

Generally used as flame retardants, Brominated Diphenyl Ethers (BDEs) have become chemicals of significant environmental concern.

BDEs are persistent and highly lipophilic substances, similar to well-known environmental contaminants such as PCBs. Flame retardants highlight the need to develop risk assessments about chemicals meant to protect us and the effect of their exposure to humans and the environment. CIL first synthesized ^{13}C -BDEs in the 1980s as part of the earliest PBDD/PBDF analytical program.



Isotope Labeled Brominated Diphenyl Ether (BDE) Standards

Generally used as flame retardants, Brominated Diphenyl Ethers (BDEs) have become chemicals of significant environmental concern. BDEs may be generally considered as persistent and highly lipophilic substances, similar to well known environmental contaminants such as polychlorinated biphenyls (PCBs).

In 1996, Cambridge Isotope Laboratories (CIL) first introduced Chlorinated and Brominated Diphenyl Ether analytical standards.

Since then, additional studies in Europe, Canada, Japan, and the United States have significantly increased interest in these products and enabled CIL to extend its flame-retardant offerings.

U.S. EPA Method 1614 Standard Mixtures

The United States EPA has developed a standardized test method for analysis of Brominated Diphenyl Ethers in multiple matrices by

High Resolution GC/MS. CIL worked closely with the EPA and their contracting laboratories to develop standard mixtures specifically for use in Method 1614.

RoHS BDE Standard Mixtures

The Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (2002/95/EC), commonly referred to as the Restriction of Hazardous Substances Directive (RoHS) was adopted in February 2003 in Europe and took effect in July 2006. This directive restricts the use of several types of hazardous materials in the manufacture of various types of electronic and electrical equipment. CIL worked with laboratories in the European Union to develop standards for analysis of brominated diphenyl ethers under the RoHS guidelines.

Brominated Flame Retardant Standards and Standard Mixtures

Following regulatory restrictions and voluntary removal of Brominated Diphenyl Ether (BDE) products from many flame retardant applications, new brominated compounds have been developed as replacements for BDEs. As monitoring of these possible environmental pollutants increased, CIL developed several labeled and unlabeled standards to allow accurate analysis of these

new-use Brominated Flame Retardant (BFR) compounds. CIL further developed a series of standard mixtures which include a combination of BDEs and other BFRs in comprehensive mixtures.

Isotope Labeled and Unlabeled BDE Metabolites

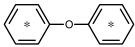
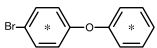
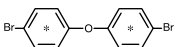
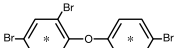
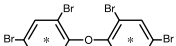
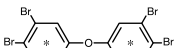
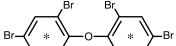
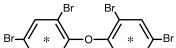
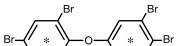
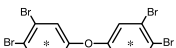
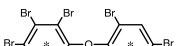
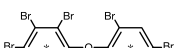
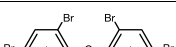
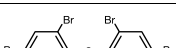
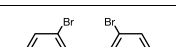
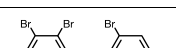
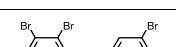
Researchers have suggested that BDE body burdens are not completely represented by measurements of BDEs in tissue or milk.

Analytical data indicates that the liver hydrolyzes BDEs in its attempts to expel them. BDE toxicity is still being established, but there

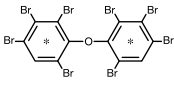
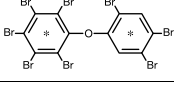
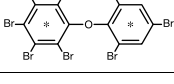
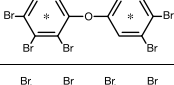
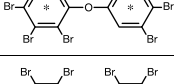
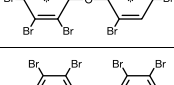
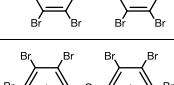
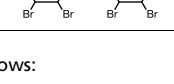
is a likelihood that BDE metabolites have similar or greater toxicity than the parent BDEs. CIL has been producing both unlabeled and $^{13}\text{C}_{12}$ Methoxy- and Hydroxy-BDEs. These items represent some of the BDE metabolites available from CIL; please contact CIL or your

CIL representative for more information on these compounds.

Isotope Labeled Individual Brominated Diphenyl Ether (BDE) Standards

Catalog #	Compound	BDE		Concentration	Amount
CLM-1587-1.2	Diphenyl ether (¹³ C ₁₂ , 99%)	0		50 ± 5 µg/mL in Nonane	1.2 mL
EO-4999	4-Monobromodiphenyl ether (¹³ C ₁₂ , 99%)	3		50 ± 5 µg/mL in Nonane	1.2 mL
EO-5001	4,4'-Dibromodiphenyl ether (¹³ C ₁₂ , 99%)	15		50 ± 5 µg/mL in Nonane	1.2 mL
EO-5002	2,4,4'-Tribromodiphenyl ether (¹³ C ₁₂ , 99%)	28		50 ± 5 µg/mL in Nonane	1.2 mL
EO-4982	2,2',4,4'-Tetrabromodiphenyl ether (¹³ C ₁₂ , 99%)	47		50 ± 5 µg/mL in Nonane	1.2 mL
EO-1439	3,3',4,4'-Tetrabromodiphenyl ether (¹³ C ₁₂ , 99%)	77		50 ± 5 µg/mL in Nonane	1.2 mL
EO-4983	2,2',4,4',5-Pentabromodiphenyl ether (¹³ C ₁₂ , 99%)	99		50 ± 5 µg/mL in Nonane	1.2 mL
EO-4993	2,2',4,4',6-Pentabromodiphenyl ether (¹³ C ₁₂ , 99%)	100		50 ± 5 µg/mL in Nonane	1.2 mL
EO-5034	2,3',4,4',5-Pentabromodiphenyl ether (¹³ C ₁₂ , 99%)	118		50 ± 5 µg/mL in Nonane	1.2 mL
EO-4930	3,3',4,4',5-Pentabromodiphenyl ether (¹³ C ₁₂ , 99%)	126		50 ± 5 µg/mL in Nonane	1.2 mL
EO-5035	2,2',3,4,4',5'-Hexabromodiphenyl ether (¹³ C ₁₂ , 99%)	138		50 ± 5 µg/mL in Nonane	1.2 mL
EO-5165	2,2',3,4,4',6-Hexabromodiphenyl ether (¹³ C ₁₂ , 99%)	139		50 ± 5 µg/mL in Nonane	1.2 mL
EO-4984	2,2',4,4',5,5'-Hexabromodiphenyl ether (¹³ C ₁₂ , 99%)	153		50 ± 5 µg/mL in Nonane	1.2 mL
EO-5161	2,2',4,4',5,6'-Hexabromodiphenyl ether (¹³ C ₁₂ , 99%)	154		50 ± 5 µg/mL in Nonane	1.2 mL
NEW EO-5413	2,2',4,4',6,6'-Hexabromodiphenyl ether (¹³ C ₁₂ , 99%)	155		50 ± 5 µg/mL in Nonane	1.2 mL
EO-4985	2,2',3,4,4',5',6-Heptabromodiphenyl ether (¹³ C ₁₂ , 99%)	183		50 ± 5 µg/mL in Nonane	1.2 mL
NEW EO-5376	2,3,3',4,4',5,6-Heptabromodiphenyl ether (¹³ C ₁₂ , 99%)	190		50 ± 5 µg/mL in Nonane	1.2 mL

Isotope Labeled Individual Brominated Diphenyl Ether (BDE) Standards

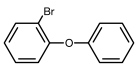
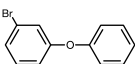
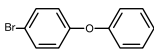
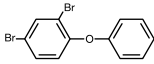
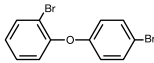
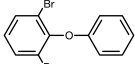
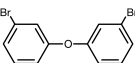
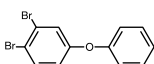
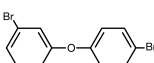
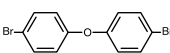
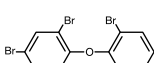
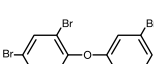
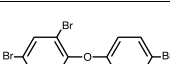
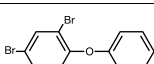
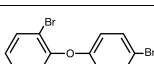
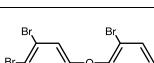
Catalog #	Compound	BDE		Concentration	Amount
NEW EO-5337	2,2',3,3',4,4',6,6'-Octabromodiphenyl ether (¹³C₁₂,99%)	197		50 ± 5 µg/mL in Nonane	1.2 mL
NEW EO-5377	2,2',3,4,4',5,5',6-Octabromodiphenyl ether (¹³C₁₂,99%)	203		50 ± 5 µg/mL in Nonane	1.2 mL
NEW EO-5355	2,2',3,4,4',5,6,6'-Octabromodiphenyl ether (¹³C₁₂,99%)	204		50 ± 5 µg/mL in Nonane	1.2 mL
NEW EO-5362	2,3,3',4,4',5,5',6-Octabromodiphenyl ether (¹³C₁₂,99%)	205		50 ± 5 µg/mL in Nonane	1.2 mL
EO-5240	2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether (¹³C₁₂,99%)	206		50 ± 5 µg/mL in Nonane	1.2 mL
EO-5241	2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether (¹³C₁₂,99%)	207		50 ± 5 µg/mL in Nonane	1.2 mL
EO-5242	2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether (¹³C₁₂,99%)	208		50 ± 5 µg/mL in Nonane	1.2 mL
EO-5003	Decabromodiphenyl ether (¹³C₁₂,99%)	209		50 ± 5 µg/mL in Nonane	1.2 mL

