



FIRE RETARDANT REFERENCE MATERIALS



FIRE RETARDANTS

Fire 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. They are now not believed to provide any meaningful fire safety benefit.

Additionally fire 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. Whilst there is no longer a drive to add flame retardants in manufacturing, 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.



Fire Retardants

Brominated Fire Retardants (BFRs)

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
2061.6-K-IP	2,4-Dibromophenol (DBP)	251.91	615-58-7	1000µg/mL	1mL Isopropanol
2060.6-K-IP	2,4,6-Tribromophenol (TBP)	330.80	118-79-6	1000µg/mL	1mL Isopropanol
2060.6-5K-5IP	2,4,6-Tribromophenol (TBP)	330.80	118-79-6	5000µg/mL	1mL Isopropanol
8882.9-50-IO	2,4,6-Tribromophenylallyl ether (TBP-AE)	370.86	3278-89-5	50µg/mL	1mL Isooctane
2676.8-50-IO	Tetrabromophthalic anhydride (TEBP-Anh)	463.70	632-79-1	50µg/mL	1mL Isooctane
2673.7-50-IO	Pentabromotoluene (PBT)	486.62	87-83-2	50µg/mL	1mL Isooctane
2673.7-5MG	Pentabromotoluene (PBT)	486.62	87-83-2	5mg	Neat
2672.6-50-IO	Pentabromophenol	488.59	608-71-9	50µg/mL	1mL Isooctane
8881.8-50-IO	Pentabromoethylbenzene (PBEb)	500.65	85-22-3	50µg/mL	1mL Isooctane
8883.9-K-ME	2,3-Dibromopropyl-2,4,6-tribromophenyl ether (TBP-DBPE)	530.67	35109-60-5	1000µg/mL	1mL Methanol
8886.15-K-ME	2-Ethylhexyl-2,3,4,5-tetrabromobenzoate (EH-TBB)	549.92	183658-27-7	1000µg/mL	1mL Methanol
2678.6-50-IO	Hexabromobenzene (HBB)	551.49	87-82-1	50µg/mL	1mL Isooctane
8885.24-10MG	Bis(2-ethylhexyl)tetrabromophthalate (BEH-TEBP)	706.14	26040-51-7	10mg	Neat
8885.24-100MG	Bis(2-ethylhexyl)tetrabromophthalate (BEH-TEBP)	706.14	26040-51-7	100mg	Neat
2674.15-50-IO	3,3',5,5'-Tetrabromobisphenol A (TBBPA)	543.88	79-94-7	50µg/mL	1mL Isooctane
2675.17-50-IO	3,3',5,5'-Tetrabromobisphenol A dimethyl ether (TBBPA-BME)	571.93	37853-61-5	50µg/mL	1mL Isooctane
8772.19-50-IO	3,3',5,5'-Tetrabromobisphenol A bis(2-hydroxyethyl) ether (TBBPA-BHEE)	631.98	4162-45-2	50µg/mL	1mL Isooctane
8887.21-50-T	3,3',5,5'-Tetrabromobisphenol A diallyl ether (TBBPA-BAE)	624.00	25327-89-3	50µg/mL	1mL Toluene
8757.14-50-T	1,2-Bis(2,4,6-tribromophenoxy)ethane (BTBPE)	687.64	37853-59-1	50µg/mL	1mL Toluene
8771.21-50-IO	3,3',5,5'-Tetrabromobisphenol A bis(2,3-dibromopropyl) ether (TBBPA-BDBPE)	943.61	21850-44-2	50µg/mL	1mL Isooctane
8884.18-10MG	Ethylene bis(tetrabromophthalamide) (EBTEBPI)	951.47	32588-76-4	10mg	Neat
10451.18-100MG	Octabromobisphenol S (TBBPS-BDBPE)	965.60	42757-55-1	100mg	Neat
2670.14-50-CB	Decabromodiphenylethane (DBDPE)	971.23	84852-53-9	50µg/mL	1mL Chlorobenzene
1812.18-50-CY	Tetradecabromo-1,4-diphenoxybenzene (PeBPOBDE208)	1366.86	58965-66-5	50µg/mL	1mL Cyclohexane
10081.13-50-T	Dechlorane 604 Component A (HCTBPH)	692.5	34571-16-9	50µg/mL	1mL Toluene
1893.12-K-T	1,2,5,6,9,10-Hexabromocyclododecane (HBCDD)	641.70	3194-55-6	1000µg/mL	1mL Toluene
2671.5-50-IP	Dibromoneopentylglycol	261.94	3296-90-0	50µg/mL	1mL Isopropanol
8751.21-50-T	2,2-Bis[3,5-dibromo-4-(2,3-dibromopropoxy)phenyl]propane	943.62	21850-44-2	50µg/mL	1mL Toluene
8751.21-K-T	2,2-Bis[3,5-dibromo-4-(2,3-dibromopropoxy)phenyl]propane	943.62	21850-44-2	1000µg/mL	1mL Toluene
8897.3-100MG	2-Bromo-2-nitro-1,3-propanediol	199.9	52-51-7	100mg	Neat
8898.2-100MG	2,2-Dibromo-2-cyano-acetamide	241.9	10222-01-2	100mg	Neat
1894.6-50-IO	1,2,3,4,5,6-Hexabromocyclohexane	557.54	1837-91-8	50µg/mL	1mL Isooctane
10400.12-100MG	1,3,5,7,9,11-Hexabromocyclododecane	641.70	25637-99-4	100mg	Neat
10457	4,4'-Sulfonylbis(2,6-dibromophenol)	N/A	544-95-5	Enquire	Enquire
10450.8-10MG	Tetrabromophthalic acid	481.72	13810-83-8	10mg	Neat
10450.8-100MG	Tetrabromophthalic acid	481.72	13810-83-8	100mg	Neat
10450.8-250MG	Tetrabromophthalic acid	481.72	13810-83-8	250mg	Neat
2676.8-10MG	Tetrabromophthalic anhydride	463.70	632-79-1	10mg	Neat
2676.8-100MG	Tetrabromophthalic anhydride	463.70	632-79-1	100mg	Neat
2676.8-250MG	Tetrabromophthalic anhydride	463.70	632-79-1	250mg	Neat
8764.6-50-IO	Bis(2,3-dibromopropyl)phosphate, techn.	497.74	5412-25-9	50µg/mL	1mL Isooctane
8764.6-10MG	Bis(2,3-dibromopropyl)phosphate, techn.	497.74	5412-25-9	10mg	Neat
10108.6-10MG	Bis(2,3-dibromopropyl)phosphate	497.74	5412-25-9	10mg	Neat
10108.6-50-IO	Bis(2,3-dibromopropyl)phosphate	497.74	5412-25-9	50µg/mL	1mL Isooctane
8768.0-1G	2,4,6-Tribromophenylterminated tetrabromobisphenol-A carbonate oligomer	N/A	71342-77-3	1g	Neat
10458.30-50-ME	Tetraphenylrecorcinol bis(diphenylphosphate), 99% (LC)	574.48	57583-54-7	50µg/mL	1mL Methanol
10458.30-10MG	Tetraphenylrecorcinol bis(diphenylphosphate), 99% (LC)	574.48	57583-54-7	10mg	Neat
10459.42-50-ME	Tetraphenylrecorcinol bis(diphenylphosphate) Trimer, 99% (LC)	822.62	N/A	50µg/mL	1mL Methanol
10459.42-10MG	Tetraphenylrecorcinol bis(diphenylphosphate) Trimer, 99% (LC)	822.62	N/A	10mg	Neat
8586.9-100MG	Tris(2,3-dibromopropyl)phosphate, tech.	697.61	126-72-7	100mg	Neat
8586.9-1G	Tris(2,3-dibromopropyl)phosphate, tech.	697.61	126-72-7	1g	Neat
10107.9-10MG	Tris(2,3-dibromopropyl)phosphate	697.61	126-72-7	10mg	Neat
10107.9-50-ME	Tris(2,3-dibromopropyl)phosphate	697.61	126-72-7	50µg/mL	1mL Methanol

Chlorinated Fire Retardants (CFRs)

