11-100-AC	1,1,1,3,10,11-Hexachloroundecane	601523-28-8	100 µg/mL	acetone	1 mL
1623.11-100-IO	1,1,1,3,9,11,11,11-Octachloroundecane	601523-25-5	100 µg/mL	isooctane	1 mL
1668.12-100-IO	1,2-Dichlorododecane	75121-23-2	100 µg/mL	isooctane	1 mL
1663.12-100-IO	1,12-Dichlorododecane	3922-28-9	100 µg/mL	isooctane	1 mL
1651.12-100-IO	1,1,1,3-Tetrachlorododecane	14983-60-9	100 µg/mL	isooctane	1 mL
1675.12-100-IO	1,2,11,12-Tetrachlorododecane	210115-98-3	100 µg/mL	isooctane	1 mL
1652.12-100-IO	1,1,1,3,11,12-Hexachlorododecane	865306-22-5	100 µg/mL	isooctane	1 mL
1624.12-100-IO	1,1,1,3,10,12,12,12-Octachlorododecane	601523-21-1	100 µg/mL	isooctane	1 mL
1669.13-100-IO	1,2-Dichlorotridecane	701920-72-1	100 µg/mL	isooctane	1 mL
1653.13-100-IO	1,1,1,3-Tetrachlorotridecane	67095-50-5	100 µg/mL	isooctane	1 mL
1654.13-100-IO	1,1,1,3,12,13-Hexachlorotridecane	865306-23-6	100 µg/mL	isooctane	1 mL
1625.13-100-IO	1,1,1,3,11,13,13,13-Octachlorotridecane	865306-24-7	100 µg/mL	isooctane	1 mL

C14+ PCAs (MCCPs)					
1670.14-K-IO	1,2-Dichlorotetradecane	701920-83-4	1000 µg/mL	isooctane	1 mL
1676.14-K-IO	1,1,1,3-Tetrachlorotetradecane	865306-25-8	1000 µg/mL	isooctane	1 mL
1677.14-K-IO	1,2,13,14-Tetrachlorotetradecane	221155-23-3	1000 µg/mL	isooctane	1 mL
1678.14-K-IO	1,1,1,3,12,14,14,14-Octachlorotetradecane	865306-26-9	1000 µg/mL	isooctane	1 mL
8506.15-K-IO	1,1,1,3,14,15-Hexachloropentadecane	N/A	1000 µg/mL	isooctane	1 mL
8507.16-K-IO	1,1,1,3,14,16,16,16-Octachlorohexadecane	N/A	1000 µg/mL	isooctane	1 mL
8508.17-K-IO	1,1,1,3,15,17,17,17-Octachloroheptadecane	N/A	1000 µg/mL	isooctane	1 mL
2051.18-10K-DC	1-Chlorooctadecane	3386-33-2	10000 µg/mL	dichloromethane	1 mL
8509.18-K-IO	1,1,1,3,16,18,18,18-Octachlorooctadecane	N/A	1000 µg/mL	isooctane	1 mL
8510.19-K-IO	1,1,1,3,17,19,19,19-Octachlorononadecane	N/A	1000 µg/mL	isooctane	1 mL
8511.20-K-IO	1,1,1,3,18,20,20,20-Octachloroeicosane	N/A	1000 µg/mL	isooctane	1 mL

PCAs (Polychlorinated n-alkanes) Technical Mixes					
9826.X-K-IO	Chlorinated paraffins (Cl:40%), technical mix	N/A	1000 µg/mL	isooctane	1 mL
9826.X-K-IOx10	Chlorinated paraffins (Cl:40%), technical mix	N/A	1000 µg/mL	isooctane	1 mLx10
11152.X-K-IO	Chlorinated paraffins (Cl:52%), technical mix	N/A	1000 µg/mL	isooctane	1 mL

