



CIL

Cambridge Isotope Laboratories, Inc.
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ENVIRONMENTAL STANDARDS

Environmental Contaminant Product Standards

2009 New Product Guide

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New

2009 New Product Guide

CIL's position as the leading supplier of isotopically labeled standards for environmental IDMS analysis is predicated on our ability to keep up with the needs of researchers in the field. This commitment requires a constant production of new and valuable products to assist researchers in the analysis of all environmental contaminants, whether "legacy" compounds, or new "emerging" analytes.

To view full product descriptions of CILs standard mixtures, please visit our website at isotope.com, click on the "Search" button, and enter

the appropriate "Catalog Number" for the mixture you wish to review. Making sure the "contains" button in the "Search Matching" section is assigned, click on the "Search" button. A list of all items containing that product number will be shown. Clicking the "Name" of the desired item takes you to the product card, which contains an "Information File" at the bottom of the card.

This pdf file contains details of the mixture, including components, concentrations, solvents, and volume.

¹³C₁₀ Toxaphene Congeners

After decades of requests, and literally years of effort, CIL proudly announces the first ¹³C₁₀ Toxaphene congeners. The most commonly-analyzed congeners, colloquially known as "Parlar 26," "Parlar 50," and "Parlar 62," are the first in what will be a series of uniformly-¹³C-labeled Toxaphene congeners, one of the important components of the Stockholm Treaty's original "Dirty Dozen" POPs.

CLM-7930-1.2	2-endo,3-exo,5-endo,6-exo,8,8,10,10-Octachlorobornane Parlar 26 (U-¹³C₁₀, 99%) 10 µg/mL in nonane	1.2 mL
CLM-7931-1.2	2-endo,3-exo,5-endo,6-exo,8,8,9,10,10-nonachlorobornane Parlar 50 (U-¹³C₁₀, 99%) 10 µg/mL in nonane	1.2 mL
CLM-7932-1.2	2-endo,2-exo,5-endo,5-exo,8,9,9,10,10-nonachlorobornane Parlar 62 (U-¹³C₁₀, 99%) 10 µg/mL in nonane	1.2 mL

Steroids

These steroids are relatively unstable in solution, so for longer-term shelf-life, they were carefully formulated using the same protocols as for CIL's quantitative formulations. The solvent was then gently evaporated to leave ~100±10 µg in the vial. Analysts can reconstitute these when needed to minimize the amount of interference and quantitative inaccuracy from decomposition products.

CLM-8011-0.1MG	DL-2-Hydroxyestrone (13,14,15,16,17,18-¹³C₆, 99%)	0.1 mg
CLM-8013-0.1MG	DL-4-Hydroxyestrone (13,14,15,16,17,18-¹³C₆, 99%)	0.1 mg
CLM-8014-0.1MG	DL-2-Methoxyestrone (13,14,15,16,17,18-¹³C₆, 99%)	0.1 mg
CLM-8015-0.1MG	DL-2-Methoxyestradiol (13,14,15,16,17,18-¹³C₆, 99%)	0.1 mg
CLM-8016-0.1MG	DL-2-Hydroxyestrone-3-methyl ether (13,14,15,16,17,18-¹³C₆, 99%)	0.1 mg
CLM-8017-0.1MG	DL-4-Methoxyestrone (13,14,15,16,17,18-¹³C₆, 99%)	0.1 mg
CLM-8019-0.1MG	DL-4-Methoxyestradiol (13,14,15,16,17,18-¹³C₆, 99%)	0.1 mg
CLM-8012-0.1MG	2-Hydroxyestradiol (13,14,15,16,17,18-¹³C₆, 99%)	0.1 mg
DLM-2218-0.1MG	Cortisol (9,11,12,12-D₄, 98%)	0.1 mg

Steroids in Polar Solvents

CIL has sold CLM-673-1.2, Estrone (3,4-¹³C₂, 90%) solutions since 2004. With 6 ¹³C-labeled atoms, each one at 99% enrichment, CIL's new CLM-7935-1.2 offers better mass discrimination and lower levels of native, enabling much greater dynamic range of analysis and better quantitation. CIL continues to offer CLM-673-1.2 for those who need continuity for methods developed using Estrone (3,4-¹³C₂, 90%).