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
9427.5-100-IO	Hexachlorocyclopentadiene (HCCPD)	N/A	77-47-4	100µg/mL	1mL Isooctane
9427.5-100MG	Hexachlorocyclopentadiene (HCCPD)	N/A	77-47-4	100mg	Neat
3457.10-100	Mirex (MIREX)	545.55	2385-85-5	100µg/mL	1mL Cyclohexane or Acetonitrile
8770.18-50-T	Dechlorane plus (DDC-CO)	653.72	13560-89-9	50µg/mL	1mL Toluene
8774.9-10MG	Tris(2-chloropropyl)phosphate (TCEP)	327.57	6145-73-9	10mg	Neat
8775.9-K-ME	Tris(2,3-dichloropropyl)phosphate (TDCPP)	430.90	78-43-3	1000µg/mL	1mL Methanol
8775.9-K-ME	Tris(2,3-dichloropropyl)phosphate (TDCPP)	430.90	78-43-3	1000µg/mL	1mL Methanol
8457.9-1G	Tris(monochloropropyl)phosphate, isomer mixture	327.57	26248-87-3	1g	Neat
8436.6-1G	Tris(2-chloroethyl)phosphate	285.48	115-96-8	1g	Neat
2071.7-K-IP	4-Chloro-3-methylphenol	142.59	59-50-7	1000µg/mL	1mL Isopropanol

Phosphorous Containing Fire Retardants (PFRs)

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
1400.3-K-IO	Trimethylphosphate (TMP)	140.08	512-56-1	1000µg/mL	1mL Isooctane
8026.6-K-IO	Triethylphosphate (TEP)	182.16	78-40-0	1000µg/mL	1mL Isooctane
3966.12-K-IO	Triisobutylphosphate (TIBP)	266.32	126-71-6	1000µg/mL	1mL Isooctane
8027.9-K-IO	Tri-n-propylphosphate (TPP)	182.16	513-08-6	1000µg/mL	1mL Isooctane
1399.12-K-IO	Tri-n-butylphosphate (TNBP)	266.32	126-73-8	1000µg/mL	1mL Isooctane
9496.18-1G	Tris(2-butoxyethyl)phosphate (TBOEP)	398.47	78-51-3	1g	Neat
9489.24-K-ME	Tris(2-ethylhexyl)phosphate (TEHP)	434.64	78-42-2	1000µg/mL	1mL Methanol
8436.6-1G	Tris(2-chloroethyl)phosphate (TCEP)	285.48	115-96-8	1g	Neat
8457.9-1G	Tris(monochloropropyl)phosphate, isomer mixture (TCIPP)	327.57	26248-87-3	1g	Neat
2135.21-K-IO	Tri-o-tolylphosphate	368.37	78-30-8	1000µg/mL	1mL Isooctane
8775.9-K-ME	Tris(2,3-dichloropropyl)phosphate (TDCPP)	430.90	78-43-3	1000µg/mL	1mL Methanol
8775.9-K-ME	Tris(2,3-dichloropropyl)phosphate (TDCPP)	430.90	78-43-3	1000µg/mL	1mL Methanol
8505.9-1G	Tris(1,3-dichloro-2-propyl)phosphate (TDCIPP)	430.90	13674-87-8	1g	Neat
8586.9-100MG	Tris(2,3-dibromopropyl)phosphate, techn. (TDBPP)	697.61	126-72-7	100mg	Neat
8586.9-1G	Tris(2,3-dibromopropyl)phosphate, techn. (TDBPP)	697.61	126-72-7	1g	Neat
10107.9-10MG	Tris(2,3-dibromopropyl)phosphate (TDBPP)	697.61	126-72-7	10mg	Neat
10107.9-50-ME	Tris(2,3-dibromopropyl)phosphate (TDBPP)	697.61	126-72-7	50µg/mL	1mL Methanol
10110.12-50-IO	9,10-Dihydro-9-oxa-10-phosphaphenanthrene-10-oxide (DOPO)	216.17	35948-25-5	50µg/mL	1mL Isooctane
10110.12-10MG	9,10-Dihydro-9-oxa-10-phosphaphenanthrene-10-oxide (DOPO)	216.17	35948-25-5	10mg	Neat
8738.20-K-IO	Ditolylphenylphosphate - Mixture of o-,m-,p-tolyl isomers	N/A	N/A	1000µg/mL	1mL Isooctane
2138.18-K-IO	Triphenylphosphate (TPHP)	326.29	115-86-6	1000µg/mL	1mL Isooctane
2137.21-K-IO	Tritolylphosphate (isomer mixture) (TMPP)	368.37	1330-78-5	1000µg/mL	1mL Isooctane
NEW	Recorcinol bis(diphenyl)phosphate (PBDPP)	N/A	N/A	Enquire	Enquire
10109.30-10MG	Tetraphenylrecorcinol bis(diphenylphosphate), techn.	574.48	57583-54-7	10mg	Neat
10458.30-50-ME	Tetraphenylrecorcinol bis(diphenylphosphate), 99% (LC)	574.48	57583-54-7	50µg/mL	1mL Methanol
10458.30-10MG	Tetraphenylrecorcinol bis(diphenylphosphate), 99% (LC)	574.48	57583-54-7	10mg	Neat
10109.30-50-ME	Tetraphenylrecorcinol bis(diphenylphosphate), techn.	574.48	57583-54-7	50µg/mL	1mL Methanol
10459.42-50-ME	Tetraphenylrecorcinol bis(diphenylphosphate) TRIMER, 99% (LC)	822.62	NA	50µg/mL	1mL Methanol
10459.42-10MG	Tetraphenylrecorcinol bis(diphenylphosphate) TRIMER, 99% (LC)	822.62	NA	10mg	Neat
10084.39-50-ME	Bisphenol A bis(diphenyl)phosphate (BPA-BDPP)	N/A	5945-33-5	50µg/mL	1mL Methanol
9561.16-K-IO	Butyldiphenylphosphate	306.30	2752-95-6	1000µg/mL	1mL Isooctane
8764.6-50-IO	Bis(2,3-dibromopropyl)phosphate, techn.	497.74	5412-25-9	50µg/mL	1mL Isooctane
8764.6-10MG	Bis(2,3-dibromopropyl)phosphate, techn.	497.74	5412-25-9	10mg	Neat
3968.6-10MG	1,1,1-Trimethylolpropanephosphate	178.12	1005-93-2	10mg	Neat
3968.6-25MG	1,1,1-Trimethylolpropanephosphate	178.12	1005-93-2	25mg	Neat
3968.6-100MG	1,1,1-Trimethylolpropanephosphate	178.12	1005-93-2	100mg	Neat
9490.20-1G	2-Ethylhexyldiphenylphosphate	N/A	1241-94-7	1g	Neat
8756.0-100MG	Bisphenol A bis(diphenyl)phosphate, Rx product of Phosphoric trichloride, biphenol A and phenol	N/A	181028-79-5	100mg	Neat
10279.24-100-IO	Trixylylphosphate, purified Ion <i>m/z</i> 410	410.	25155-23-1	100µg/mL	1mL Isooctane
9562.14-K-IO	Dibutylphenylphosphate	286.30	2528-36-1	1000µg/mL	1mL Isooctane
3967.19-K-IO	Diphenyltolylphosphate - Mixture of o-,m-,p-tolyl isomers	N/A	26444-49-5	1000µg/mL	1mL Isooctane
10108.6-10MG	Bis(2,3-dibromopropyl)phosphate	497.74	5412-25-9	10mg	Neat
10108.6-50-IO	Bis(2,3-dibromopropyl)phosphate	497.74	5412-25-9	50µg/mL	1mL Isooctane
2134.21-K-IO	Tri-m-tolylphosphate	368.37	563-04-2	1000µg/mL	1mL Isooctane
8798.0-1G	Ammonium polyphosphate (Phase II n>1000) (Reflam APP)	N/A	68333-79-9	1g	Neat
8769.0-1G	Polyphosphoric acids ammonium salt	N/A	68333-79-9	1g	Neat
8777.9-1G	Isopropylated trisphenyl phosphate (Phenol, isopropylated, phosphate)	N/A	68937-41-7	1g	Neat
8768.0-1G	2,4,6-Tribromophenylterminated tetrabromobisphenol-A carbonate oligomer	N/A	71342-77-3	1g	Neat
2135.21-K-IO	Tri-o-tolylphosphate	368.37	78-30-8	1000µg/mL	1mL Isooctane
2136.21-K-IO	Tri-p-tolylphosphate	368.37	78-32-0	1000µg/mL	1mL Isooctane
8767-1G	Phenoxyterminated carbonate oligomer of tetrabromobisphenol A	N/A	94334-64-2	1g	Neat
8738.20-K-IO	Ditolylphenylphosphate - Mixture of o-,m-,p-tolyl isomers	N/A	N/A	1000µg/mL	1mL Isooctane
8739.19-100MG	Phenyl/Tolyl phosphates - Mixture of analogues - with detailed CoA	N/A	N/A	100mg	Neat