Multiple-unit pricing is available for individual ¹³C-BDE standards as follows:

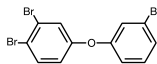
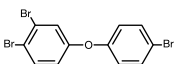
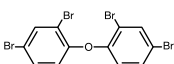
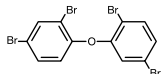
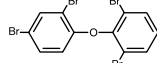
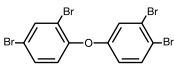
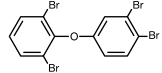
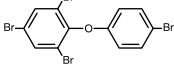
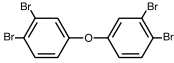
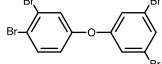
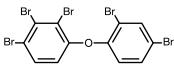
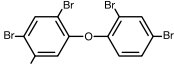
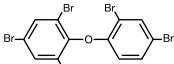
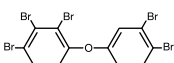
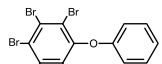
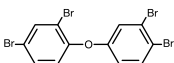
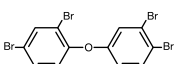
2-3 units = 20% discount

4 or more units = 33% discount

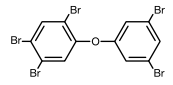
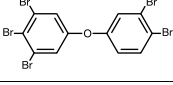
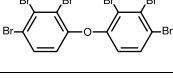
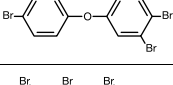
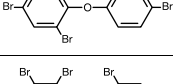
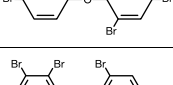
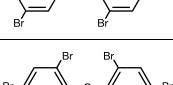
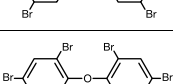
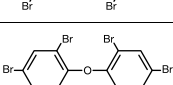
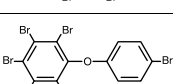
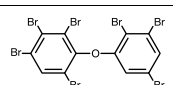
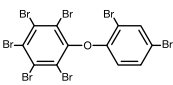
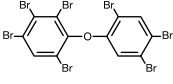
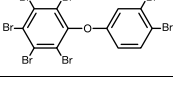
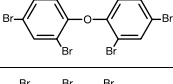
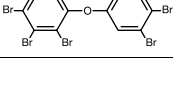
Unlabeled Individual Brominated Diphenyl Ether (BDE) Standards

Catalog #	Compound	BDE		Concentration	Amount
BDE-1-CS	2-Monobromodiphenyl ether	1		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-2-CS	3-Monobromodiphenyl ether	2		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-3-CS	4-Monobromodiphenyl ether	3		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-7-CS	2,4-Dibromodiphenyl ether	7		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-8-CS	2,4'-Dibromodiphenyl ether	8		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-10-CS	2,6-Dibromodiphenyl ether	10		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-11-CS	3,3'-Dibromodiphenyl ether	11		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-12-CS	3,4-Dibromodiphenyl ether	12		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-13-CS	3,4'-Dibromodiphenyl ether	13		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-15-CS	4,4'-Dibromodiphenyl ether	15		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-17-CS	2,2',4-Tribromodiphenyl ether	17		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-25-CS	2,3',4-Tribromodiphenyl ether	25		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-28-CS	2,4,4'-Tribromodiphenyl ether	28		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-30-CS	2,4,6-Tribromodiphenyl ether	30		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-32-CS	2,4',6-Tribromodiphenyl ether	32		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-33-CS	2',3,4-Tribromodiphenyl ether	33		50 ± 5 µg/mL in Nonane	1.2 mL

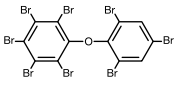
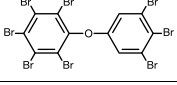
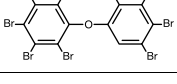
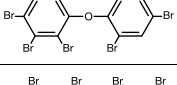
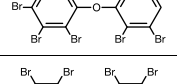
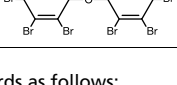
Unlabeled Individual Brominated Diphenyl Ether (BDE) Standards

Catalog #	Compound	BDE		Concentration	Amount
BDE-35-CS	3,3',4-Tribromodiphenyl ether	35		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-37-CS	3,4,4'-Tribromodiphenyl ether	37		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-47-CS	2,2',4,4'-Tetrabromodiphenyl ether	47		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-49-CS	2,2',4,5'-Tetrabromodiphenyl ether	49		50 ± 5 µg/mL in Nonane	1.2 mL
NEW BDE-51-CS	2,2',4,6'-Tetrabromodiphenyl ether	51		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-66-CS	2,3',4,4'-Tetrabromodiphenyl ether	66		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-71-CS	2,3',4',6-Tetrabromodiphenyl ether	71		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-75-CS	2,4,4',6-Tetrabromodiphenyl ether	75		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-77-CS	3,3',4,4'-Tetrabromodiphenyl ether	77		50 ± 5 µg/mL in Nonane	1.2 mL
NEW BDE-79-CS	3,3',4,5'-Tetrabromodiphenyl ether	79		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-85-CS	2,2',3,4,4'-Pentabromodiphenyl ether	85		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-99-CS	2,2',4,4',5-Pentabromodiphenyl ether	99		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-100-CS	2,2',4,4',6-Pentabromodiphenyl ether	100		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-105-CS	2,3,3',4,4'-Pentabromodiphenyl ether	105		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-116-CS	2,3,4,5,6-Pentabromodiphenyl ether	116		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-118-CS	2,3',4,4',5-Pentabromodiphenyl ether	118		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-119-CS	2,3',4,4',6-Pentabromodiphenyl ether	119		50 ± 5 µg/mL in Nonane	1.2 mL

Unlabeled Individual Brominated Diphenyl Ether (BDE) Standards

Catalog #	Compound	BDE		Concentration	Amount
NEW BDE-120-CS	2,3',4,5,5'-Pentabromodiphenyl ether	120		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-126-CS	3,3',4,4',5-Pentabromodiphenyl ether	126		50 ± 5 µg/mL in Nonane	1.2 mL
NEW BDE-128-CS	2,2',3,3',4,4'-Hexabromodiphenyl ether	128		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-138-CS	2,2',3,4,4',5'-Hexabromodiphenyl ether	138		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-139-CS	2,2',3,4,4',6-Hexabromodiphenyl ether	139		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-140-CS	2,2',3,4,4',6'-Hexabromodiphenyl ether	140		50 ± 5 µg/mL in Nonane	1.2 mL
NEW BDE-148-CS	2,2',3,4',5,6'-Hexabromodiphenyl ether	148		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-153-CS	2,2',4,4',5,5'-Hexabromodiphenyl ether	153		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-154-CS	2,2',4,4',5,6'-Hexabromodiphenyl ether	154		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-155-CS	2,2',4,4',6,6'-Hexabromodiphenyl ether	155		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-166-CS	2,3,4,4',5,6-Hexabromodiphenyl ether	166		50 ± 5 µg/mL in Nonane	1.2 mL
NEW BDE-175-CS	2,2',3,3',4,5',6-Heptabromodiphenyl ether	175		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-181-CS	2,2',3,4,4',5,6-Heptabromodiphenyl ether	181		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-183-CS	2,2',3,4,4',5',6-Heptabromodiphenyl ether	183		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-190-CS	2,3,3',4,4',5,6-Heptabromodiphenyl ether	190		50 ± 5 µg/mL in Nonane	1.2 mL
NEW BDE-197-CS	2,2',3,3',4,4',6,6'-Octabromodiphenyl ether	197		50 ± 5 µg/mL in Nonane	1.2 mL
BDE-203-CS	2,2',3,4,4',5,5',6-Octabromodiphenyl ether	203		50 ± 5 µg/mL in Nonane	1.2 mL