Flame Retardants Mixes

Phosphorous-containing Flame Retardants Mixes

Phosphate flame retardants mix of 3 alkyl-chloro components (all CFRs)	
S-4809, FR-Mix 03	
3 Components each 100 µg/mL in methanol	
8436.6	Tris(2-chloroethyl) phosphate (TCEP) [115-96-8]
8505.9	Tris(1,3-dichloro-2-propyl) phosphate (TDCIPP) [13674-87-8]
8457.9	Tris(monochloropropyl) phosphate (isomer mixture, TCPP) [26248-87-3]
S-4809-100-ME, 1 x 1 mL ampoule	
S-4809-100-MEx5, 5 x 1 mL ampoules	

Phosphate flame retardants mix of 10 PFR and CFR components	
S-4712, FR-Mix 01	
10 Components each 15 µg/mL in isooctane	
3966.12	Triisobutyl phosphate (TIBP) [126-71-6]
1399.12	Tri- <i>n</i> -butyl phosphate (TBP) [126-73-8]
8457.9	Tris(monochloropropyl) phosphate (isomer mixture, TCPP) [26248-87-3]
8436.6	Tris(2-chloroethyl) phosphate (TCEP) [115-96-8]
8505.9	Tris(1,3-dichloro-2-propyl) phosphate (TDCIPP) [13674-87-8]
9489.24	Tris(2-ethylhexyl) phosphate (TEHP) [78-42-3]
9496.18	Tris(2-butoxyethyl) phosphate (TBOEP) [78-51-3]
9490.20	2-Ethylhexyldiphenyl phosphate (EHDP) [1241-94-7]
2137.21	Tritolyl phosphate (isomer mixture (TMPP) [1330-78-5]
2138.18	Triphenyl phosphate (TPHP) [115-86-6]
S-4712-15-IO, 1 x 1 mL ampoule	
S-4712-15-IOx10, 1 x 10 mL screwcap bottle	

Phosphate flame retardants and alkoxyesters/alcohols mix of 10 components	
S-4788, FR-Mix 02	
10 Components each 100 µg/mL in ethyl acetate	
2135.21	Tri- <i>o</i> -cresyl phosphate [78-30-8]
10416.6	Diglyme [111-96-6]
8436.6	Tri(2-chloroethyl) phosphate (TCEP) [115-96-8]
10417.14	1,4,5,8-Tetraamino-9,10-anthracenedione [2475-45-8]
2209.6]	TEPA (Aphoxide) [545-55-1]
F-7132.6	2-Methoxy-1-propyl acetate [70657-70-4]
10418.5	2-Methoxyethyl acetate [110-49-6]
2553.6	2-Ethoxyethyl acetate [111-15-9]
8586.9	Tris(2,3-dibromopropyl) phosphate (TDBPP) [126-72-7], techn.
1379.1	Methanol [67-56-1]
S-4788-100-EA, 1 x 1 mL ampoule	
S-4788-100-10EA, 1 x 10 mL screwcap bottle	

PBB Mixes

PBB Mix of 10 mono- to decabrominated components	
S-4769, PBB-Mix 01a	
10 Components each 30 µg/mL in toluene	
3091.12	BB-3
3096.12	BB-15
3097.12	BB-18
3103.12	BB-52
3107.12	BB-103
3108.12	BB-153
10174.12	BB-180
9716.12	BB-194
9536.12	BB-206
2677.12	BB-209
S-4769-30-T, 1 x 1 mL ampoule	
S-4769-30-10T, 1 x 10 mL screwcap bottle	

PBB Mix of 10 mono- to decabrominated components in assorted concentrations (also see S-4769)	
S-4769, PBB-Mix 01b	
10 Components in assorted concentrations in toluene, 1 x 1 mL or 1 x 10 mL	
3091.12	BB-3 - 30 ppm
3096.12	BB-15 - 30 ppm
3097.12	BB-18 - 30 ppm
3103.12	BB-52 - 30 ppm
3107.12	BB-103 - 50 ppm
3108.12	BB-153 - 50 ppm
10174.12	BB-180 - 50 ppm
9716.12	BB-194 - 100 ppm
9536.12	BB-206 - 100 ppm
2677.12	BB-209 - 100 ppm
S-4769-ASS-T, 1 x 1 mL ampoule	
S-4769-ASS-10T, 1 x 10 mL screwcap bottle	