Melamine (Triazine)-Based Fire Retardants

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
8754.3-1G	Melamine cyanurate (Reflam MCA)	N/A	N/A	1g	Neat
8755.0-1G	Melamine micronized (Reflam MA)	N/A	N/A	1g	Neat
8752.0-1G	Melamine phosphate (Reflam MP)	N/A	N/A	1g	Neat
8753.0-1G	Melamine polyphosphate (Reflam MPP)	N/A	N/A	1g	Neat

Deuterated Trialkyl/Triaryl Phosphates

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
9493.3-100-IO	Trimethylphosphate-d9	N/A	32176-12-8	100µg/mL	1mL Isooctane
9492.6-100-IO	Triethylphosphate-d15	N/A	135942-11-9	100µg/mL	1mL Isooctane
9495.9-100-IO	Tri-n-propylphosphate-d21	N/A	N/A	100µg/mL	1mL Isooctane
9491.12-100-IO	Tri-n-butylphosphate-d27	N/A	61196-26-7	100µg/mL	1mL Isooctane
9491.12-K-IO	Tri-n-butylphosphate-d27	N/A	61196-26-7	1000µg/mL	1mL Isooctane
9491.12-10MG	Tri-n-butylphosphate-d27	N/A	61196-26-7	10mg	Neat
9494.18-100-IO	Triphenylphosphate-d15	341.38	1173020-30-8	100µg/mL	1mL Isooctane
9494.18-K-IO	Triphenylphosphate-d15	341.38	1173020-30-8	1000µg/mL	1mL Isooctane
9494.18-10MG	Triphenylphosphate-d15	341.38	1173020-30-8	10mg	Neat

Polybromodiphenyl ethers (PBDEs)

Native PBDEs

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
8948.12-100-IO	Phenyl ether (Diphenyl ether)	170.21	101-84-8	100µg/mL	1mL Isooctane
9124.12-50-IO	2-Bromodiphenyl ether (BDE1)	249.11	7025-06-1	50µg/mL	1mL Isooctane
8747.12-50-IO	3-Bromodiphenyl ether (BDE2)	249.11	6876-00-2	50µg/mL	1mL Isooctane
8748.12-50-IO	4-Bromodiphenyl ether (BDE3)	249.11	101-55-3	50µg/mL	1mL Isooctane
9246.12-50-IO	2,4-Dibromodiphenyl ether (BDE7)	327.98	171977-44-9	50µg/mL	1mL Isooctane
8749.12-50-IO	3,4'-Dibromodiphenyl ether (BDE13)	327.98	83694-71-7	50µg/mL	1mL Isooctane
8750.12-50-IO	4,4'-Dibromodiphenyl ether (BDE15)	327.98	2050-47-7	50µg/mL	1mL Isooctane
8742.12-50-IO	2,2',4-Tribromodiphenyl ether (BDE17)	406.90	147217-75-2	50µg/mL	1mL Isooctane
1960.12-50-IO	2,3',4-Tribromodiphenyl ether (BDE25)	406.90	147217-77-4	50µg/mL	1mL Isooctane
1961.12-50-IO	2,4,4'-Tribromodiphenyl ether (BDE28)	406.90	41318-75-6	50µg/mL	1mL Isooctane
10267.12-50-IO	3,3',4-Tribromodiphenyl ether (BDE33)	406.90	147217-78-5	50µg/mL	1mL Isooctane
2116.12-50-IO	3,3',4-Tribromodiphenyl ether (BDE35)	406.90	147217-80-9	50µg/mL	1mL Isooctane
1962.12-50-IO	2,2',4,4'-Tetrabromodiphenyl ether (BDE47)	485.80	5436-43-1	50µg/mL	1mL Isooctane
1962.12-50-IOx10	2,2',4,4'-Tetrabromodiphenyl ether (BDE47)	485.80	5436-43-1	50µg/mL	1mL Isooctane
1962.12-50-IOx20	2,2',4,4'-Tetrabromodiphenyl ether (BDE47)	485.80	5436-43-1	50µg/mL	1mL Isooctane
1963.12-50-IO	2,2',4,5'-Tetrabromodiphenyl ether (BDE49)	485.80	243982-82-3	50µg/mL	1mL Isooctane
1964.12-50-IO	2,3',4,4'-Tetrabromodiphenyl ether (BDE66)	485.80	189084-61-5	50µg/mL	1mL Isooctane
1965.12-50-IO	2,3',4',6-Tetrabromodiphenyl ether (BDE71)	485.80	189084-62-6	50µg/mL	1mL Isooctane
1990.12-50-IO	2,4,4',6-Tetrabromodiphenyl ether (BDE75)	485.80	189084-63-7	50µg/mL	1mL Isooctane
1991.12-50-IO	3,3',4,4'-Tetrabromodiphenyl ether (BDE77)	485.80	93703-48-1	50µg/mL	1mL Isooctane
1966.12-50-IO	2,2',3,4,4'-Pentabromodiphenyl ether (BDE85)	564.69	182346-21-0	50µg/mL	1mL Isooctane
1967.12-50-IO	2,2',4,4',5-Pentabromodiphenyl ether (BDE99)	564.69	60348-60-9	50µg/mL	1mL Isooctane
1968.12-50-IO	2,2',4,4',6-Pentabromodiphenyl ether (BDE100)	564.69	189084-64-8	50µg/mL	1mL Isooctane
2867.12-50-IO	2,3',4,4',5-Pentachlorobiphenyl ether (BDE118)	564.69	446254-80-4	50µg/mL	1mL Isooctane
1969.12-50-IO	2,3',4,4',6-Pentabromodiphenyl ether (BDE119)	564.69	189084-66-0	50µg/mL	1mL Isooctane
1970.12-50-IO	2,2',3,4,4',5-Hexabromodiphenyl ether (BDE138)	643.59	182677-30-1	50µg/mL	1mL Isooctane
1971.12-50-IO	2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE153)	643.59	68631-49-2	50µg/mL	1mL Isooctane
1972.12-50-IO	2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE154)	643.59	207122-15-4	50µg/mL	1mL Isooctane
2652.12-50-IO	2,2',3,4,4',5,6-Heptabromodiphenyl ether (BDE181)	722.49	189084-67-1	50µg/mL	1mL Isooctane
1973.12-50-IO	2,2',3,4,4',5,6-Heptabromodiphenyl ether (BDE183)	722.49	207122-16-5	50µg/mL	1mL Isooctane
1992.12-50-IO	2,3,3',4,4',5,6-Heptabromodiphenyl ether (BDE190)	722.49	189084-68-2	50µg/mL	1mL Isooctane
2486.12-50-IO	2,2',3,3',4,4',5,6-Octabromodiphenyl ether (BDE195)	801.38	446255-38-5	50µg/mL	1mL Isooctane
9135.12-50-IO	2,2',3,3',4,4',5,6'-Octabromodiphenyl ether (BDE196)	801.38	446255-39-6	50µg/mL	1mL Isooctane
1975.12-50-IO	2,2',3,4,4',5,5',6-Octabromodiphenyl ether (BDE203)	801.38	337513-72-1	50µg/mL	1mL Isooctane
2647.12-50-IO	2,3,3',4,4',5,5',6-Octabromodiphenyl ether (BDE205)	801.38	446255-56-7	50µg/mL	1mL Isooctane
10298.12-10MG	Octabromodiphenyl ether, techn. (BDE Octa)	801.38	32536-52-0	10mg	Neat
9033.12-50-IO	2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether (BDE206)	880.27	63387-28-0	50µg/mL	1mL Isooctane
9034.12-50-IO	2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether (BDE207)	880.27	437701-79-6	50µg/mL	1mL Isooctane
9035.12-50-IO	2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether (BDE208)	880.27	437701-78-5	50µg/mL	1mL Isooctane
1811.12-50-T	Decabromodiphenyl ether (BDE209)	959.17	1163-19-5	50µg/mL	1mL Toluene
1811.12-5MG	Decabromodiphenyl ether (BDE209)	959.17	1163-19-5	5mg	Neat

F-PBDE® Internal Standards

Mono- and difluorinated PBDEs are closely similar to the parent PBDEs in terms of physico-chemical properties, and are ideal internal or surrogate standards for GC-MS, GC-ECD, GC-FID and two dimensional GC.