Unlabeled Individual Brominated Diphenyl Ether (BDE) Standards

Catalog #	Compound	BDE	Concentration	Amount
NEW BDE-204-CS	2,2',3,4,4',5,6,6'-Octabromodiphenyl ether	204 	50 ± 5 µg/mL in Nonane	1.2 mL
BDE-205-CS	2,3,3',4,4',5,5',6-Octabromodiphenyl ether	205 	50 ± 5 µg/mL in Nonane	1.2 mL
BDE-206-CS	2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether	206 	50 ± 5 µg/mL in Nonane	1.2 mL
BDE-207-CS	2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether	207 	50 ± 5 µg/mL in Nonane	1.2 mL
BDE-208-CS	2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether	208 	50 ± 5 µg/mL in Nonane	1.2 mL
BDE-209-CS	Decabromodiphenyl ether	209 	50 ± 5 µg/mL in Nonane	1.2 mL

Multiple-unit pricing is available for individual unlabeled BDE standards as follows:

5-7 units = 20% discount
8-11 units = 33% discount
12 or more units = 50% discount

Isotope Labeled Individual Polybrominated Biphenyl (PBB) Standards

EB-5055	3,3',4,4'-TetraBB (¹³C₁₂,99%) (PBB-77)	40 ± 2 µg/mL in Nonane	3 mL
EB-5056	3,3',4,4',5-PentaBB (¹³C₁₂,99%) (PBB-126)	40 ± 2 µg/mL in Nonane	3 mL
NEW EB-5162	2,2',4,4',5,5'-HexaBB (¹³C₁₂,99%) (PBB-153)	40 ± 2 µg/mL in Nonane	3 mL
EB-5106	2,3,3',4,4',5'-HexaBB (¹³C₁₂,99%) (PBB-157)	40 ± 2 µg/mL in Nonane	3 mL
NEW EB-5439	DecaBB (¹³C₁₂,99%) (PBB-209)	40 ± 2 µg/mL in Nonane	3 mL

Unlabeled Individual Polybrominated Biphenyl (PBB) Standards

PBB-77-CS	3,3',4,4'-TetraBB Certified Standard (PBB-77)	100 ± 5 µg/mL in Isooctane	1.2 mL
PBB-126	3,3',4,4',5-PentaBB (PBB-126)	100 ± 10 µg/mL in Isooctane	1.2 mL
PBB-153-CS	2,2',4,4',5,5'-HexaBB Certified Standard (PBB-153)	100 ± 5 µg/mL in Isooctane	1.2 mL
PBB-157-CS	2,3,3',4,4',5'-HexaBB Certified Standard (PBB-157)	100 ± 5 µg/mL in Isooctane	1.2 mL
NEW PBB-209-CS	DecaBB Certified Standard (PBB-209)	100 ± 5 µg/mL in Isooctane	1.2 mL

BDE Technical Mixtures

Catalog #	Compound	Concentration	Amount
EO-4958-1.2	PentaBDE Technical Mix (Bromkal™ 70-5)	50 µg/mL in Methanol	1.2 mL
EO-5031	PentaBDE Technical Mix (DE-71™)	50 µg/mL in Methanol	1.2 mL
EO-5030	OctaBDE Technical Mix (DE-79™)	50 µg/mL in Methanol	1.2 mL
EO-5060	DecaBDE Technical Mix (Saytex® 102E)	10 µg/mL in Methanol	10 mL

Tetrabromobisphenol A (TBBPA) and Hexabromocyclododecane (HBCD) Standards

	CLM-4694-1.2	Tetrabromobisphenol A (TBBPA) (ring- ¹³ C ₁₂ ,99%)	50 µg/mL in Methanol	1.2 mL
NEW	ULM-8734-1.2	Tetrabromobisphenol A (TBBPA) (unlabeled)	50 µg/mL in Methanol	1.2 mL
	ULM-6236-1.2	Dimethyl Tetrabromobisphenol A (unlabeled)	50 µg/mL in Nonane	1.2 mL
	CLM-7102-1.2	Hexabromocyclododecane (HBCD) (¹³ C ₁₂ ,99%) (Unequal mixture of α, β, and γ isomers)	50 µg/mL in Toluene	1.2 mL
NEW	CLM-7922-0.5	α-Hexabromocyclododecane (HBCD) (¹³ C ₁₂ ,99%)	50 µg/mL in Toluene	0.5 mL
	ULM-4834-1.2	α-Hexabromocyclododecane (HBCD) (unlabeled)	50 µg/mL in Toluene	1.2 mL
NEW	CLM-7923-1.2	β-Hexabromocyclododecane (HBCD) (¹³ C ₁₂ ,99%)	50 µg/mL in Toluene	1.2 mL
	ULM-4835-1.2	β-Hexabromocyclododecane (HBCD) (unlabeled)	50 µg/mL in Toluene	1.2 mL
NEW	CLM-7924-1.2	γ-Hexabromocyclododecane (HBCD) (¹³ C ₁₂ ,99%)	50 µg/mL in Toluene	1.2 mL
	ULM-4836-1.2	γ-Hexabromocyclododecane (HBCD) (unlabeled)	50 µg/mL in Toluene	1.2 mL

Other Flame-Retardant Standards

NEW	CLM-8569-1.2	Dechlorane Plus <i>syn</i> (¹³ C ₁₀ ,99%)	100 µg/mL in Nonane	1.2 mL
NEW	ULM-7886-1.2	Dechlorane Plus <i>syn</i> (unlabeled)	100 µg/mL in Nonane	1.2 mL
NEW	CLM-8588-1.2	Dechlorane Plus <i>anti</i> (¹³ C ₁₀ ,99%)	100 µg/mL in Nonane	1.2 mL
NEW	ULM-7887-1.2	Dechlorane Plus <i>anti</i> (unlabeled)	100 µg/mL in Nonane	1.2 mL
NEW	ULM-7777-1.2	Dechlorane Plus Technical Product (unlabeled) (mix of <i>syn/anti</i> isomers)	100 µg/mL in Nonane	1.2 mL
NEW	ULM-7375-2X1.2	1,2-Bis(pentabromophenyl) ethane (DBDPE) (unlabeled) (CP: 96%)	25 µg/mL in Toluene	2 x 1.2 mL
NEW	ULM-7595-1.2	1,2-Bis(2,4,6-tribromophenoxy) ethane (BTBPE) (unlabeled)	50 µg/mL in Nonane	1.2 mL
NEW	CLM-8006-1.2	Tetrachlorobisphenol A (ring- ¹³ C ₁₂ ,99%)	50 µg/mL in Methanol	1.2 mL
NEW	ULM-7606-1.2	Tetrachlorobisphenol A (unlabeled)	50 µg/mL in Methanol	1.2 mL

BDE Metabolite Standards

OH-BDE

NEW	OHBDE-5190-1.2	6-Hydroxy-2,2',4,4'-TetraBDE (ring- ¹³ C ₁₂ ,99%) (CP: 92%)	50 µg/mL in Toluene	1.2 mL
NEW	OHBDE-5206-1.2	6-Hydroxy-2,2',4,4'-TetraBDE (unlabeled)	50 µg/mL in Nonane	1.2 mL
NEW	OHBDE-5191-1.2	2-Hydroxy-2',4,4',5',6-PentaBDE (ring- ¹³ C ₁₂ ,99%) (CP: 94%)	50 µg/mL in Toluene	1.2 mL
NEW	OHBDE-5212-1.2	4'-Hydroxy-2,2',4,5'-TetraBDE (unlabeled)	50 µg/mL in Nonane	1.2 mL
NEW	OHBDE-5214-1.2	6'-Hydroxy-2,2',4,5'-TetraBDE (unlabeled)	50 µg/mL in Nonane	1.2 mL
NEW	OHBDE-5228-1.2	6-Hydroxy-2,2',4,4',5-PentaBDE (unlabeled)	50 µg/mL in Nonane	1.2 mL

MEO-BDE

NEW	MEOBDE-5153-1.2	2'-Methoxy-2,3',4,5'-TetraBDE (unlabeled)	50 µg/mL in Nonane	1.2 mL
NEW	MEOBDE-5205-1.2	6-Methoxy-2,2',4,4'-TetraBDE (unlabeled)	50 µg/mL in Nonane	1.2 mL

Bromkal is a trademark of Chemische Fabrik Kalk GmbH.
 DE-71 is a trademark of Chemtura (Great Lakes Chemical Company).
 DE-79 is a trademark of Chemtura (Great Lakes Chemical Company).
 Saytex is a registered trademark of Albemarle Corporation.