CLM-7935-1.2	DL-Estrone (13,14,15,16,17,18-¹³C₆, 99%) 100 µg/mL in methanol	1.2 mL
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Many steroid and pesticide analyses are now being performed on samples of a polar nature, ranging from water to urine to plasma. To facilitate spiking into a polar phase, CIL has begun formulation of standards in polar solvents such as Dioxane, Methanol, and Acetonitrile as alternatives to our standards using Nonane or Isooctane solvents.

DLM-170-D-1.2	Diethylstilbestrol (cis/trans mix) (ring-3,3',5,5'-diethyl-1,1,1',1'-D₈, 98%) 100 µg/mL in dioxane	1.2 mL
ULM-7921-D-1.2	Diethylstilbestrol (cis/trans mix) 100 µg/mL in dioxane	1.2 mL
DLM-8085-D-1.2	Testosterone (D₅, 98%) 100 µg/mL in dioxane	1.2 mL
ULM-8081-D-1.2	Testosterone (unlabeled) 100 µg/mL in dioxane	1.2 mL

Pharmaceutical & Personal Care Products (PPCPs) and Pesticides in Polar Solvents

Interest in the analysis of Personal Care Products in wastewater and drinking water has expanded to include many new analytes. Thiabendazole is both a pesticide and an antibiotic, while Oxybenzone is a Benzophenone derivative used in sunscreens. Diphenylhydantoin, like Carbamazepine, is an anticonvulsant (more commonly known as Dilantin), and Amitriptyline is an antidepressant. These standards have all been produced in water-miscible solvents.

CLM-8370-1.2	Thiabendazole (ring-¹³C₆, 99%) 100 µg/mL in acetonitrile	1.2 mL
ULM-8371-1.2	Thiabendazole (unlabeled) 100 µg/mL in acetonitrile	1.2 mL
CLM-8525-1.2	Oxybenzone (phenyl-¹³C₆, 99%) 100 µg/mL in acetonitrile	1.2 mL
ULM-8531-1.2	Oxybenzone (unlabeled) 100 µg/mL in acetonitrile	1.2 mL
CNLM-411-1.2	5,5-Diphenylhydantoin (2-¹³C, 99%; 1,3-¹⁵N₂, 98%) 100 µg/mL in methanol	1.2 mL
ULM-8533-1.2	5,5-Diphenylhydantoin (unlabeled) 100 µg/mL in methanol	1.2 mL
DLM-3008-1.2	Amitriptyline:HCl (N,N-dimethyl-D₆, 98%) 100 µg/mL in methanol	1.2 mL
ULM-8350-1.2	Amitriptyline:HCl (unlabeled) 100 µg/mL in methanol	1.2 mL

New isotope-labeled pesticides are always helpful to the analytical community. In anticipation of aqueous analyses, these have been prepared in polar solvents, as have the new unlabeled solutions of Propazine and Phosmet.

DLM-4762-D-1.2	N,N-Diethyl-m-toluamide (DEET) (dimethyl-D₆, 98%) 100µg/mL in dioxane	1.2 mL
ULM-7975-D-1.2	N,N-Diethyl-m-toluamide (DEET) (unlabeled) 100 µg/mL in dioxane	1.2 mL
DLM-7150-1.2	Oxydemeton methyl (di-O-methyl-D₆, 98%) 100 µg/mL in acetonitrile	1.2 mL
ULM-8579-1.2	Oxydemeton methyl (Chemical Purity 95%) (unlabeled) 100 µg/mL in acetonitrile	1.2 mL
DLM-8512-1.2	Imidacloprid (4,4,5,5-D₄, 98%) 100 µg/mL in methanol	1.2 mL
ULM-8513-1.2	Imidacloprid (unlabeled) 100 µg/mL in methanol	1.2 mL
ULM-8304-1.2	Propazine (unlabeled) 100 µg/mL in methanol	1.2 mL
ULM-8454-1.2	Phosmet (unlabeled) 100 µg/mL in acetonitrile	1.2 mL
CNLM-7148-1.2	Methomyl (Acetohydroxamate-¹³C₂, 99%; ¹⁵N 98%) 100 µg/mL in methanol	1.2 mL
ULM-8639-1.2	Methomyl (unlabeled) 100 µg/mL in methanol	1.2 mL