The F-PBDE® internal standards offered by Chiron have several advantages over the more traditionally used 13C isotopes and unlabelled internal standards:

- ✓ Cost-efficient. Much cheaper than the 13C isotopes. Useful with electron impact ionization and negative ion chemical ionization
- ✓ Gives one single, pure isotope (F has only one isotope)
- ✓ Can be used with GC-ECD detection, 13C cannot since they coelute with the native
- ✓ Do not discriminate from the native upon work-up
- ✓ "Designer retention times" (*ortho*-, *meta*-, *para*-F) possible for optimal elution rate

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
1604.12-50-IO	2-Fluorodiphenyl ether (2-F-BDE0)	188.20	124330-20-7	50µg/mL	1mL Isooctane
1605.12-50-IO	4-Fluorodiphenyl ether (4-F-BDE0)	188.20	330-84-7	50µg/mL	1mL Isooctane
2178.12-K-IO	2,4'-Difluorodiphenyl ether (2,4'-F2-BDE0)	206.19	863315-03-1	1000µg/mL	1mL Isooctane
3620.12-K-IO	3,3'-Difluorodiphenyl ether (3,3'-F2-BDE0)	206.19	1800-48-2	1000µg/mL	1mL Isooctane
1608.12-50-IO	3-Bromo-4'-fluorodiphenyl ether (3-F-BDE2)	267.10	50904-38-6	50µg/mL	1mL Isooctane
2258.12-50-IO	3'-Fluoro-2,4-dibromodiphenyl ether (3'-F-BDE7)	346.00	N/A	50µg/mL	1mL Isooctane
2257.12-50-IO	3'-Fluoro-3,4-dibromodiphenyl ether (3'-F-PBDE12)	346.00	N/A	50µg/mL	1mL Isooctane
1926.12-50-IO	4'-Fluoro-2,3',4-tribromodiphenyl ether (4'-F-BDE25)	424.89	863314-85-6	50µg/mL	1mL Isooctane
1927.12-50-IO	4'-Fluoro-2,3',6-tribromodiphenyl ether (4'-F-BDE27)	424.89	863314-86-7	50µg/mL	1mL Isooctane
2160.12-50-T	2'-Fluoro-2,4,4'-tribromodiphenyl ether (2'-F-BDE28)	424.89	876310-22-4	50µg/mL	1mL Toluene
2160.12-50-IO	2'-Fluoro-2,4,4'-tribromodiphenyl ether (2'-F-BDE28)	424.89	876310-22-4	50µg/mL	1mL Isooctane
2161.12-50-T	6-Fluoro-2,2',4,4'-tetrabromodiphenyl ether (6-F-BDE47)	503.79	876310-23-4	50µg/mL	1mL Toluene
2161.12-50-IO	6-Fluoro-2,2',4,4'-tetrabromodiphenyl ether (6-F-BDE47)	503.79	876310-23-4	50µg/mL	1mL Isooctane
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)	521.78	886748-32-9	50µg/mL	1mL Toluene

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
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-BDE47)	521.78	886748-32-9	50µg/mL	1mL Isooctane
2162.12-50-IO	6-Fluoro-2,3',4,4'-tetrabromodiphenyl ether (6-F-BDE66)	503.79	87310-24-6	50µg/mL	1mL Isooctane
1928.12-50-IO	4'-Fluoro-2,3',4,6-tetrabromodiphenyl ether (4'-F-BDE69)	503.79	863314-87-8	50µg/mL	1mL Isooctane
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-BDE85)	600.67	886748-33-0	50µg/mL	1mL Isooctane
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-BDE99)	600.67	886748-34-1	50µg/mL	1mL Isooctane
2163.12-50-T	3-Fluoro-2,2',4,4',6-pentabromodiphenyl ether (3-F-BDE100)	582.68	887401-80-1	50µg/mL	1mL Toluene
2163.12-50-IO	3-Fluoro-2,2',4,4',6-pentabromodiphenyl ether (3-F-BDE100)	582.68	887401-80-1	50µg/mL	1mL Isooctane
2164.12-50-IO	3-Fluoro-2,3',4,4',6-pentabromodiphenyl ether (3-F-BDE119)	582.68	876310-26-8	50µg/mL	1mL Isooctane
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-BDE119)	600.67	886748-35-2	50µg/mL	1mL Isooctane
1929.12-50-T	4'-Fluoro-2,3,3',4,5,6-hexabromodiphenyl ether (4'-F-BDE160)	661.58	863314-88-9	50µg/mL	1mL Toluene
2166.12-50-T	3-Fluoro-2,2',4,4',5,5',6-heptabromodiphenyl ether (3-F-BDE183)	740.48	876310-28-0	50µg/mL	1mL Toluene
2167.12-50-T	4',6-Difluoro-2,2',3,3',4,5,5',6'-octabromodiphenyl ether (4',6-F2-BDE199)	837.36	863314-96-9	50µg/mL	1mL Toluene
2168.12-50-IO	4'-Fluoro-2,2',3,3',4,5,5',6,6'-nonabromodiphenyl ether (4'-F-BDE208)	898.27	876310-29-1	50µg/mL	1mL Isooctane
2168.12-50-T	4'-Fluoro-2,2',3,3',4,5,5',6,6'-nonabromodiphenyl ether (4'-F-BDE208)	898.27	876310-29-1	50µg/mL	1mL Toluene

Polybromobiphenyls (PBBs)

Native PBBs (Polybromobiphenyls)

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
3089.12-50-IO	2-Bromobiphenyl (BB1)	233.10	2052-07-5	50µg/mL	1mL Isooctane
3090.12-50-IO	3-Bromobiphenyl (BB2)	233.10	2113-57-7	50µg/mL	1mL Isooctane
3091.12-50-IO	4-Bromobiphenyl (BB3)	233.10	92-66-0	50µg/mL	1mL Isooctane
3092.12-50-IO	2,2'-Dibromobiphenyl (BB4)	312.00	13029-09-9	50µg/mL	1mL Isooctane
3093.12-50-IO	2,4-Dibromobiphenyl (BB7)	312.00	53592-10-2	50µg/mL	1mL Isooctane
3094.12-50-IO	2,5-Dibromobiphenyl (BB9)	312.00	57422-77-2	50µg/mL	1mL Isooctane
3095.12-50-IO	2,6-Dibromobiphenyl (BB10)	312.00	59080-32-9	50µg/mL	1mL Isooctane
3096.12-50-IO	4,4'-Dibromobiphenyl (BB15)	312.00	92-86-4	50µg/mL	1mL Isooctane
3097.12-50-IO	2,2',5-Tribromobiphenyl (BB18)	390.90	59080-34-1	50µg/mL	1mL Isooctane
3098.12-50-IO	2,3',5-Tribromobiphenyl (BB26)	390.90	59080-35-2	50µg/mL	1mL Isooctane
2664.12-50-IO	2,4,5-Tribromobiphenyl (BB29)	390.90	115245-07-3	50µg/mL	1mL Isooctane
2744.12-35-IO	2,4,6-Tribromobiphenyl (BB30)	390.90	59080-33-0	35µg/mL	1mL Isooctane
2744.12-50-IO	2,4,6-Tribromobiphenyl (BB30)	390.90	59080-33-0	50µg/mL	1mL Isooctane
3099.12-50-IO	2,4',5-Tribromobiphenyl (BB31)	390.90	59080-36-3	50µg/mL	1mL Isooctane
3101.12-50-IO	3,4,5-Tribromobiphenyl (BB38)	390.90	115245-08-4	50µg/mL	1mL Isooctane
3102.12-50-IO	2,2',4,5'-Tetrabromobiphenyl (BB49)	469.80	60044-24-8	50µg/mL	1mL Isooctane
3103.12-50-IO	2,2',5,5'-Tetrabromobiphenyl (BB52)	469.80	59080-37-4	50µg/mL	1mL Isooctane
3104.12-50-IO	2,2',5,6'-Tetrabromobiphenyl (BB56)	469.80	60044-25-9	50µg/mL	1mL Isooctane
10266.12-50-IO	3,3',4,4'-Tetrabromobiphenyl (BB77)	469.80	77102-82-0	50µg/mL	1mL Isooctane
3105.12-50-IO	3,3',5,5'-Tetrabromobiphenyl (BB80)	469.80	16400-50-3	50µg/mL	1mL Isooctane
3106.12-50-IO	2,2',4,5,5'-Pentabromobiphenyl (BB101)	548.70	67888-96-4	50µg/mL	1mL Isooctane
3107.12-50-IO	2,2',4,5',6-Pentabromobiphenyl (BB103)	548.70	59080-39-6	50µg/mL	1mL Isooctane
10123.12-50-IO	3,3',4,5,5'-Pentabromobiphenyl (BB126)	548.70	81902-33-2	50µg/mL	1mL Isooctane
3108.12-50-HX	2,2',4,4',5,5'-Hexabromobiphenyl (BB153)	627.60	59080-40-9	50µg/mL	Hexane
3110.12-50-IO	2,2',4,4',6,6'-Hexabromobiphenyl (BB155)	627.60	59261-08-4	50µg/mL	1mL Isooctane
3109.12-10-CY	3,3',4,4',5,5'-Hexabromobiphenyl (BB169)	627.60	60044-26-0	10µg/mL	1mL Cyclohexane
9534.12-50-IO	2,3,3',4,4',5,5'-Heptabromobiphenyl (BB189)	706.48	88700-06-5	50µg/mL	1mL Isooctane
9716.12-50-IO	2,2',3,3',4,4',5,5'-Octabromobiphenyl (BB194)	785.38	N/A	50µg/mL	1mL Isooctane
9535.12-50-IO	2,2',3,4,4',5,5',6-Octabromobiphenyl (BB203)	785.38	N/A	50µg/mL	1mL Isooctane
9715.12-50-IO	2,3,3',4,4',5,5',6-Octabromobiphenyl (BB205)	785.38	915039-12-2	50µg/mL	1mL Isooctane
2679.12-50-IO	Octabromobiphenyl, techn. (hepta+octa+nona) (BB Octa)	785.38	27858-07-7	50µg/mL	1mL Isooctane
9536.12-50-IO	2,2',3,3',4,4',5,5',6-Nonabromobiphenyl (BB206)	N/A	N/A	50µg/mL	1mL Isooctane
NEW	2,2',3,3',4,4',5,6,6'-Nonabromobiphenyl (BB207)	N/A	N/A	Enquire	Enquire
NEW	2,2',3,3',4,5,5',6,6'-Nonabromobiphenyl (BB208)	N/A	N/A	Enquire	Enquire
2677.12-50-IO	Decabromobiphenyl (BB209)	943.17	13654-09-6	50µg/mL	1mL Isooctane
2677.12-100MG	Decabromobiphenyl (BB209)	943.17	13654-09-6	100mg	Neat