U.S. EPA Method 1614 Standard Mixtures

Catalog #	Compound	Amount
EO-5279	EPA Method 1614 Calibration Solutions [CS1-CS5]	Set of 5 x 0.2 mL in Nonane
EO-5279-CS1	EPA Method 1614 Calibration Solution [CS1]	0.2 mL in Nonane
EO-5279-CS2	EPA Method 1614 Calibration Solution [CS2]	0.2 mL in Nonane
EO-5279-CS3	EPA Method 1614 Calibration Solution [CS3]	0.2 mL in Nonane
EO-5279-CS4	EPA Method 1614 Calibration Solution [CS4]	0.2 mL in Nonane
EO-5279-CS5	EPA Method 1614 Calibration Solution [CS5]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	Congener	CS1	CS2	CS3	CS4	CS5
2,4,4'-TriBDE	28	1	5	50	500	2500
2,2',4,4'-TetraBDE	47	1	5	50	500	2500
2,2',4,4',5-PentaBDE	99	1	5	50	500	2500
2,2',4,4',6-PentaBDE	100	1	5	50	500	2500
2,2',4,4',5,5'-HexaBDE	153	1	5	50	500	2500
2,2',4,4',5,6'-HexaBDE	154	1	5	50	500	2500
2,2',3,4,4',5,6-HeptaBDE	183	1	5	50	500	2500
DecaBDE	209	10	50	500	5000	25,000
Labeled						
2,4,4'-TriBDE (¹³ C ₁₂ ,99%)	28L	100	100	100	100	100
2,2',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	47L	100	100	100	100	100
2,2',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	99L	100	100	100	100	100
2,2',4,4',6-PentaBDE (¹³ C ₁₂ ,99%)	100L	100	100	100	100	100
2,2',4,4',5,5'-HexaBDE (¹³ C ₁₂ ,99%)	153L	100	100	100	100	100
2,2',4,4',5,6'-HexaBDE (¹³ C ₁₂ ,99%)	154L	100	100	100	100	100
2,2',3,4,4',5,6-HeptaBDE (¹³ C ₁₂ ,99%)	183L	100	100	100	100	100
DecaBDE (¹³ C ₁₂ ,99%)	209L	1000	1000	1000	1000	1000
Labeled Cleanup						
2,2',3,4,4',6-HexaBDE (¹³ C ₁₂ ,99%)	139L	100	100	100	100	100
Labeled Injection Internal						
2,2',5,5'-TetraCB (¹³ C ₁₂ ,99%)	PCB-52L	100	100	100	100	100
2,2',3,4,4',5'-HexaCB (¹³ C ₁₂ ,99%)	PCB-138L	100	100	100	100	100

U.S. EPA Method 1614 Standard Mixtures

Catalog #	Compound	Amount
EO-5277	EPA Method 1614 Labeled Surrogate Stock Solution	1.2 mL in Nonane

Labeled		(ng/mL)
2,4,4'-TriBDE (¹³C₁₂,99%)	28L	1000
2,2',4,4'-TetraBDE (¹³C₁₂,99%)	47L	1000
2,2',4,4',5-PentaBDE (¹³C₁₂,99%)	99L	1000
2,2',4,4',6-PentaBDE (¹³C₁₂,99%)	100L	1000
2,2',4,4',5,5'-HexaBDE (¹³C₁₂,99%)	153L	1000
2,2',4,4',5,6'-HexaBDE (¹³C₁₂,99%)	154L	1000
2,2',3,4,4',5',6-HeptaBDE (¹³C₁₂,99%)	183L	1000
DecaBDE (¹³C₁₂,99%)	209L	10,000

EO-5276	EPA Method 1614 Labeled Cleanup Stock Solution	1.2 mL in Nonane
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Labeled		
2,2',3,4,4',6-HexaBDE (¹³C₁₂,99%)	139L	1000

EO-5275	EPA Method 1614 Labeled Injection Internal Stock Solution	1.2 mL in Nonane
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Labeled		
2,2',5,5'-TetraCB (¹³C₁₂,99%)	PCB-52L	5000
2,2',3,4,4',5'-HexaCB (¹³C₁₂,99%)	PCB-138L	5000

EO-5278	EPA Method 1614 Native PAR Stock Solution	1.2 mL in Nonane
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Unlabeled		
2,4,4'-TriBDE	28	1000
2,2',4,4'-TetraBDE	47	1000
2,2',4,4',5-PentaBDE	99	1000
2,2',4,4',6-PentaBDE	100	1000
2,2',4,4',5,5'-HexaBDE	153	1000
2,2',4,4',5,6'-HexaBDE	154	1000
2,2',3,4,4',5',6-HeptaBDE	183	1000
DecaBDE	209	10,000

RoHS BDE Standard Mixtures

Catalog #	Compound	Amount
NEW EO-5402	RoHS PBDE Calibration Solutions [CS1-CS5]	Set of 5 x 0.2 mL in Nonane
NEW EO-5402-CS1	RoHS PBDE Calibration Solution [CS1]	0.2 mL in Nonane
NEW EO-5402-CS2	RoHS PBDE Calibration Solution [CS2]	0.2 mL in Nonane
NEW EO-5402-CS3	RoHS PBDE Calibration Solution [CS3]	0.2 mL in Nonane
NEW EO-5402-CS4	RoHS PBDE Calibration Solution [CS4]	0.2 mL in Nonane
NEW EO-5402-CS5	RoHS PBDE Calibration Solution [CS5]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	BDE	CS1	CS2	CS3	CS4	CS5
4-MonoBDE	3	1	5	20	100	500
2,4-DiBDE	7	1	5	20	100	500
4,4'-DiBDE	15	1	5	20	100	500
2,2',4-TriBDE	17	1	5	20	100	500
2,4,4'-TriBDE	28	1	5	20	100	500
2,2',4,4'-TetraBDE	47	1	5	20	100	500
2,2',4,5'-TetraBDE	49	1	5	20	100	500
2,3',4,4'-TetraBDE	66	1	5	20	100	500
2,3',4',6-TetraBDE	71	1	5	20	100	500
3,3',4,4'-TetraBDE	77	1	5	20	100	500
2,2',3,4,4'-PentaBDE	85	1	5	20	100	500
2,2',4,4',5-PentaBDE	99	1	5	20	100	500
2,2',4,4',6-PentaBDE	100	1	5	20	100	500
2,3',4,4',6-PentaBDE	119	1	5	20	100	500
3,3',4,4',5-PentaBDE	126	1	5	20	100	500
2,2',3,4,4',5'-HexaBDE	138	2	10	40	200	1000
2,2',4,4',5,5'-HexaBDE	153	2	10	40	200	1000
2,2',4,4',5,6'-HexaBDE	154	2	10	40	200	1000
2,2',4,4',6,6'-HexaBDE	155	2	10	40	200	1000
2,3,4,4',5,6-HexaBDE	166	2	10	40	200	1000
2,2',3,4,4',5,6-HeptaBDE	181	2	10	40	200	1000
2,2',3,4,4',5',6-HeptaBDE	183	2	10	40	200	1000
2,3,3',4,4',5,6-HeptaBDE	190	2	10	40	200	1000
2,2',3,4,4',5,5',6-OctaBDE	203	2	10	40	200	1000
2,3,3',4,4',5,5',6-OctaBDE	205	2	10	40	200	1000
2,2',3,3',4,4',5,5',6-NonaBDE	206	5	25	100	500	2500
2,2',3,3',4,4',5,6,6'-NonaBDE	207	5	25	100	500	2500
DecaBDE	209	5	25	100	500	2500
Labeled						
4-MonoBDE (¹³ C ₁₂ ,99%)	3	100	100	100	100	100
4,4'-DiBDE (¹³ C ₁₂ ,99%)	15	100	100	100	100	100
2,4,4'-TriBDE (¹³ C ₁₂ ,99%)	28	100	100	100	100	100
2,2',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	47	100	100	100	100	100
2,2',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	99	100	100	100	100	100
2,2',3,4,4',5'-HexaBDE (¹³ C ₁₂ ,99%)	138	200	200	200	200	200
2,2',4,4',5,5'-HexaBDE (¹³ C ₁₂ ,99%)	153	200	200	200	200	200
2,2',4,4',5,6'-HexaBDE (¹³ C ₁₂ ,99%)	154	200	200	200	200	200
2,2',3,4,4',5',6-HeptaBDE (¹³ C ₁₂ ,99%)	183	200	200	200	200	200
2,2',3,4,4',5,6,6'-OctaBDE (¹³ C ₁₂ ,99%)	204	200	200	200	200	200
2,2',3,3',4,4',5,6,6'-NonaBDE (¹³ C ₁₂ ,99%)	207	500	500	500	500	500
DecaBDE (¹³ C ₁₂ ,99%)	209	500	500	500	500	500