PBB Mix of 10 mono- to decabrominated components (alternative to S-4769)	
S-4875, BB-Mix 03	
10 Components each 50 µg/mL in isooctane	
3091.12	BB-3
3096.12	BB-15
3097.12	BB-18
3103.12	BB-52
3106.12	BB-101
3108.12	BB-153
10174.12	BB-180
9716.12	BB-194
9536.12	BB-206
2677.12	BB-209
S-4875-50-IO, 1 x 1 mL ampoule	
S-4875-50-IOx10, 10 x 1 mL ampoules	

PBB Mix 10 of mono- to decabrominated components (alternative to S-4769 and S-4875)	
S-4823, PBB-Mix 02	
10 Components each 50 µg/ml in toluene	
3089.12	BB-1
3092.12	BB-4
2664.12	BB-29
3105.12	BB-80
3107.12	BB-103
3109.12	BB-169
9534.12	BB-189
9716.12	BB-194
9536.12	BB-206
2677.12	BB-209
S-4823-50-T, 1 x 1 mL ampoule	
S-4823-50-Tx10, 10 x 1 mL ampoules	

PBDE Mixes and KITS, Lake Michigan Study (LMS)

Lake Michigan Study PBDEs single solutions (PBDE-KIT of 9 single components)	
2653.9-KIT	
Individual solutions each 50 µg/mL in isooctane	
1961.12	BDE-28
1962.12	BDE-47
1964.12	BDE-66
1966.12	BDE-85
1967.12	BDE-99
1968.12	BDE-100
1970.12	BDE-138
1971.12	BDE-153
1972.12	BDE-154
2653.9-KIT, 9 x 1 mL ampoules	

Lake Michigan Study PBDEs	
S-4391, PBDE-Mix 06	
9 Components each 10 µg/mL in toluene	
1961.12	BDE-28
1962.12	BDE-47
1964.12	BDE-66
1966.12	BDE-85
1967.12	BDE-99
1968.12	BDE-100
1970.12	BDE-138
1971.12	BDE-153
1972.12	BDE-154
S-4391-10-IO: 1 x 1 mL ampoule	
S-4391-10-IOx10: 10 x 1 mL ampoules	

Extended mix of Lake Michigan Study PBDEs: LMS-PBDEs + BDE-183 and BDE-209	
S-4737, PBDE-Mix 21	
11 Components each 100 µg/mL in toluene	
1961.12	BDE-28
1962.12	BDE-47
1964.12	BDE-66
1966.12	BDE-85
1967.12	BDE-99
1968.12	BDE-100
1970.12	BDE-138
1971.12	BDE-153
1972.12	BDE-154
1973.12	BDE-183
1811.12	BDE-209
S-4737-100-T, 1 x 1 mL ampoule	
S-4737-100-Tx10, 10 x 1 mL ampoules	

PBDE Mixes, ISO Method 22032

ISO 22032 PBDE Multi-component solution with native ref. substances	
S-4535-10, PBDE-Mix 08	
8 Components each 10 µg/mL in isooctane	
1962.12	BDE-47
1967.12	BDE-99
1968.12	BDE-100
1971.12	BDE-153
1972.12	BDE-154
1973.12	BDE-183
2647.12	BDE 205
1811.12	BDE-209
S-4535-10-IO, 1 x 1 mL ampoule	
S-4535-10-IOx10, 10 x 1 mL ampoules	

ISO 22032 PBDE Multi-component stock solution of native ref. substances (§ 5.8 in the ISO-method)	
S-4388-50-IO, PBDE-Mix 03	
8 Components each 50 µg/mL in isooctane	
1962.12	BDE-47
1967.12	BDE-99
1968.12	BDE-100
1971.12	BDE-153
1972.12	BDE-154
1973.12	BDE-183
2647.12	BDE 205
1811.12	BDE-209
S-4388-50-IO, 1 x 1 mL ampoule	
S-4388-50-IOx10: 10 x 1 mL ampoules	