Fluorinated bromobiphenyl internal standards (F-PBBs)

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
2891.12-100-IO	4,4'-Dibromooctafluorobiphenyl (F8-BB15)	455.93	10386-84-2	100µg/mL	1mL Isooctane
2891.12-2K-DC	4,4'-Dibromooctafluorobiphenyl (F8-BB15)	455.93	10386-84-2	2000µg/mL	Dichloromethane / Methylene chloride

Bromophenols

Native bromophenols

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
3822.6-K-IP	2-Bromophenol	173.01	95-56-7	1000µg/mL	1mL Isopropanol
2383.6-K-IP	4-Bromophenol	173.01	106-41-2	1000µg/mL	1mL Isopropanol
3721.6-K-IP	2,3-Dibromophenol	251.91	57383-80-9	1000µg/mL	1mL Isopropanol
2061.6-K-IP	2,4-Dibromophenol (DBP)	251.91	615-58-7	1000µg/mL	1mL Isopropanol
2470.6-K-IP	2,5-Dibromophenol	251.91	28165-52-8	1000µg/mL	1mL Isopropanol
2472.6-K-IP	2,6-Dibromophenol	251.91	608-33-3	1000µg/mL	1mL Isopropanol
8595.6-K-IP	3,4-Dibromophenol	251.91	615-56-5	1000µg/mL	1mL Isopropanol
2507.6-K-IP	2,3,4-Tribromophenol	330.80	138507-65-0	1000µg/mL	1mL Isopropanol
2471.6-K-IP	2,3,6-Tribromophenol	330.80	28165-57-3	1000µg/mL	1mL Isopropanol
2508.6-K-IP	2,4,5-Tribromophenol	330.80	14401-61-7	1000µg/mL	1mL Isopropanol
2060.6-K-IP	2,4,6-Tribromophenol (TBP)	330.80	118-79-6	1000µg/mL	1mL Isopropanol
2060.6-5K-5IP	2,4,6-Tribromophenol	330.80	118-79-6	51000µg/mL	1mL Isopropanol
2509.6-K-IP	2,3,4,6-Tetrabromophenol	409.70	14400-94-3	1000µg/mL	1mL Isopropanol
2509.6-10MG	2,3,4,6-Tetrabromophenol	409.70	14400-94-3	10mg	Neat
2672.6-50-IO	Pentabromophenol	488.59	608-71-9	50µg/mL	1mL Isooctane
9703.6-10MG	3-Fluoro-2,4,6-tribromophenol			10mg	Neat

Deuterated Bromophenols

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
2427.6-K-IP	4-Bromophenol-2,3,5,6-d4	177.03	152404-44-9	1000µg/mL	1mL Isopropanol
2428.6	2,4-Dibromophenol-3,5,6-d3	254.92	225386-58-3	Enquire	Enquire
2430.6-K-IP	2,4,6-Tribromophenol-3,5-d2	332.81	93951-78-1	1000µg/mL	1mL Isopropanol

Polychlorinated *n* -alkanes (PCA's)

C8-9 PCAs

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
1664.8-K-IO	1,2-Dichlorooctane	183.12	21948-46-9	1000µg/mL	1mL Isooctane
1660.8-K-IO	1,1,1,3-Tetrachlorooctane	252.01	18088-13-6	1000µg/mL	1mL Isooctane
1672.8-K-IO	1,2,7,8-Tetrachlorooctane	252.01	865306-19-0	1000µg/mL	1mL Isooctane
1657.8	1,1,1,3,7,8-Hexachlorooctane	320.90	N/A	Enquire	Enquire
1656.8-K-IO	1,1,1,3,6,8,8-Octachlorooctane	389.79	61856-19-7	1000µg/mL	1mL Isooctane
1665.9-K-IO	1,2-Dichlorononane	197.15	56375-96-3	1000µg/mL	1mL Isooctane
1661.9-K-IO	1,1,1,3-Tetrachlorononane	266.04	1070-27-5	1000µg/mL	1mL Isooctane
1673.9-K-IO	1,2,8,9-Tetrachlorononane	266.04	865306-20-3	1000µg/mL	1mL Isooctane
1658.9-K-IO	1,1,1,3,8,9-Hexachlorononane	334.93	865306-21-4	1000µg/mL	1mL Isooctane
1655.9	1,1,1,3,7,9,9,9-Octachlorononane	403.82	13389-26-9	Enquire	Enquire

C10-13 PCAs (SCCPs)

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
1666.10-100-IO	1,2-Dichlorodecane	211.18	34619-32-4	100µg/mL	1mL Isooctane
1662.10-100-IO	1,1,1,3-Tetrachlorodecane	280.07	51755-60-3	100µg/mL	1mL Isooctane
1671.10-100-IO	1,2,9,10-Tetrachlorodecane	280.07	205646-11-3	100µg/mL	1mL Isooctane
1659.10-100-IO	1,1,1,3,9,10-Hexachlorodecane	348.96	601523-26-6	100µg/mL	1mL Isooctane
1622.10-100-IO	1,1,1,3,8,10,10,10-Octachlorodecane	417.85	601523-23-3	100µg/mL	1mL Isooctane
1667.11-100-IO	1,2-Dichloroundecane	225.20	81246-86-8	100µg/mL	1mL Isooctane
1649.11-100-IO	1,1,1,3-Tetrachloroundecane	294.09	56686-55-6	100µg/mL	1mL Isooctane
1674.11-100-IO	1,2,10,11-Tetrachloroundecane	294.09	210049-49-3	100µg/mL	1mL Isooctane
1650.11-100-IO	1,1,1,3,10,11-Hexachloroundecane	362.98	601523-28-8	100µg/mL	1mL Isooctane
1623.11-100-IO	1,1,1,3,9,11,11,11-Octachloroundecane	431.87	601523-25-5	100µg/mL	1mL Isooctane
1668.12-100-IO	1,2-Dichlorododecane	239.23	75121-23-2	100µg/mL	1mL Isooctane
1663.12-100-IO	1,12-Dichlorododecane	239.23	3922-28-9	100µg/mL	1mL Isooctane
1651.12-100-IO	1,1,1,3-Tetrachlorododecane	308.12	14983-60-9	100µg/mL	1mL Isooctane
1675.12-100-IO	1,2,11,12-Tetrachlorododecane	308.12	210115-98-3	100µg/mL	1mL Isooctane
1652.12-100-IO	1,1,1,3,11,12-Hexachlorododecane	377.01	865306-22-5	100µg/mL	1mL Isooctane
1624.12-100-IO	1,1,1,3,10,12,12,12-Octachlorododecane	445.90	601523-21-1	100µg/mL	1mL Isooctane
1669.13-100-IO	1,2-Dichlorotridecane	253.26	701920-72-1	100µg/mL	1mL Isooctane
1653.13-100-IO	1,1,1,3-Tetrachlorotridecane	322.15	67095-50-5	100µg/mL	1mL Isooctane
1654.13-100-IO	1,1,1,3,12,13-Hexachlorotridecane	391.04	865306-23-6	100µg/mL	1mL Isooctane
1625.13-100-IO	1,1,1,3,11,13,13,13-Octachlorotridecane	459.93	865306-24-7	100µg/mL	1mL Isooctane