RoHS BDE Standard Mixtures

Catalog #	Compound	Amount
NEW EO-5403	RoHS PBDE Cleanup Spike	1.2 mL in Nonane
	Labeled	BDE (ng/mL)
	4-MonoBDE (¹³ C ₁₂ ,99%)	3 100
	4,4'-DiBDE (¹³ C ₁₂ ,99%)	15 100
	2,4,4'-TriBDE (¹³ C ₁₂ ,99%)	28 100
	2,2',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	47 100
	2,2',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	99 100
	2,2',4,4',5,5'-HexaBDE (¹³ C ₁₂ ,99%)	153 200
	2,2',4,4',5,6'-HexaBDE (¹³ C ₁₂ ,99%)	154 200
	2,2',3,4,4',5,6-HeptaBDE (¹³ C ₁₂ ,99%)	183 200
	2,2',3,4,4',5,6,6'-OctaBDE (¹³ C ₁₂ ,99%)	204 200
	2,2',3,3',4,4',5,6,6'-NonaBDE (¹³ C ₁₂ ,99%)	207 500
	DecaBDE (¹³ C ₁₂ ,99%)	209 500
NEW EO-5404	RoHS PBDE Syringe Spike	1.2 mL in Nonane
	Labeled	
	2,2',3,4,4',5'-HexaBDE (¹³ C ₁₂ ,99%)	138 200
NEW EO-5405	RoHS PBDE Native PAR Spike	1.2 mL in Nonane
	Unlabeled	
	4-MonoBDE	3 1000
	2,4-DiBDE	7 1000
	4,4'-DiBDE	15 1000
	2,2',4-TriBDE	17 1000
	2,4,4'-TriBDE	28 1000
	2,2',4,4'-TetraBDE	47 1000
	2,2',4,5'-TetraBDE	49 1000
	2,3',4,4'-TetraBDE	66 1000
	2,3',4',6-TetraBDE	71 1000
	3,3',4,4'-TetraBDE	77 1000
	2,2',3,4,4'-PentaBDE	85 1000
	2,2',4,4',5-PentaBDE	99 1000
	2,2',4,4',6-PentaBDE	100 1000
	2,3',4,4',6-PentaBDE	119 1000
	3,3',4,4',5-PentaBDE	126 1000
	2,2',3,4,4',5'-HexaBDE	138 2000
	2,2',4,4',5,5'-HexaBDE	153 2000
	2,2',4,4',5,6'-HexaBDE	154 2000
	2,2',4,4',6,6'-HexaBDE	155 2000
	2,3,4,4',5,6-HexaBDE	166 2000
	2,2',3,4,4',5,6-HeptaBDE	181 2000
	2,2',3,4,4',5,6-HeptaBDE	183 2000
	2,3,3',4,4',5,6-HeptaBDE	190 2000
	2,2',3,4,4',5,5',6-OctaBDE	203 2000
	2,3,3',4,4',5,5',6-OctaBDE	205 2000
	2,2',3,3',4,4',5,5',6-NonaBDE	206 5000
	2,2',3,3',4,4',5,6,6'-NonaBDE	207 5000
	DecaBDE	209 5000

RoHS BDE Standard Mixtures

Catalog #	Compound	Amount
EO-5425	RoHS Screening PBDE Calibration Solutions [CS1-CS3]	Set of 3 x 0.2 mL in Nonane
EO-5425-CS1	RoHS Screening PBDE Calibration Solution [CS1]	0.2 mL in Nonane
EO-5425-CS2	RoHS Screening PBDE Calibration Solution [CS2]	0.2 mL in Nonane
EO-5425-CS3	RoHS Screening PBDE Calibration Solution [CS3]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	BDE	CS1	CS2	CS3
4,4'-DiBDE	15	20	100	1000
2,4,4'-TriBDE	28	20	100	1000
2,2',4,4'-TetraBDE	47	20	100	1000
2,2',4,4',5-PentaBDE	99	20	100	1000
2,2',4,4',5,5'-HexaBDE	153	20	100	1000
2,2',4,4',5,6'-HexaBDE	154	20	100	1000
2,2',3,4,4',5,6-HeptaBDE	183	20	100	1000
2,2',3,3',4,4',6,6'-OctaBDE	197	50	250	2500
2,2',3,3',4,4',5,5',6-NonaBDE	206	100	500	5000
2,2',3,3',4,4',5,6,6'-NonaBDE	207	50	250	2500
2,2',3,3',4,5,5',6,6'-NonaBDE	208	50	250	2500
DecaBDE	209	500	2500	25,000
Labeled				
4,4'-DiBDE (¹³ C ₁₂ ,99%)	15	100	100	100
2,4,4'-TriBDE (¹³ C ₁₂ ,99%)	28	100	100	100
2,2',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	47	100	100	100
2,2',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	99	100	100	100
2,2',4,4',5,5'-HexaBDE (¹³ C ₁₂ ,99%)	153	100	100	100
2,2',4,4',5,6'-HexaBDE (¹³ C ₁₂ ,99%)	154	100	100	100
2,2',3,4,4',5,6-HeptaBDE (¹³ C ₁₂ ,99%)	183	100	100	100
2,2',3,3',4,4',6,6'-OctaBDE (¹³ C ₁₂ ,99%)	197	250	250	250
2,2',3,3',4,4',5,5',6-NonaBDE (¹³ C ₁₂ ,99%)	206	500	500	500
2,2',3,3',4,4',5,6,6'-NonaBDE (¹³ C ₁₂ ,99%)	207	250	250	250
2,2',3,3',4,5,5',6,6'-NonaBDE (¹³ C ₁₂ ,99%)	208	250	250	250
DecaBDE (¹³ C ₁₂ ,99%)	209	25,000	25,000	25,000

RoHS BDE Standard Mixtures

Catalog #	Compound	Amount
NEW EO-5426	RoHS Screening PBDE Cleanup Spike	1.2 mL in Nonane
	Labeled	BDE (ng/mL)
	4,4'-DiBDE (¹³ C ₁₂ ,99%)	15 1000
	2,4,4'-TriBDE (¹³ C ₁₂ ,99%)	28 1000
	2,2',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	47 1000
	2,2',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	99 1000
	2,2',4,4',5,5'-HexaBDE (¹³ C ₁₂ ,99%)	153 1000
	2,2',4,4',5,6'-HexaBDE (¹³ C ₁₂ ,99%)	154 1000
	2,2',3,4,4',5',6-HeptaBDE (¹³ C ₁₂ ,99%)	183 1000
	2,2',3,3',4,4',6,6'-OctaBDE (¹³ C ₁₂ ,99%)	197 2500
	2,2',3,3',4,4',5,5',6-NonaBDE (¹³ C ₁₂ ,99%)	206 5000
	2,2',3,3',4,5,5',6,6'-NonaBDE (¹³ C ₁₂ ,99%)	208 2500
	DecaBDE (¹³ C ₁₂ ,99%)	209 25,000
NEW EO-5427	RoHS Screening PBDE Syringe Spike	1.2 mL in Nonane
	Labeled	
	2,2',3,3',4,4',5,6,6'-NonaBDE (¹³ C ₁₂ ,99%)	207 2500
NEW EO-5428	RoHS Screening PBDE Native PAR Spike	1.2 mL in Nonane
	Unlabeled	
	4,4'-DiBDE	15 1000
	2,4,4'-TriBDE	28 1000
	2,2',4,4'-TetraBDE	47 1000
	2,2',4,4',5-PentaBDE	99 1000
	2,2',4,4',5,5'-HexaBDE	153 1000
	2,2',4,4',5,6'-HexaBDE	154 1000
	2,2',3,4,4',5',6-HeptaBDE	183 1000
	2,2',3,3',4,4',6,6'-OctaBDE	197 2500
	2,2',3,3',4,4',5,5',6-NonaBDE	206 5000
	2,2',3,3',4,4',5,6,6'-NonaBDE	207 2500
	2,2',3,3',4,5,5',6,6'-NonaBDE	208 2500
	DecaBDE	209 25,000