ISO 22032 Calibration Curve							
Set of PBDEs, Native Compounds (§ 5.9 in the ISO-method)							
S-4389-SET, PBDE-Mix 04							
Set of 7 solutions in isooctane/toluene, 7 x 1 mL							
Comp.	Sol. 1 ng/mL	Sol. 2 ng/mL	Sol. 3 ng/mL	Sol. 4 ng/mL	Sol. 5 ng/mL	Sol. 6 ng/mL	Sol. 7 ng/mL
BDE-47	5	12.5	25	50	100	150	250
BDE-99	5	12.5	25	50	100	150	250
BDE-100	5	12.5	25	50	100	150	250
BDE-153	5	12.5	25	50	100	150	250
BDE-154	5	12.5	25	50	100	150	250
BDE-183	5	12.5	25	50	100	150	250
BDE-205	5	12.5	25	50	100	150	250
BDE-209	25	50	100	200	500	700	1000
S-4389-SET, 7 x 1 mL ampoules							

PBDE Mixes, EPA Methods 1614 and 527

EPA 1614 – Multi-component solution PBDE Congeners of primary interest (§7.8 in the ISO-method)	
S-4390-1, PBDE-Mix 05a	
8 Components each 1 µg/mL in isooctane	
1961.12	BDE-28
1962.12	BDE-47
1967.12	BDE-99
1968.12	BDE-100
1971.12	BDE-153
1972.12	BDE-154
1973.12	BDE-183
1811.12	BDE-209
S-4390-1-IO, 1 x 1 mL ampoule	
S-4390-1-IOx10, 10 x 1 mL ampoules	

EPA 1614 - Multi-component solution PBDE Congeners of primary interest (§7.8 in the ISO-method)	
S-4390-20, PBDE-Mix 05b	
8 Components each 20 µg/mL in isooctane	
1961.12	BDE-28
1962.12	BDE-47
1967.12	BDE-99
1968.12	BDE-100
1971.12	BDE-153
1972.12	BDE-154
1973.12	BDE-183
1811.12	BDE-209
S-4390-20-IO, 1 x 1 mL ampoule	
S-4390-20-IOx10, 10 x 1 mL ampoules	

EPA 1614 - Multi-component solution PBDE Congeners of primary interest (§7.8 in the ISO-method)	
S-4390, PBDE-Mix 05c	
8 Components in assorted concentrations in isooctane	
1961.12	BDE-28 - 550 µg/L
1962.12	BDE-47 - 550 µg/L
1967.12	BDE-99 - 500 µg/L
1968.12	BDE-100 - 450 µg/L
1971.12	BDE-153 - 500 µg/L
1972.12	BDE-154 - 550 µg/L
1973.12	BDE-183 - 500 µg/L
1811.12	BDE-209 - 600 µg/L
S-4390-ASS-IO, 1 x 1 mL ampoule	
S-4390-ASS-IOx10, 10 x 1 mL ampoules	
S-4390-ASS-IOx60, 60 x 1 mL ampoules	

Customised variation of EPA 1614 PDBEs	
S-4659, PBDE-Mix 16	
8 Components each 10 µg/mL in cyclohexane	
1961.12	BDE-28
1962.12	BDE-47
1967.12	BDE-99
1968.12	BDE-100
1971.12	BDE-153
1972.12	BDE-154
1973.12	BDE-183
1811.12	BDE-209
S-4659-10-CY, 1 x 1 mL ampoule	
S-4659-10-10CY, 1 x 10 mL screwcap bottle	

Customised selection of EPA 1614 PDBEs	
S-4661, PBDE-Mix 17	
7 Components in assorted concentrations in isooctane	
1961.12	BDE-28 - 20 ng/mL
1962.12	BDE-47 - 70 ng/mL
1967.12	BDE-99 - 100 ng/mL
1968.12	BDE-100 - 20 ng/mL
1971.12	BDE-153 - 15 ng/mL
1972.12	BDE-154 - 15 ng/mL
1811.12	BDE-209 - 180 ng/mL
S-4661-ASS-CY, 1 x 1 mL ampoule	
S-4661-ASS-CYx40, 40x1 mL ampoules	

EPA 527 Mix 3, PBDE Congeners and Hexabromobiphenyl	
S-4484, PBDE-Mix 07 (PBB- and PBDE-Mix 01)	
5 Components each 50 µg/mL in isooctane:ethyl acetate (8:2)	
3108.12	BB-153
1962.12	BDE-47
1967.12	BDE-99
1968.12	BDE-100
1971.12	BDE-153
S-4484-50-MX, 1 x 1 mL ampoule	
S-4484-50-MXx10, 10 x 1 mL ampoules	