C14-17 PCAs (MCCPs)

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
1670.14-K-IO	1,2-Dichlorotetradecane	267.29	701920-83-4	1000µg/mL	1mL Isooctane
1676.14-K-IO	1,1,1,3-Tetrachlorotetradecane	336.18	865306-25-8	1000µg/mL	1mL Isooctane
1677.14-K-IO	1,2,13,14-Tetrachlorotetradecane	336.18	221155-23-3	1000µg/mL	1mL Isooctane
1678.14-K-IO	1,1,1,3,12,14,14,14-Octachlorotetradecane	473.96	865306-26-9	1000µg/mL	1mL Isooctane
8506.15-K-IO	1,1,1,3,14,15-Hexachloropentadecane	N/A	N/A	1000µg/mL	1mL Isooctane
8507.16-K-IO	1,1,1,3,14,16,16,16-Octachlorohexadecane	N/A	N/A	1000µg/mL	1mL Isooctane
8508.17-K-IO	1,1,1,3,15,17,17,17-Octachloroheptadecane	N/A	N/A	1000µg/mL	1mL Isooctane

C18-30 PCAs (LCCPs)

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
2051.18-10K-DC	1-Chlorooctadecane	288.95	3386-33-2	101000µg/mL	Dichloromethane / Methylene chloride
8509.18-K-IO	1,1,1,3,16,18,18,18-Octachlorooctadecane	N/A	N/A	1000µg/mL	1mL Isooctane
8510.19-K-IO	1,1,1,3,17,19,19,19-Octachlorononadecane	N/A	N/A	1000µg/mL	1mL Isooctane
8511.20-K-IO	1,1,1,3,18,20,20,20-Octachloroeicosane	N/A	N/A	1000µg/mL	1mL Isooctane

Polychlorinated n-alkanes (PCAs) Technical mix

Catalogue No.	Description (Abbreviation)	Mol Wt.	Cas No.	Concentration	Presentation
9826.0-K-IO	Chlorinated paraffins (Cl:40%), technical mix	N/A	N/A	1000µg/mL	1mL Isooctane

Reference Materials for ISO Standards and Published Methods

ISO 22032: 2006

Water quality – Determination of selected polybrominated diphenyl ethers in sediments and sewage sludge – Method using extraction and GC/MS

Native ISO 22032 PBDEs

Catalogue No.	Description		IUPAC No.
1962.12-50-IO	2,2',4,4'-Tetrabromodiphenyl ether	Tetrabromo	BDE-47
1967.12-50-IO	2,2',4,4',5-Pentabromodiphenyl ether	Pentabromo	BDE-99
1968.12-50-IO	2,2',4,4',6-Pentabromodiphenyl ether		BDE-100
1971.12-50-IO	2,2',4,4',5,5'-Hexabromodiphenyl ether	Hexabromo	BDE-153
1972.12-50-IO	2,2',4,4',5,6'-Hexabromodiphenyl ether		BDE-154
1973.12-50-IO	2,2',3,4,4',5',6-Heptabromodiphenyl ether	Heptabromo	BDE-183
2647.12-50-IO	2,3,3',4,4',5,5',6-Octabromodiphenyl ether	Octabromo	BDE-205
1811.12-50-IO	Decabromodiphenyl ether	Decabromo	BDE-209
S-4535-10-IO	Multicomponent Stock Solution of 8 Native Substances: ISO 22032 PBDEs, 1mL of 10 µg/mL of each in Isooctane <i>Includes 1962.12-10-IO, 1967.12-10-IO, 1968.12-10-IO, 1971.12-10-IO, 1972.12-10-IO, 1973.12-10-IO, 2647.12-10-IO, 1811.12-10-IO</i>	Multiple components	
S-4388-50-IO	Multicomponent Stock Solution of 8 Native Substances: ISO 22032 PBDEs, 1mL of 50 µg/mL of each in Isooctane <i>Includes 1962.12-10-IO, 1967.12-10-IO, 1968.12-10-IO, 1971.12-10-IO, 1972.12-10-IO, 1973.12-10-IO, 2647.12-10-IO, 1811.12-10-IO</i>	Multiple components	
8573.8-KIT	ISO 22032 PBDE Single Components, Solutions Kit <i>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</i>	KIT	

Single standard solutions are 1mL of 50 µg/mL in isooctane (IO)

Internal Standards (IS) for ISO 22032: F-PBDEs[®]

(Electron impact or chemical ionization)

Catalogue No.	IS for BDE No.	Description		IUPAC No.
2161.12-50-T	47	6-Fluoro-2,2',4,4'-tetrabromodiphenyl ether	Tetrabromo	6-F-BDE-47
2161.12-50-IO				
2506.12-50-T	47	5,5'-Difluoro-2,2',4,4'-tetrabromodiphenyl ether		5,5'-F ₂ -BDE-47
2505.12-50-IO	99	3,6-Difluoro-2,2',4,4',5-pentabromodiphenyl ether	Pentabromo	3,6-F ₂ -BDE-99
2163.12-50-T	100	3-Fluoro-2,2',4,4',6-pentabromodiphenyl ether		3-F-BDE-100
1929.12-50-T	153, 154, 183	4'-Fluoro-2,3,3',4,5,6-hexabromodiphenyl ether	Hexabromo	4'-F-BDE-160
2166.12-50-T	183	3-Fluoro-2,2',3,4,4',5',6-heptabromodiphenyl ether	Heptabromo	3-F-BDE-183
2167.12-50-T	205, 209	4,6'-Difluoro-2,2',3,3',4,5,5',6'-octabromodiphenyl ether	Octabromo	2,4'-F ₂ -BDE-199
2168.12-50-T				
2168.12-50-IO	205, 209	4'-Fluoro-2,2',3,3',4,5,5',6,6'-nonabromodiphenyl ether	Nonabromo	4'-F-BDE-208
8574.8-KIT		ISO 22032 F-PBDE [®] Single Component Solutions <i>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</i>	KIT	

Single standard solutions are 1mL of 50 µg/mL in isooctane (IO) or toluene (T)

Internal Standards (IS) for ISO 22032 PBDEs

(Negative ion chemical ionization)

Catalogue No.	IS for BDE No.	Description		IUPAC No.
1991.12-50-IO	47, 99, 100	3,3',4,4'-Tetrabromodiphenyl ether	Tetrabromo	BDE-77
2652.12-50-IO	153, 154, 183	2,2',3,4,4',5,5'-6-Hexabromodiphenyl ether	Hexabromo	BDE-181

Internal standard solutions are 1mL of 50 µg/mL in isooctane (IO)

EPA Method 1614, 2007

Brominated diphenyl ethers in Water, Soil, Sediments and Tissue by HRGC/HRMS

Native PBDEs for EPA 1614

Most relevant with respect to EPA Method 1614 (BDEs of primary interest as determined at the 4th Annual Workshop on Brominated Flame Retardants in the Environment, 2002)

Catalogue No.	Description		IUPAC No.
1961.12-50-IO	2,4,4'-Tribromodiphenyl ether	Tribromo	BDE-28
1962.12-50-IO	2,2',4,4'-Tetrabromodiphenyl ether	Tetrabromo	BDE-47
1967.12-50-IO	2,2',4,4',5-Pentabromodiphenyl ether	Pentabromo	BDE-99
1968.12-50-IO	2,2',4,4',6-Pentabromodiphenyl ether		BDE-100
1971.12-50-IO	2,2',4,4',5,5'-Hexabromodiphenyl ether	Hexabromo	BDE-153
1972.12-50-IO	2,2',4,4',5,6'-Hexabromodiphenyl ether		BDE-154
1973.12-50-IO	2,2',3,4,4',5',6-Heptabromodiphenyl ether	Heptabromo	BDE-183
1811.12-50-IO	Decabromodiphenyl ether	Decabromo	BDE-209
S-4659-10-CY	Multicomponent Stock Solution of 8 Native Substances; EPA 1614 PBDEs, 1mL of 10 µg/mL of each in Cyclohexane <i>Including 1961.12, 1962.12, 1967.12, 1968.12, 1971.12, 1972.12, 1973.12, 1811.12</i>	Multiple components	
8575.8-KIT	EPA 1614 PBDE Single Component Solutions <i>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</i>	KIT	