Brominated Diphenyl Ether (BDE) Standard Mixtures

Catalog #	Compound	Amount
EO-5104	Brominated Diphenyl Ether Calibration Solutions [CS1-CS6]	Set of 6 x 0.2 mL in Nonane
NEW EO-5104-CS1	Brominated Diphenyl Ether Calibration Solution [CS1]	0.2 mL in Nonane
NEW EO-5104-CS2	Brominated Diphenyl Ether Calibration Solution [CS2]	0.2 mL in Nonane
NEW EO-5104-CS3	Brominated Diphenyl Ether Calibration Solution [CS3]	0.2 mL in Nonane
NEW EO-5104-CS4	Brominated Diphenyl Ether Calibration Solution [CS4]	0.2 mL in Nonane
NEW EO-5104-CS5	Brominated Diphenyl Ether Calibration Solution [CS5]	0.2 mL in Nonane
NEW EO-5104-CS6	Brominated Diphenyl Ether Calibration Solution [CS6]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)							
Unlabeled	BDE	CS1	CS2	CS3	CS4	CS5	CS6
2-MonoBDE	1	0.2	1	5	25	100	500
3-MonoBDE	2	0.2	1	5	25	100	500
4-MonoBDE	3	0.2	1	5	25	100	500
2,4-DiBDE	7	0.2	1	5	25	100	500
2,4'-DiBDE	8	0.2	1	5	25	100	500
2,6-DiBDE	10	0.2	1	5	25	100	500
3,3'-DiBDE	11	0.2	1	5	25	100	500
3,4-DiBDE	12	0.2	1	5	25	100	500
3,4'-DiBDE	13	0.2	1	5	25	100	500
4,4'-DiBDE	15	0.2	1	5	25	100	500
2,2',4-TriBDE	17	0.2	1	5	25	100	500
2,3',4-TriBDE	25	0.2	1	5	25	100	500
2,4,4'-TriBDE	28	0.2	1	5	25	100	500
2,4,6-TriBDE	30	0.2	1	5	25	100	500
2,4',6-TriBDE	32	0.2	1	5	25	100	500
2',3,4-TriBDE	33	0.2	1	5	25	100	500
3,3',4-TriBDE	35	0.2	1	5	25	100	500
3,4,4'-TriBDE	37	0.2	1	5	25	100	500
2,2',4,4'-TetraBDE	47	0.2	1	5	25	100	500
2,2',4,5'-TetraBDE	49	0.2	1	5	25	100	500
2,3',4,4'-TetraBDE	66	0.2	1	5	25	100	500
2,3',4',6-TetraBDE	71	0.2	1	5	25	100	500
2,4,4',6-TetraBDE	75	0.2	1	5	25	100	500
3,3',4,4'-TetraBDE	77	0.2	1	5	25	100	500
2,2',3,4,4'-PentaBDE	85	0.3	1.5	7.5	37.5	150	750
2,2',4,4',5-PentaBDE	99	0.3	1.5	7.5	37.5	150	750
2,2',4,4',6-PentaBDE	100	0.3	1.5	7.5	37.5	150	750
2,3,4,5,6-PentaBDE	116	0.3	1.5	7.5	37.5	150	750
2,3',4,4',5-PentaBDE	118	0.3	1.5	7.5	37.5	150	750
2,3',4,4',6-PentaBDE	119	0.3	1.5	7.5	37.5	150	750
3,3',4,4',5-PentaBDE	126	0.3	1.5	7.5	37.5	150	750
2,2',3,4,4',5'-HexaBDE	138	0.6	3	15	75	300	1500
2,2',4,4',5,5'-HexaBDE	153	0.4	2	10	50	200	1000
2,2',4,4',5,6'-HexaBDE	154	0.4	2	10	50	200	1000
2,2',4,4',6,6'-HexaBDE	155	0.4	2	10	50	200	1000
2,3,4,4',5,6-HexaBDE	166	0.4	2	10	50	200	1000
2,2',3,4,4',5,6-HeptaBDE	181	0.5	2.5	12.5	62.5	250	1250
2,2',3,4,4',5',6-HeptaBDE	183	0.5	2.5	12.5	62.5	250	1250
2,3,3',4,4',5,6-HeptaBDE	190	0.5	2.5	12.5	62.5	250	1250
Labeled							
4-MonoBDE (¹³ C ₁₂ ,99%)	3	100	100	100	100	100	100
4,4'-DiBDE (¹³ C ₁₂ ,99%)	15	100	100	100	100	100	100
2,4,4'-TriBDE (¹³ C ₁₂ ,99%)	28	100	100	100	100	100	100
2,2',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	47	100	100	100	100	100	100
3,3',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	77	100	100	100	100	100	100
2,2',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	99	100	100	100	100	100	100
2,2',4,4',6-PentaBDE (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100
2,3',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	118	100	100	100	100	100	100
3,3',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	126	150	150	150	150	150	150
2,2',4,4',5,5'-HexaBDE (¹³ C ₁₂ ,99%)	153	200	200	200	200	200	200
2,2',3,4,4',5',6-HeptaBDE (¹³ C ₁₂ ,99%)	183	250	250	250	250	250	250

Brominated Diphenyl Ether (BDE) Standard Mixtures

Catalog #	Compound	Amount
EO-5100	Polybrominated Diphenyl Ether Surrogate Spiking Solution	1.2 mL in Nonane
EO-5100-10X-0.5	Polybrominated Diphenyl Ether Surrogate Spiking Solution (10X stock)	0.5 mL in Nonane

Labeled	BDE	EO-5100 (ng/mL)	EO-5100-10X-0.5 (ng/mL)
4-MonoBDE (¹³C₁₂,99%)	3	100	1000
4,4'-DiBDE (¹³C₁₂,99%)	15	100	1000
2,4,4'-TriBDE (¹³C₁₂,99%)	28	100	1000
2,2',4,4'-TetraBDE (¹³C₁₂,99%)	47	100	1000
2,2',4,4',5-PentaBDE (¹³C₁₂,99%)	99	150	1500
2,2',4,4',6-PentaBDE (¹³C₁₂,99%)	100	150	1500
2,3',4,4',5-PentaBDE (¹³C₁₂,99%)	118	150	1500
2,2',4,4',5,5'-HexaBDE (¹³C₁₂,99%)	153	200	2000
2,2',3,4,4',5,6-HeptaBDE (¹³C₁₂,99%)	183	250	2500

EO-5101	Polybrominated Diphenyl Ether Performance Standard Solution	1.2 mL in Nonane
EO-5101-10X-1.2	Polybrominated Diphenyl Ether Performance Standard Solution (10X stock)	1.2 mL in Nonane

Labeled		EO-5101	EO-5101-10X-1.2
3,3',4,4'-TetraBDE (¹³C₁₂,99%)	77	100	1000
3,3',4,4',5-PentaBDE (¹³C₁₂,99%)	126	150	1500

EO-5103	Polybrominated Diphenyl Ether Predominant Congener Mixture	1.2 mL in Nonane
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Unlabeled		
2,2',4-TriBDE	17	2500
2,4,4'-TriBDE	28	2500
2,2',4,4'-TetraBDE	47	2500
2,3',4,4'-TetraBDE	66	2500
2,3',4',6-TetraBDE	71	2500
2,2',3,4,4'-PentaBDE	85	2500
2,2',4,4',5-PentaBDE	99	2500
2,2',4,4',6-PentaBDE	100	2500
2,2',3,4,4',5'-HexaBDE	138	3750
2,2',4,4',5,5'-HexaBDE	153	2500
2,2',4,4',5,6'-HexaBDE	154	2500
2,2',3,4,4',5,6-HeptaBDE	183	2500
2,3,3',4,4',5,6-HeptaBDE	190	2500
DecaBDE	209	10,000

Brominated Diphenyl Ether (BDE) Standard Mixtures

Catalog #	Compound	Amount
EO-5113	Polybrominated Diphenyl Ether PAR Solution	0.5 mL in Nonane
EO-5113-7.5X-0.5	Polybrominated Diphenyl Ether PAR Solution (7.5X stock)	0.5 mL in Nonane