PBDE Mixes, Customised Solutions with 2-8 Components

PBDE Mix of BDE-153 and BDE-196	
S-4736, PBDE-Mix 20	
2 Components each 100 µg/mL in cycloheane	
1971.12	BDE-153
9135.12	BDE-196
S-4736-100-CY, 1 x 1 mL ampoule	
S-4736-100-10CY, 1 x 10 mL screwcap	

PBDE Mix of 4 octa- to decabrominated components	
S-4768-50, PBDE-Mix 22	
4 Components each 50 µg/mL in toluene	
9135.12	BDE-196
9033.12	BDE-206
9035.12	BDE-208
1811.12	BDE-209
S-4768-50-T, 1 x 1 mL ampoule	
S-4768-50-Tx10, 10 x 1 mL ampoules	

PBDE Mix of 5 tri- to hexabrominated components	
S-4689, PBDE-Mix 18	
5 Components each 10 µg/mL in isooctane	
1961.12	BDE-28
1967.12	BDE-99
1968.12	BDE-100
1971.12	BDE-153
1972.12	BDE-154
S-4689-10-IO, 1 x 1 mL ampoule	
S-4689-10-IOx10, 10 x 1 mL ampoules	

PBDE Mix of 7 tri-to decabrominated components	
S-4720, PBDE-Mix 19	
7 Components each 100 µg/mL in isooctane	
1961.12	BDE-28
1962.12	BDE-47
1967.12	BDE-99
1968.12	BDE-100
1972.12	BDE-154
1973.12	BDE-183
1811.12	BDE-209
S-4720-100-CY, 1 x 1 mL ampoule	
S-4720-100-10CY, 1 x 10 mL screwcap	

PBDE Mix of 7 tri- to decabromination	PBDE Mix of 7 tetra- to decabrominated components
S-4545, PBDE-Mix 09	S-4588, PBDE-Mix 11
7 Components in assorted concentrations in isooctane	7 Components each 10 µg/mL in hexane
1961.12 BDE-28 - 10 ng/ml 1962.12 BDE-47 - 40 ng/ml 1967.12 BDE-99 - 60 ng/ml 1968.12 BDE-100 - 15 ng/ml 1971.12 BDE-153 - 10 ng/ml 1972.12 BDE-154 - 10 ng/ml 1811.12 BDE-209 - 100 ng/ml S-4545-ASS-T, 1 x 1 mL ampoule S-4545-ASS-Tx10, 1 x 10 mL ampoules	1962.12 BDE-47 1967.12 BDE-99 1968.12 BDE-100 1971.12 BDE-153 1972.12 BDE-154 1973.12 BDE-183 1811.12 BDE-209 S-4588-10-HX, 1 x 1 mL certain bottle S-4588-10-10HX, 1 x 10 mL screwcap bottle

PBDE Mixes, Customised Solutions with 9+ Components

PBDE Mix of 9 tri- to heptabrominated components	PBDE Mix of 10 mono- to decabrominated components
S-4657, PBDE-Mix 15	S-4604, PBDE-Mix 13
9 Components each 100 µg/mL in isooctane	10 Components each 50 µg/mL in toluene
1961.12 BDE-28 1962.12 BDE-47 1964.12 BDE-66 1966.12 BDE-85 1967.12 BDE-99 1968.12 BDE-100 1971.12 BDE-153 1972.12 BDE-154 1973.12 BDE-183 S-4657-100-IO, 1 x 1 mL ampoule S-4657-100-IOx10, 10 x 1 mL ampoules	8747.12 BDE-2 8749.12 BDE-13 1961.12 BDE-28 1964.12 BDE-66 1966.12 BDE-85 1970.12 BDE-138 1992.12 BDE-190 2647.12 BDE-205 9033.12 BDE-206 1811.12 BDE-209 S-4604-50-T, 1 x 1 mL ampoule S-4604-50-Tx10, 10 x 1 mL ampoules