Melamine and Melamine Byproducts

Ammelide (2-Amino-4,6-dihydroxytriazine) is the next Melamine-like standard to be produced by CIL; Ammeline (Desethyl-desisopropyl-hydroxyatrazine) is in production, so please inquire for price and delivery. For large volume analysis of Cyanuric acid and Melamine, CIL offers new 1mg/mL stock solutions.

CLM-8589-1.2	Ammelide (ring-¹³C₃, 99%) 100 µg/mL in water:diethylamine (80:20)	1.2 mL
ULM-8590-1.2	Ammelide (unlabeled) 100 µg/mL in water:diethylamine (80:20)	1.2 mL
CNLM-8150-10X-1.2	Melamine (¹³C₃, 99%; amino-¹⁵N₃, 98%) 1000 µg/mL in water	1.2 mL
CNLM-4661-10X-1.2	Cyanuric acid (90%+ Chemical Purity)(U-¹³C₃, 99%; U-¹⁵N₃, 98%+) 1000 µg/mL in water	1.2 mL

Unlabeled PCB Mixes

CIL has produced two large mixes of unlabeled PCBs, formulated entirely from CIL's PCB "Certified Standards" individual stock solutions. The Comprehensive Native PCB Mixture is a multipurpose mixture that includes all the WHO Dioxin-Like PCBs that have been assigned TEFs, the predominant congeners, and first- and last-eluting congeners from the Mono through Deca homologue groups. Since some pairs of these compounds coelute on certain columns, the Fully Resolved Native Mono-Deca PCB Mixture was formulated with no coeluting congeners under normal analytical conditions.

EC-5433	Comprehensive Native PCB Mixture (unlabeled)	1.2 mL
EC-5434	Fully Resolved Native Mono-Deca PCB Mixture (unlabeled)	1.2 mL

Brominated and Chlorinated Flame Retardants

As BDE flame retardants are phased out worldwide, other flame retardants such as Dechlorane Plus have attracted the interest of analysts and toxicologists. Dechlorane Plus occurs as a pair of stereoisomers. CIL has recently completed synthesis and formulation of both the Syn and Anti stereoisomers to pair with our previously-offered unlabeled standards.

CLM-8569-1.2	Dechlorane Plus Syn ($^{13}\text{C}_{10}$, 99%) 100 $\mu\text{g}/\text{mL}$ in nonane	1.2 mL
CLM-8588-1.2	Dechlorane Plus Anti ($^{13}\text{C}_{10}$, 99%) 100 $\mu\text{g}/\text{mL}$ in nonane	1.2 mL

With attention focusing on the analysis of DecaBDE and the debromination of DecaBDE, CIL is pleased to offer two new isotope-labeled BDE standards to join the unlabeled Certified Standards analogues.

EO-5376	2,3,3',4,4',5,6-HeptaBDE (BDE-190) ($^{13}\text{C}_{12}$, 99%) 50 $\mu\text{g}/\text{mL}$ in nonane	1.2 mL
EO-5413	2,2',4,4',6,6'-HexaBDE (BDE-155) ($^{13}\text{C}_{12}$, 99%) 50 $\mu\text{g}/\text{mL}$ in nonane	1.2 mL

Other Brominated Compounds

Potassium bromate is an oxidizing agent historically used as a flour improver, but now is considered a possible human carcinogen. It has been banned from use in food products in Europe, Canada, China, and many other countries, but not in the United States. It can be difficult to analyze, so isotope dilution should improve data quality.