Unlabeled	BDE	EO-5113 (ng/mL)	EO-5113-7.5X-0.5 (ng/mL)
2-MonoBDE	1	100	750
3-MonoBDE	2	100	750
4-MonoBDE	3	100	750
2,4-DiBDE	7	100	750
2,4'-DiBDE	8	100	750
2,6-DiBDE	10	100	750
3,3'-DiBDE	11	100	750
3,4-DiBDE	12	100	750
3,4'-DiBDE	13	100	750
4,4'-DiBDE	15	100	750
2,2',4-TriBDE	17	100	750
2,3',4-TriBDE	25	100	750
2,4,4'-TriBDE	28	100	750
2,4,6-TriBDE	30	100	750
2,4',6-TriBDE	32	100	750
2',3,4-TriBDE	33	100	750
3,3',4-TriBDE	35	100	750
3,4,4'-TriBDE	37	100	750
2,2',4,4'-TetraBDE	47	100	750
2,2',4,5'-TetraBDE	49	100	750
2,3',4,4'-TetraBDE	66	100	750
2,3',4',6-TetraBDE	71	100	750
2,4,4',6-TetraBDE	75	100	750
3,3',4,4'-TetraBDE	77	100	750
2,2',3,4,4'-PentaBDE	85	150	1125
2,2',4,4',5-PentaBDE	99	150	1125
2,2',4,4',6-PentaBDE	100	150	1125
2,3,4,5,6-PentaBDE	116	150	1125
2,3',4,4',5-PentaBDE	118	150	1125
2,3',4,4',6-PentaBDE	119	150	1125
3,3',4,4',5-PentaBDE	126	150	1125
2,2',3,4,4',5'-HexaBDE	138	300	2250
2,2',4,4',5,5'-HexaBDE	153	200	1500
2,2',4,4',5,6'-HexaBDE	154	200	1500
2,2',4,4',6,6'-HexaBDE	155	200	1500
2,3,4,4',5,6-HexaBDE	166	200	1500
2,2',3,4,4',5,6-HeptaBDE	181	250	1875
2,2',3,4,4',5',6-HeptaBDE	183	250	1875
2,3,3',4,4',5,6-HeptaBDE	190	250	1875

Brominated Diphenyl Ether (BDE) Standard Mixtures

Catalog #	Compound	Amount
EO-5099	Polybrominated Diphenyl Ether Analytical Standard Solution	1.2 mL in Nonane
	Unlabeled	BDE (ng/mL)
	2-MonoBDE	1
	3-MonoBDE	2
	4-MonoBDE	3
	2,4-DiBDE	7
	2,4'-DiBDE	8
	2,6-DiBDE	10
	3,3'-DiBDE	11
	3,4-DiBDE	12
	3,4'-DiBDE	13
	4,4'-DiBDE	15
	2,2',4-TriBDE	17
	2,3',4-TriBDE	25
	2,4,4'-TriBDE	28
	2,4,6-TriBDE	30
	2,4',6-TriBDE	32
	2',3,4-TriBDE	33
	3,3',4-TriBDE	35
	3,4,4'-TriBDE	37
	2,2',4,4'-TetraBDE	47
	2,2',4,5'-TetraBDE	49
	2,3',4,4'-TetraBDE	66
	2,3',4',6-TetraBDE	71
	2,4,4',6-TetraBDE	75
	3,3',4,4'-TetraBDE	77
	2,2',3,4,4'-PentaBDE	85
	2,2',4,4',5-PentaBDE	99
	2,2',4,4',6-PentaBDE	100
	2,3,4,5,6-PentaBDE	116
	2,3',4,4',5-PentaBDE	118
	2,3',4,4',6-PentaBDE	119
	3,3',4,4',5-PentaBDE	126
	2,2',3,4,4',5'-HexaBDE	138
	2,2',4,4',5,5'-HexaBDE	153
	2,2',4,4',5,6'-HexaBDE	154
	2,2',4,4',6,6'-HexaBDE	155
	2,3,4,4',5,6-HexaBDE	166
	2,2',3,4,4',5,6-HeptaBDE	181
	2,2',3,4,4',5',6-HeptaBDE	183
	2,3,3',4,4',5,6-HeptaBDE	190
	Labeled	
	4-MonoBDE (¹³ C ₁₂ ,99%)	3
	4,4'-DiBDE (¹³ C ₁₂ ,99%)	15
	2,4,4'-TriBDE (¹³ C ₁₂ ,99%)	28
	2,2',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	47
	3,3',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	77
	2,2',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	99
	2,2',4,4',6-PentaBDE (¹³ C ₁₂ ,99%)	100
	2,3',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	118
	3,3',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	126
	2,2',4,4',5,5'-HexaBDE (¹³ C ₁₂ ,99%)	153
	2,2',3,4,4',5',6-HeptaBDE (¹³ C ₁₂ ,99%)	183

Brominated Flame Retardant (BFR) Standard Mixtures

Catalog #	Compound	Amount
NEW EO-5319-A	CDC BFR Calibration Standards [CS1-CS10]	Set of 10 x 0.5 mL in Nonane
NEW EO-5319-A-CS1	CDC BFR Calibration Standard [CS1]	0.5 mL in Nonane
NEW EO-5319-A-CS2	CDC BFR Calibration Standard [CS2]	0.5 mL in Nonane
NEW EO-5319-A-CS3	CDC BFR Calibration Standard [CS3]	0.5 mL in Nonane
NEW EO-5319-A-CS4	CDC BFR Calibration Standard [CS4]	0.5 mL in Nonane
NEW EO-5319-A-CS5	CDC BFR Calibration Standard [CS5]	0.5 mL in Nonane
NEW EO-5319-A-CS6	CDC BFR Calibration Standard [CS6]	0.5 mL in Nonane
NEW EO-5319-A-CS7	CDC BFR Calibration Standard [CS7]	0.5 mL in Nonane
NEW EO-5319-A-CS8	CDC BFR Calibration Standard [CS8]	0.5 mL in Nonane
NEW EO-5319-A-CS9	CDC BFR Calibration Standard [CS9]	0.5 mL in Nonane
NEW EO-5319-A-CS10	CDC BFR Calibration Standard [CS10]	0.5 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled		CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8	CS9	CS10
2,2',4'-TriBDE	17	0.2	0.5	1	5	10	50	100	500	1000	2000
2,4,4'-TriBDE	28	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',4,4'-TetraBDE	47	0.2	0.5	1	5	10	50	100	500	1000	2000
2,3',4,4'-TetraBDE	66	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',4,4',6-PentaBDE	100	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',4,4',5-PentaBDE	99	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',3,4,4'-PentaBDE	85	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',4,4',5,6'-HexaBDE	154	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',4,4',5,5'-HexaBDE	153	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',3,4,4',5,6'-HeptaBDE	183	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',3,3',4,4',5,6'-OctaBDE	196	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',3,3',4,4',6,6'-OctaBDE	197	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',3,4,4',5,5',6-OctaBDE	203	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',3,3',4,4',5,5',6-NonaBDE	206	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',3,3',4,4',5,6,6'-NonaBDE	207	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',3,3',4,5,5',6,6'-NonaBDE	208	0.2	0.5	1	5	10	50	100	500	1000	2000
DecaBDE	209	0.2	0.5	1	5	10	50	100	500	1000	2000
2,2',4,4',5,5'-Hexabromobiphenyl	153	0.2	0.5	1	5	10	50	100	500	1000	2000
Hexabromobenzene		0.2	0.5	1	5	10	50	100	500	1000	2000
1,2-Bis(pentabromophenyl) ethane		0.2	0.5	1	5	10	50	100	500	1000	2000
1,2-Bis(2,4,6-tribromophenoxy) ethane		0.2	0.5	1	5	10	50	100	500	1000	2000
γ-Hexabromocyclododecane		0.2	0.5	1	5	10	50	100	500	1000	2000
Labeled											
1,2,3,4-TCDD (¹³ C ₆ ,99%)		25	25	25	25	25	25	25	25	25	25
2,2',3,3',4,5,5',6,6'-NonaCB (¹³ C ₁₂ ,99%)	208	100	100	100	100	100	100	100	100	100	100
2,4,4'-TriBDE (¹³ C ₁₂ ,99%)	28	75	75	75	75	75	75	75	75	75	75
2,2',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	47	75	75	75	75	75	75	75	75	75	75
3,3',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	77	75	75	75	75	75	75	75	75	75	75
2,2',4,4',6-PentaBDE (¹³ C ₁₂ ,99%)	100	75	75	75	75	75	75	75	75	75	75
2,2',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	99	75	75	75	75	75	75	75	75	75	75
2,2',4,4',5,6'-HexaBDE (¹³ C ₁₂ ,99%)	154	75	75	75	75	75	75	75	75	75	75
2,2',4,4',5,5'-HexaBDE (¹³ C ₁₂ ,99%)	153	75	75	75	75	75	75	75	75	75	75
2,2',3,4,4',6-HexaBDE (¹³ C ₁₂ ,99%)	139	75	75	75	75	75	75	75	75	75	75
2,2',3,4,4',5,6'-HeptaBDE (¹³ C ₁₂ ,99%)	183	75	75	75	75	75	75	75	75	75	75
2,2',3,3',4,4',6,6'-OctaBDE (¹³ C ₁₂ ,99%)	197	75	75	75	75	75	75	75	75	75	75
2,2',3,4,4',5,5',6-OctaBDE (¹³ C ₁₂ ,99%)	203	75	75	75	75	75	75	75	75	75	75
2,2',3,3',4,4',5,5',6-NonaBDE (¹³ C ₁₂ ,99%)	206	75	75	75	75	75	75	75	75	75	75
2,2',3,3',4,4',5,6,6'-NonaBDE (¹³ C ₁₂ ,99%)	207	75	75	75	75	75	75	75	75	75	75
2,2',3,3',4,5,5',6,6'-NonaBDE (¹³ C ₁₂ ,99%)	208	75	75	75	75	75	75	75	75	75	75
DecaBDE (¹³ C ₁₂ ,99%)	209	500	500	500	500	500	500	500	500	500	500
2,2',4,4',5,5'-HexaBB (¹³ C ₁₂ ,99%)	153	75	75	75	75	75	75	75	75	75	75
Hexabromobenzene (¹³ C ₆ ,99%)		75	75	75	75	75	75	75	75	75	75
1,2-Bis(pentabromophenyl) ethane (¹³ C ₁₄ ,99%)		75	75	75	75	75	75	75	75	75	75
1,2-Bis(2,4,6-tribromophenoxy) ethane (¹³ C ₁₂ ,99%)		75	75	75	75	75	75	75	75	75	75
γ-Hexabromocyclododecane (¹³ C ₁₂ ,99%)		75	75	75	75	75	75	75	75	75	75