PBDE Mix of 10 mono- to decabrominated components	PBDE Mix of 10 tri- to nonabrominated components
S-4604-500, PBDE-Mix 14	S-4726-50, PBDE-Mix 23a
10 Components each 500 µg/mL in isooctane	10 Components each 50 µg/mL in toluene
8748.12 BDE-3 8750.12 BDE-15 2116.12 BDE-35 1964.12 BDE-66 1967.12 BDE-99 1972.12 BDE-154 1992.12 BDE-190 9135.12 BDE-196 9035.12 BDE-208 1811.12 BDE-209 S-4604-500-T, 1 x 1 mL ampoule S-4604-500-Tx10, 10 x 1 mL ampoules	1961.12 BDE-28 1962.12 BDE-47 1964.12 BDE-66 1967.12 BDE-99 1968.12 BDE-100 1969.12 BDE-119 1970.12 BDE-138 1971.12 BDE-153 1972.12 BDE-154 1973.12 BDE-183 S-4726-50-T, 1 x 1 mL ampoule S-4726-50-Tx10, 1 x 10 mL ampoules

PBDE Mix of 11 tri- to decabrominated components	
S-4600, PBDE-Mix 12	
11 Components each 100 µg/mL in isooctane	
1961.12	BDE-28
1962.12	BDE-47
1964.12	BDE-66
1966.12	BDE-85
1967.12	BDE-99
1968.12	BDE-100
1970.12	BDE-138
1971.12	BDE-153
1972.12	BDE-154
1973.12	BDE-183
1811.12	BDE-209
S-4600-100-IO, 1 x 1 mL ampoule	
S-4600-100-IOx10, 10 x 1 mL ampoules	

PBDE Mix of 11 tri- to heptabrominated compounds	
S-4887, PBDE-Mix 24	
11 Components at each 50 µg/mL in isooctane	
1961.12	BDE-28
1962.12	BDE-47
1964.12	BDE-66
1965.12	BDE-71
1966.12	BDE-85
1967.12	BDE-99
1968.12	BDE-100
1970.12	BDE-138
1971.12	BDE-153
1972.12	BDE-154
1973.12	BDE-183
S-4887-50-IO, 1 x 1 mL ampoule	
S-4887-50-IOx10, 10 x 1 mL ampoules	

PBDE Mix of 18 components	
S-4559, PBDE-Mix 10	
18 Components at 50 µg/mL in toluene	
8742.12	BDE-17
1961.12	BDE-28
1962.12	BDE-47
1963.12	BDE-49
1964.12	BDE-66
1965.12	BDE-71
1990.12	BDE-75
1991.12	BDE-77
1966.12	BDE-85
1967.12	BDE-99
1968.12	BDE-100
1969.12	BDE-119
1970.12	BDE-138
1971.12	BDE-153
1972.12	BDE-154
1973.12	BDE-183
1992.12	BDE-190
1811.12	BDE-209
S-4559-50-T, 1 x 1 mL ampoule	
S-4559-50-Tx10, 10 x 1 mL ampoules	

F-PBDE® Mix, Internal Standards Mix

F-PBDE Mix of 8 tetra- to nonabrominated components F-Internal standards mix for ISO 12032	
S-4791, PBDE-Mix 23b	
8 Components each 50 µg/mL in toluene	
2161.12	6-F-BDE-47 (tetrabromo)
2506.12	5,5'-F ₂ -BDE-47 (tetrabromo)
2505.12	3,6-F ₂ -BDE-99 (pentabromo)
2163.12	3-F-BDE-100 (pentabromo)
1929.12	4'-F-BDE-160 (hexabromo)
2166.12	3-F-BDE-183 (heptabromo)
2167.12	2,4'-F ₂ -BDE-199 (octabromo)
2168.12	4'-F-BDE-208 (nonabromo)
S-4791-50-T, 1 x 1 mL ampoule	
S-4791-50-10T, 1 x 10 mL screwcap bottle	
S-4791-50-Tx10, 10 x 1 mL ampoules	