Single standard solutions are 1mL of 50 µg/mL in isooctane (IO)

Internal Standards (IS) for EPA 1614 PBDEs

Catalogue No.	IS for BDE No.	Description		IUPAC No.
1608.12-50-IO	3	3-Bromo-4'-fluorodiphenyl ether	Monobromo	4'-F-BDE-2
2258.12-50-IO	15	3'-Fluoro-2,4-dibromodiphenyl ether	Dibromo	3'-F-BDE-7
2257.12-50-IO	15	3'-Fluoro-3,4-dibromodiphenyl ether		3'-F-BDE-12
2160.12-50-T	28	2'-Fluoro-2,4,4'-tribromodiphenyl ether	Tribromo	2'-F-BDE-28
1926.12-50-IO	28	4'-Fluoro-2,3',4-tribromodiphenyl ether		4'-F-BDE-25
1927.12-50-IO	28	4'-Fluoro-2,3',6-tribromodipheyl ether		4'-F-BDE-27
2161.12-50-T	47	6-Fluoro-2,2',4,4'-tetrabromodiphenyl ether	Tetrabromo	6-F-BDE-47
2506.12-50-IO	47	5,5'-Difluoro-2,2',4,4'-tetrabromodiphenyl ether		5,5'-F ₂ -BDE-47
2162.12-50-IO	47	6-Fluoro-2,3',4,4'-tetrabromodiphenyl ether		6-F-BDE-66
1928.12-50-IO	47	4'-Fluoro-2,3',4,6-tetrabromodiphenyl ether	Pentabromo	4'-F-BDE-69
2505.12-50-IO	99	3,6-Difluoro-2,2',4,4',5-pentabromodiphenyl ether		3,6-F ₂ -BDE-99
2163.12-50-T	100	3-Fluoro-2,2',4,4',6-pentabromodiphenyl ether		3-F-BDE-100
2164.12-50-IO	99, 100	3-Fluoro-2,3',4,4',6-pentabromodiphenyl ether		3-F-BDE-119
2504.12-50-IO	99, 100	3,5-Difluoro-2,3',4,4',6-pentabromodiphenyl ether		3,5-F ₂ -BDE-119
2503.12-50-IO	85	5,6-Difluoro-2,2',3,4,4'-pentabromodiphenyl ether	Hexabromo	5,6-F ₂ -BDE-85
1929.12-50-T	138, 153, 154	4'-Fluoro-2,3,3',4,5,6-hexabromodiphenyl ether		4'-F-BDE-160
2166.12-50-T	183	3-Fluoro-2,2',3,4,4',5',6-Heptabromodiphenyl ether	Heptabromo	3-F-BDE-183
2168.12-50-IO	209	4'-Fluoro-2,2',3,3',4,5,5',6,6'-nonabromodiphenyl ether	Nonabromo	4'-F-BDE-208

Solutions of single internal standards are 1mL of 50 µg/mL in isooctane (IO) or toluene (T)

Lake Michigan

Native Lake Michigan PBDEs

Catalogue No.	Description		IUPAC No.
1961.12-50-IO	2,4,4'-Tribromodiphenyl ether	Tribromo	BDE-28
1962.12-50-IO	2,2',4,4'-Tetrabromodiphenyl ether	Tetrabromo	BDE-47
1964.12-50-IO	2,3',4,4'-Tetrabromodiphenyl ether		BDE-66
1966.12-50-IO	2,2',3,4,4'-Pentabromodiphenyl ether	Pentabromo	BDE-85
1967.12-50-IO	2,2',4,4',5-Pentabromodiphenyl ether		BDE-99
1968.12-50-IO	2,2',4,4',6-Pentabromodiphenyl ether		BDE-100
1970.12-50-IO	2,2',3,4,4',5-Hexabromodiphenyl ether	Hexabromo	BDE-138
1971.12-50-IO	2,2',4,4',5,5'-Hexabromodiphenyl ether		BDE-153
1972.12-50-IO	2,2',4,4',5,6'-Hexabromodiphenyl ether		BDE-154
S-4391-10-IO	Lake Michigan PBDE Mixture, 10 µg/mL each <i>Including 1961.12, 1962.12, 1964.12, 1966.12, 1967.12, 1968.12, 1970.12, 1971.12, 1972.12</i>	Multiple components	
2653.9-KIT	Lake Michigan Single Component Solutions <i>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</i>	KIT	

Single standard solutions are 1mL of 50 µg/mL in isooctane (IO)

Internal Standards for Lake Michigan PBDEs

Catalogue No.	IS for BDE No.	Description		IUPAC No.
2160.12-50-T	28	2'-Fluoro-2,4,4'-tribromodiphenyl ether	Tribromo	2'-F-BDE-28
2161.12-50-T	47	6-Fluoro-2,2',4,4'-tetrabromodiphenyl ether	Tetrabromo	6-F-BDE-47
2506.12-50-IO	47	5,5'-Difluoro-2,2',4,4'-tetrabromodiphenyl ether		5,5'-F ₂ -BDE-47
2162.12-50-IO	66	6-Fluoro-2,3',4,4'-tetrabromodiphenyl ether		6-F-BDE-66
2503.12-50-IO	85	5,6-Difluoro-2,2',3,4,4'-pentabromodiphenyl ether	Pentabromo	5,6-F ₂ -BDE-85
2505.12-50-IO	99	3,6-Difluoro-2,2',4,4',5-pentabromodiphenyl ether		3,6-F ₂ -BDE-99
2163.12-50-T	100	3-Fluoro-2,2',4,4',6-pentabromodiphenyl ether		3-F-BDE-100
1929.12-50-T	138, 153, 154	4'-Fluoro-2,3,3',4,5,6-hexabromodiphenyl ether	Hexabromo	4'-F-BDE-160
9751.7-KIT		Lake Michigan Study F-PBDEs® Kit Single Component Solutions <i>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</i>	KIT	

Internal standard solutions are 1mL of 50 µg/mL in isooctane (IO) or toluene

EPA 527.1: 2005

Drinking water – Pesticides and PBDEs by GC-MS

Determination of selected pesticides and flame retardants in drinking water by solid phase extraction and capillary column GC/MS

Catalogue No.	Description		IUPAC No.
3108.12-50-HX	2,2',4,4',5,5'-Hexabromobiphenyl	Hexabromo	PBB-153
1962.12-50-IO	2,2',4,4'-Tetrabromodiphenyl ether	Tetrabromo	BDE-47
1967.12-50-IO	2,2',4,4',5-Pentabromodiphenyl ether	Pentabromo	BDE-99
1968.12-50-IO	2,2',4,4',6-Pentabromodiphenyl ether		BDE-100
1971.12-50-IO	2,2',4,4',5,5'-Hexabromodiphenyl ether	Hexabromo	BDE-153
S-4484-50-MX	EPA 527 Mixture 3, BDE Congeners and Hexabromobiphenyl 50 µg/mL of each in Isooctane:Ethyl Acetate <i>Includes 3108.12, 1962.12, 1967.12, 1968.12, 1971.12</i>	Multiple components	

Single standard solutions are 1mL of 50 µg/mL in hexane (HX) or isooctane (IO)