Brominated Flame Retardant (BFR) Standard Mixtures

Catalog #	Compound	Amount																																																									
NEW EO-5320-A	CDC BFR Spiking Standard	10 mL in Methanol																																																									
	<table> <tr> <th>Labeled</th><th>Congener</th><th>(ng/mL)</th></tr> <tr> <td>2,4,4'-TriBDE (¹³C₁₂,99%)</td><td>28</td><td>7.5</td></tr> <tr> <td>2,2',4,4'-TetraBDE (¹³C₁₂,99%)</td><td>47</td><td>7.5</td></tr> <tr> <td>2,2',4,4',6-PentaBDE (¹³C₁₂,99%)</td><td>100</td><td>7.5</td></tr> <tr> <td>2,2',4,4',5-PentaBDE (¹³C₁₂,99%)</td><td>99</td><td>7.5</td></tr> <tr> <td>2,2',4,4',5,6'-HexaBDE (¹³C₁₂,99%)</td><td>154</td><td>7.5</td></tr> <tr> <td>2,2',4,4',5,5'-HexaBDE (¹³C₁₂,99%)</td><td>153</td><td>7.5</td></tr> <tr> <td>2,2',3,4,4',5,6-HeptaBDE (¹³C₁₂,99%)</td><td>183</td><td>7.5</td></tr> <tr> <td>2,2',3,3',4,4',6,6'-OctaBDE (¹³C₁₂,99%)</td><td>197</td><td>7.5</td></tr> <tr> <td>2,2',3,4,4',5,5',6-OctaBDE (¹³C₁₂,99%)</td><td>203</td><td>7.5</td></tr> <tr> <td>2,2',3,3',4,4',5,5',6-NonaBDE (¹³C₁₂,99%)</td><td>206</td><td>7.5</td></tr> <tr> <td>2,2',3,3',4,4',5,6,6'-NonaBDE (¹³C₁₂,99%)</td><td>207</td><td>7.5</td></tr> <tr> <td>2,2',3,3',4,5,5',6,6'-NonaBDE (¹³C₁₂,99%)</td><td>208</td><td>7.5</td></tr> <tr> <td>DecaBDE (¹³C₁₂,99%)</td><td>209</td><td>50</td></tr> <tr> <td>2,2',4,4',5,5'-HexaBB (¹³C₁₂,99%)</td><td>153</td><td>7.5</td></tr> <tr> <td>Hexabromobenzene (¹³C₆,99%)</td><td></td><td>7.5</td></tr> <tr> <td>1,2-Bis(pentabromophenyl) ethane (¹³C₁₄,99%)</td><td></td><td>7.5</td></tr> <tr> <td>1,2-Bis(2,4,6-tribromophenoxy) ethane (¹³C₁₂,99%)</td><td></td><td>7.5</td></tr> <tr> <td>γ-Hexabromocyclododecane (¹³C₁₂,99%)</td><td></td><td>7.5</td></tr> </table>	Labeled	Congener	(ng/mL)	2,4,4'-TriBDE (¹³ C ₁₂ ,99%)	28	7.5	2,2',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	47	7.5	2,2',4,4',6-PentaBDE (¹³ C ₁₂ ,99%)	100	7.5	2,2',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	99	7.5	2,2',4,4',5,6'-HexaBDE (¹³ C ₁₂ ,99%)	154	7.5	2,2',4,4',5,5'-HexaBDE (¹³ C ₁₂ ,99%)	153	7.5	2,2',3,4,4',5,6-HeptaBDE (¹³ C ₁₂ ,99%)	183	7.5	2,2',3,3',4,4',6,6'-OctaBDE (¹³ C ₁₂ ,99%)	197	7.5	2,2',3,4,4',5,5',6-OctaBDE (¹³ C ₁₂ ,99%)	203	7.5	2,2',3,3',4,4',5,5',6-NonaBDE (¹³ C ₁₂ ,99%)	206	7.5	2,2',3,3',4,4',5,6,6'-NonaBDE (¹³ C ₁₂ ,99%)	207	7.5	2,2',3,3',4,5,5',6,6'-NonaBDE (¹³ C ₁₂ ,99%)	208	7.5	DecaBDE (¹³ C ₁₂ ,99%)	209	50	2,2',4,4',5,5'-HexaBB (¹³ C ₁₂ ,99%)	153	7.5	Hexabromobenzene (¹³ C ₆ ,99%)		7.5	1,2-Bis(pentabromophenyl) ethane (¹³ C ₁₄ ,99%)		7.5	1,2-Bis(2,4,6-tribromophenoxy) ethane (¹³ C ₁₂ ,99%)		7.5	γ-Hexabromocyclododecane (¹³ C ₁₂ ,99%)		7.5	
Labeled	Congener	(ng/mL)																																																									
2,4,4'-TriBDE (¹³ C ₁₂ ,99%)	28	7.5																																																									
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2,2',4,4',6-PentaBDE (¹³ C ₁₂ ,99%)	100	7.5																																																									
2,2',4,4',5-PentaBDE (¹³ C ₁₂ ,99%)	99	7.5																																																									
2,2',4,4',5,6'-HexaBDE (¹³ C ₁₂ ,99%)	154	7.5																																																									
2,2',4,4',5,5'-HexaBDE (¹³ C ₁₂ ,99%)	153	7.5																																																									
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2,2',4,4',5,5'-HexaBB (¹³ C ₁₂ ,99%)	153	7.5																																																									
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1,2-Bis(pentabromophenyl) ethane (¹³ C ₁₄ ,99%)		7.5																																																									
1,2-Bis(2,4,6-tribromophenoxy) ethane (¹³ C ₁₂ ,99%)		7.5																																																									
γ-Hexabromocyclododecane (¹³ C ₁₂ ,99%)		7.5																																																									
EO-5169	BFR Recovery Spiking Solution	10 mL in 88% Hexane/ 2% Dodecane/10% Nonane																																																									
	<table> <tr> <th>Labeled</th><th></th><th></th></tr> <tr> <td>1,2,3,4-TetraCDD (¹³C₆,99%)</td><td></td><td>2.5</td></tr> <tr> <td>3,3',4,4'-TetraBDE (¹³C₁₂,99%)</td><td>77</td><td>7.5</td></tr> <tr> <td>2,2',3,4,4',6-HexaBDE (¹³C₁₂,99%)</td><td>139</td><td>7.5</td></tr> <tr> <td>2,2',3,3',4,5,5',6,6'-NonaCB (¹³C₁₂,99%)</td><td>208</td><td>10</td></tr> </table>	Labeled			1,2,3,4-TetraCDD (¹³ C ₆ ,99%)		2.5	3,3',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	77	7.5	2,2',3,4,4',6-HexaBDE (¹³ C ₁₂ ,99%)	139	7.5	2,2',3,3',4,5,5',6,6'-NonaCB (¹³ C ₁₂ ,99%)	208	10																																											
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3,3',4,4'-TetraBDE (¹³ C ₁₂ ,99%)	77	7.5																																																									
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