F-PBDE Mix of 9 mono- to nonabrominated components F-Internal standards mix for PBDEs, all bromination level	
S-4899, PBDE-Mix 25	
9 Components each 50 µg/mL in toluene	
1608.12	4'-F-BDE-2 (monobromo)
2258.12	3'-F-BDE-7 (dibromo)
2160.12	2'-F-BDE-28 (tribromo)
2161.12	6-F-BDE-47 (tetrabromo)
2163.12	3-F-BDE-100 (pentabromo)
1929.12	4'-F-BDE-160 (hexabromo)
2166.12	3-F-BDE-183 (heptabromo)
2167.12	2,4'-F ₂ -BDE-199 (octabromo)
2168.12	4'-F-BDE-208 (nonabromo)
S-4899-50-T, 1 x 1 mL ampoule	
S-4899-50-10T, 1 x 10 mL screwcap bottle	
S-4899-50-Tx10, 10 x 1 mL ampoules	

PBB and PBDE Mixes

PBB and PBDE Mix of 8 tri- to heptabrominated components	EPA 527 Mix 3, PBDE Congeners and Hexabromobiphenyl
S-4885, PBB- and PBDE-Mix 02	S-4484, PBDE-Mix 07 (PBB- and PBDE-Mix 01)
8 Components each 100 µg/mL in isooctane	5 Components each 50 µg/mL in isooctane:ethyl acetate (8:2)
2664.12 BB-29 3103.12 BB-52 3107.12 BB-103 3110.12 BB-155 1962.12 BDE-47 1967.12 BDE-99 1971.12 BDE-153 1973.12 BDE-183 S-4885-100-IO, 1 x 1 mL ampoule S-4885-100-IOx10, 10 x 1 mL ampoules	3108.12 BB-153 1962.12 BDE-47 1967.12 BDE-99 1968.12 BDE-100 1971.12 BDE-153 S-4484-50-MX, 1 x 1 mL ampoule S-4484-50-MXx10, 10 x 1 mL ampoules

PCA (SCCP) Mixes

C10 PCA (SCCP) Mix	C11 PCA (SCCP) Mix
S-4784, PCA-Mix 01	S-4785, PCA-Mix 02
5 Components each 100 µg/mL in isooctane	5 Components each 100 µg/mL in isooctane
1666.10 1,2-Dichlorodecane 1662.10 1,1,1,3-Tetrachlorodecane 1671.10 1,2,9,10-Tetrachlorodecane 1659.10 1,1,1,3,9,10-Hexachlorodecane 1622.10 1,1,1,3,8,10,10,10-Octachloroundecane S-4784-100-IO, 1 x 1 mL ampoule S-4784-100-IOx5, 5 x 1 mL ampoules	1667.11 1,2-Dichloroundecane 1649.11 1,1,1,3-Tetrachloroundecane 1674.11 1,2,10,11-Tetrachloroundecane 1650.11 1,1,1,3,10,11-Hexachloroundecane 1623.11 1,1,1,3,9,11,11,11-Octachloroundecane S-4785-100-IO, 1 x 1 mL ampoule S-4785-100-IOx5, 5 x 1 mL ampoules

C12 PCA (SCCP) Mix	C13 PCA (SCCP) Mix
S-4786, PCA-Mix 03	S-4787, PCA-Mix 04
6 Components each 100 µg/mL in isooctane	4 Components each 100 µg/mL in isooctane
1668.12 1,2-Dichlorododecane 1663.12 1,12-Dichlorododecane 1651.12 1,1,1,3-Tetrachlorododecane 1675.1 1,2,11,12-Tetrachlorododecane 1652.12 1,1,1,3,11,12-Hexachlorododecane 1624.1 1,1,1,3,9,11,11,11-Octachlorododecane S-4786-100-IO, 1 x 1 mL ampoule S-4786-100-IOx5, 5 x 1 mL ampoules	1669.13 1,2-Dichlorotridecane 1653.13 1,1,1,3-Tetrachlorotridecane 1654.13 1,1,1,3,12,13-Hexachlorotridecane 1625.13 1,1,1,3,11,13,13,13-Octachlorotridecane S-4787-100-IO, 1 x 1 mL ampoule S-4787-100-IOx5, 5 x 1 mL ampoules



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