PBDE and PBB Mixtures

Catalogue No.	Quick Ref.	Description	Concn.	Analytes	Solvent	Quantity	Vol.
S-4604-50-T	PBDE-Mix 13	Custom PBDE Mixture, mono- to decabromo 8747.12: 3-Bromodiphenyl ether PBDE-2 8749.12: 3,4'-Dibromodiphenyl ether PBDE-13 1961.12: 2,4,4'-Tribromodiphenyl ether PBDE-28 1964.12: 2,3',4,4'-Tetrabromodiphenyl ether PBDE-66 1966.12: 2,2',3,4,4'-Pentabromodiphenyl ether PBDE-85 1970.12: 2,2',3,4,4',5-Hexabromodiphenyl ether PBDE-138 1992.12: 2,3,3',4,4',5,6-Heptabromodiphenyl ether PBDE-190 2647.12: 2,3,3',4,4',5,5',6-Octabromodiphenyl ether PBDE-205 9033.12: 2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether PBDE-206 1811.12: Decabromodiphenyl ether PBDE-209	50µg/mL	10	Toluene	1	1mL
S-4604-500-T x10	PBDE-Mix 13	Custom PBDE Mixture, mono- to decabromo 8747.12: 3-Bromodiphenyl ether PBDE-2 8749.12: 3,4'-Dibromodiphenyl ether PBDE-13 1961.12: 2,4,4'-Tribromodiphenyl ether PBDE-28 1964.12: 2,3',4,4'-Tetrabromodiphenyl ether PBDE-66 1966.12: 2,2',3,4,4'-Pentabromodiphenyl ether PBDE-85 1970.12: 2,2',3,4,4',5-Hexabromodiphenyl ether PBDE-138 1992.12: 2,3,3',4,4',5,6-Heptabromodiphenyl ether PBDE-190 2647.12: 2,3,3',4,4',5,5',6-Octabromodiphenyl ether PBDE-205 9033.12: 2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether PBDE-206 1811.12: Decabromodiphenyl ether PBDE-209	500µg/mL	10	Toluene	10	1mL
S-4655-50-10IO	PBDE-Mix 14	Custom PBDE Mixture, bromination 1-10 8748.12: 4-Bromodiphenyl ether, PBDE-3 8750.12: 4,4'-Dibromodiphenyl ether, PBDE-15 2116.12: 3,3',4-Tribromodiphenyl ether, PBDE-35 1964.12: 2,3',4,4-Tetrabromodiphenyl ether, PBDE-66 1967.12: 2,2',4,4',5-Pentabromodiphenyl ether, PBDE-99 1972.12: 2,2',4,4',5,6'-Hexabromodiphenyl ether, PBDE-154 1992.12: 2,3,3',4,4',5,6-Heptabromodiphenyl ether, PBDE-190 9135.12: 2,2',3,3',4,4',5,6'-Octabromodiphenyl ether, PBDE-196 9035.12: 2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether, PBDE-208 1811.12: Decabromodiphenyl ether, PBDE-209	50µg/mL	10	Isooctane	1	10mL
S-4657-100-IOx10	PBDE-Mix 15	Custom PBDE Mixture, 9 components 1961.12: 2,4,4'-Tribromodiphenyl ether PBDE-28 1962.12: 2,2',4,4'-Tetrabromodiphenyl ether PBDE-47 1964.12: 2,3',4,4'-Tetrabromodiphenyl ether PBDE-66 1966.12: 2,2',3,4,4'-Pentabromodiphenyl ether PBDE-85 1967.12: 2,2',4,4',5-Pentabromodiphenyl ether PBDE-99 1968.12: 2,2',4,4',6-Pentabromodiphenyl ether PBDE-100 1971.12: 2,2',4,4',5,5'-Hexabromodiphenyl ether PBDE-153 1972.12: 2,2',4,4',5,6'-Hexabromodiphenyl ether PBDE-154 1973.12: 2,2',3,4,4',5',6-Heptabromodiphenyl ether PBDE-183	100µg/mL	9	Isooctane	10	1mL
S-4689-10-IOx10	PBDE-Mix 18	Custom PBDE Mixture, 5 components 1961.12: 2,4,4'-Tribromodiphenyl ether PBDE-28 1967.12: 2,2',4,4',5-Pentabromodiphenyl ether PBDE-99 1968.12: 2,2',4,4',6-Pentabromodiphenyl ether PBDE-100 1971.12: 2,2',4,4',5,5'-Hexabromodiphenyl ether PBDE-153 1972.12: 2,2',4,4',5,6'-Hexabromodiphenyl ether PBDE-154	10µg/mL	5	Isooctane	10	1mL
S-4720-100-10CY	PBDE-Mix 19	Custom PBDE Mixture, 7 components 1961.12: 2,4,4'-Tribromodiphenyl ether PBDE-28 1962.12: 2,2',4,4'-Tetrabromodiphenyl ether PBDE-47 1967.12: 2,2',4,4',5-Pentabromodiphenyl ether PBDE-99 1968.12: 2,2',4,4',6-Pentabromodiphenyl ether PBDE-100 1972.12: 2,2',4,4',5,6'-Hexabromodiphenyl ether PBDE-154 1973.12: 2,2',3,4,4',5',6-Heptabromodiphenyl ether PBDE-183 1811.12: Decabromodiphenyl ether PBDE-209	100µg/mL	7	Cyclohexane	1	10mL

Catalogue No.	Quick Ref.	Description	Concn.	Analytes	Solvent	Quantity	Vol.
S-4726-50-Tx10	PBDE-Mix 23	Custom PBDE Mixture, 10 components 1961.12: 2,4,4'-Tribromodiphenyl ether PBDE-28 1962.12: 2,2',4,4'-Tetrabromodiphenyl ether PBDE-47 1964.12: 2,3',4,4'-Tetrabromodiphenyl ether PBDE-66 1967.12: 2,2',4,4',5-Pentabromodiphenyl ether PBDE-99 1968.12: 2,2',4,4',6-Pentabromodiphenyl ether PBDE-100 1969.12: 2,3',4,4',6-Pentabromodiphenyl ether PBDE-119 1970.12: 2,2',3,4,4',5-Hexabromodiphenyl ether PBDE-138 1971.12: 2,2',4,4',5,5'-Hexabromodiphenyl ether PBDE-153 1972.12: 2,2',4,4',5,6'-Hexabromodiphenyl ether PBDE-154 1973.12: 2,2',3,4,4',5',6-Heptabromodiphenyl ether PBDE-183	50µg/mL	10	Toluene	10	1mL
S-4736-100-10CY	PBDE-Mix 20	Custom Mixture of PBDE-153 and PBDE-196 1971.12: 2,2',4,4',5,5'-Hexabromodiphenyl ether PBDE-153 9135.12: 2,2',3,3',4,4',5,6'-Octabromodiphenyl ether, PBDE-196	100µg/mL	2	Cyclohexane	1	10mL
S-4737-100-Tx10	PBDE-mix 21	Custom Variation of Lake Michigan PBDEs Lake Michigan PBDEs + PBDE-183 and PBDE-209 1961.12: 2,4,4'-Tribromodiphenyl ether PBDE-28 1962.12: 2,2',4,4'-Tetrabromodiphenyl ether PBDE-47 1964.12: 2,3',4,4'-Tetrabromodiphenyl ether PBDE-66 1966.12: 2,2',3,4,4'-Pentabromodiphenyl ether PBDE-85 1967.12: 2,2',4,4',5-Pentabromodiphenyl ether PBDE-99 1968.12: 2,2',4,4',6-Pentabromodiphenyl ether PBDE-100 1970.12: 2,2',3,4,4',5-Hexabromodiphenyl ether PBDE-138 1971.12: 2,2',4,4',5,5'-Hexabromodiphenyl ether PBDE-153 1972.12: 2,2',4,4',5,6'-Hexabromodiphenyl ether PBDE-154 1973.12: 2,2',3,4,4',5',6-Heptabromodiphenyl ether PBDE-183 1811.12: Decabromodiphenyl ether PBDE-209	100µg/mL	11	Toluene	10	1mL
S-4768-50-Tx10	PBDE-Mix 22	Custom Mixture of PBDEs, 4 components 9135.12: 2,2',3,3',4,4',5,6'-Octabromodiphenyl ether PBDE-196 9033.12: 2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether PBDE-206 9035.12: 2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether PBDE-208 1811.12: Decabromodiphenyl ether PBDE-209	50µg/mL	4	Toluene	10	1mL
S-4769-30-10T	PBB-Mix 01	Custom Mixture of PBB, 10 components 3091.12: 4-Bromobiphenyl PBB-3 3096.12: 4,4'-Dibromobiphenyl PBB-15 3097.12: 2,2',5-Tribromobiphenyl PBB-18 3103.12: 2,2',5,5'-Tetrabromobiphenyl PBB-52 3107.12: 2,2',4,5',6-Pentabromobiphenyl PBB-103 3108.12: 2,2',4,4',5,5'-Hexabromobiphenyl PBB-153 10174.12: 2,2',3,4,4',5,5'-Heptabromobiphenyl PBB-180 9716.12: 2,2',3,3',4,4',5,5'-Octabromobiphenyl PBB-194 9536.12: 2,2',3,3',4,4',5,5',6-Nonabromobiphenyl PBB-206 2677.12: Decabromobiphenyl PBB-209	30µg/mL	10	Toluene	1	10mL



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