OLM-8283-1.2	Potassium bromate (90-95% Chemical Purity) ($^{18}\text{O}_3$, 98%) 100 $\mu\text{g}/\text{mL}$ in water	1.2 mL
ULM-8451-1.2	Potassium bromate (unlabeled) 100 $\mu\text{g}/\text{mL}$ in water	1.2 mL

$^{13}\text{C}_{12}$ -2,4,6,8-TBDF has been available as a 4 x 1.2mL product for several years, and is now available as a single ampoule.

EF-5082-1.2	2,4,6,8-TBDF ($^{13}\text{C}_{12}$, 99%) 5 $\mu\text{g}/\text{mL}$ in nonane	1.2 mL
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New Unlabeled PCB Certified Standards

CIL extends its offerings of the rigorously-formulated PCB-CS (Certified Standards). CIL takes extra steps to ensure the accuracy of PCB-CS standards. If the neat material shows signs of byproduct PCBs or other impurities that might affect the integrity of the quantitative accuracy, we perform additional repurification by recrystallization and/or HPLC purification. Using these ultra-pure unlabeled PCBs, three different Formulations Chemists independently prepare 100 µg/mL solutions. If these solutions are statistically equivalent, the final solution is prepared by combining these three independently formulated and analyzed solutions to form the most accurate commercially-available unlabeled PCB standards. Please visit www.isotope.com for a full list of PCB "Certified Standards"

PCB-11-CS	3,3'-DICB Certified Standard (unlabeled) 100 µg/mL in isooctane	1.2 mL
PCB-12-CS	3,4-DICB Certified Standard (unlabeled) 100 µg/mL in isooctane	1.2 mL
PCB-31-CS	2,4',5-TriCB Certified Standard (unlabeled) 100 µg/mL in isooctane	1.2 mL
PCB-33-CS	2',3,4-TriCB Certified Standard (unlabeled) 100 µg/mL in isooctane	1.2 mL
PCB-35-CS	3,3',4-TriCB Certified Standard (unlabeled) 100 µg/mL in isooctane	1.2 mL
PCB-57-CS	2,3,3',5-TetraCB Certified Standard (unlabeled) 100 µg/mL in isooctane	1.2 mL
PCB-78-CS	3,3',4,5-TetraCB Certified Standard (unlabeled) 100 µg/mL in isooctane	1.2 mL
PCB-95-CS	2,2',3,5',6-PentaCB Certified Standard (unlabeled) 100 µg/mL in isooctane	1.2 mL
PCB-162-CS	2,3,3',4',5,5'-HexaCB Certified Standard (unlabeled) 100 µg/mL in isooctane	1.2 mL
PCB-174-CS	2,2',3,3',4,5,6'-HeptaCB Certified Standard (unlabeled) 100 µg/mL in isooctane	1.2 mL
PCB-199-CS	2,2',3,3',4,5,6,6'-OctaCB Certified Standard (unlabeled) 100 µg/mL in isooctane	1.2 mL

Substituted PAHs

As substituted PAHs continue to be explored, CIL continues to produce new standards to aid the analysis.

ULM-8270-1.2	9-Chlorophenanthrene (unlabeled) 50 µg/mL in toluene	1.2 mL
ULM-8365-1.2	9-Nitroanthracene (unlabeled) 50 µg/mL in toluene	1.2 mL

Industrial Chemicals

Perfluorinated compounds continue to be studied extensively because of their widespread use in consumer products that require stain resistance or stick resistance. CIL has sold ¹³C-labeled Epichlorohydrin standards for years, and now offers the unlabeled standard as well. Unlabeled Monoisodecyl phthalate (explicitly Mono-3,7-Dimethyloctylphthalate) is our most recent Phthalate metabolite standard; please inquire if you are interested in the ¹³C₄ standard.

CLM-8240-1.2	Perfluoroundecanoic acid (¹³C₉) 50 µg/mL in methanol	1.2 mL
ULM-8084-1.2	Perfluoroundecanoic acid (unlabeled) 50 µg/mL in methanol	1.2 mL
ULM-7403-1.2	Epichlorohydrin (unlabeled) 100 µg/mL in acetonitrile	1.2 mL
ULM-4652-1.2	Monoisodecyl phthalate (unlabeled) 100 µg/mL in acetonitrile	1.2 mL