Cambridge Isotope Laboratories, Inc.
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ENVIRONMENTAL STANDARDS

Standards for Environmental, Food, Water, and Exposure Analysis NEW!

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2022 New Products

Each year CIL adds many new products for environmental, food, water, and exposure analysis to our inventory. Most items included in this new-product listing are in stock and available for standard delivery, though some items still in the production process may be listed as "inquire." Please contact us for complete product availability.

Cannabinoids

(-)-Δ^9-Tetrahydrocannabinol (THC) is a major cannabinoid compound produced by the cannabis plant. THC is regulated by a variety of state and federal laws due to its psychoactive effects. Tetrahydrocannabivarin (THCV) is a homologue of tetrahydrocannabinol (THC) and does not exhibit psychoactive effects. It has potential use for weight loss and/or management of obesity and type 2 diabetes, as it has been shown to suppress the appetite and increase satiety.[1] For a complete listing of CIL's cannabis testing standards, please click **here**.

Catalog No.	Description	Concentration	Amount
DLM-10846-1.2	(-)-Δ^9-Tetrahydrocannabinol (THC) (methyl-D_3, 98%)	100 µg/mL in methanol	1.2 mL
ULM-10874-1.2	(-)-Δ^9-Tetrahydrocannabinol (THC) (unlabeled)	1000 µg/mL in methanol	1.2 mL
DLM-10707-1.2	Tetrahydrocannabivarin (THCV) (propyl-3,3,3-D_3, 98%)	100 µg/mL in methanol	1.2 mL

CIL cannabinoid standards are excluded or exempted from the US DEA Controlled Substances Act (CSA) regulatory controls – no customer permits or licensing is required to ship within the U.S.

International shipment restrictions may apply. Contact your local distributor or CIL customer service for more information.

Reference

1. Abioye, A., Ayodele, O., Marinkovic, A. et al. 2020. Δ^9-Tetrahydrocannabivarin (THCV): a commentary on potential therapeutic benefit for the management of obesity and diabetes. *J Cannabis Res, 2,* 6.

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Per- and Polyfluorinated Substances (PFAS)

Increased interest in short- and ultra-short-chain PFAS has led to the development of C_3 carboxylic acid PFPrA. As part of our continuing improvement process, we have adjusted several carboxylates and sulfonates to their salt form, or an alternate salt form, leading to easier, cleaner purification and formulation. DONA is now available as a free acid standard, while several previously developed native mixtures have been updated to include components now in their salt form. Expanding interests have led to CIL developments for fluorotelomer alcohol (FTOH) and fluorotelomer acid (FTA) standards. As with the fluorotelomer sulfonates (FTS), our labeled fluorotelomer compounds utilize the preferred $^{13}C_2/D_4$ (M+6) labeling scheme. New efforts have led to the development of small-chain perfluoro mono-ether acids PMPA and PEPA. A linear isomer-only FOSA is now added to complement our stock mixed isomer standard. CIL has formulated the US EPA Method 8237 native mixture and should soon also have the Method 8327 labeled mixture (comparable to PFAC-24PAR and MPFAC-24ES, respectively). CIL has prepared a new set of native and labeled mixtures for PFOS, PFOA, and PFHxS to meet growing demand for this set of important PFAS compounds. CIL also now offers convenient native and labeled mixtures of the four commonly analyzed FTS compounds (4:2, 6:2, 8:2, and 10:2 FTS).

Catalog No.	Description	Concentration	Amount
Perfluoroalkylcarboxylic Acids (PFCA)			
CLM-11324-1.2	Perfluoropropanoic acid (PFPrA) ($^{13}C_3$, 99%)	50 µg/mL in methanol	1.2 mL
ULM-11323-1.2	Perfluoropropanoic acid (PFPrA) (unlabeled)	50 µg/mL in methanol	1.2 mL
Perfluoroalkylsulfonates (PFAS)			
CLM-11340-1.2	Potassium perfluoro-1-octanesulfonate (PFOS) ($^{13}C_8$, 99%)	50 µg/mL in methanol	1.2 mL
ULM-12322-1.2	Perfluorodecanesulfonate (PFDS), potassium salt (unlabeled)	50 µg/mL in methanol	1.2 mL
Fluorotelomer Alcohols (FTOH)			
CDLM-10709-1.2	1H,1H,2H,2H-Perfluoro-1-octanol (6:2 FTOH) (1,2-$^{13}C_2$, 99%; 1,1,2,2-D_4, 98%)	50 µg/mL in methanol	1.2 mL
CDLM-10712-1.2	1H,1H,2H,2H-Perfluoro-1-decanol (8:2 FTOH) (1,2-$^{13}C_2$, 99%; 1,1,2,2-D_4, 98%)	50 µg/mL in methanol	1.2 mL
CDLM-10715-1.2	1H,1H,2H,2H-Perfluoro-1-dodecanol (10:2 FTOH) (1,2-$^{13}C_2$, 99%; 1,1,2,2-D_4, 98%)	50 µg/mL in methanol	1.2 mL
Fluorotelomer Acids (FTA)			
ULM-10725-1.2	2H,2H-Perfluorooctanoic acid (6:2 FTA) (unlabeled)	100 µg/mL in methanol	1.2 mL
ULM-10726-1.2	2H,2H-Perfluorodecanoic acid (8:2 FTA) (unlabeled)	100 µg/mL in methanol	1.2 mL
Fluoroether and Polyethers			
ULM-11280-1.2	Dodecafluoro-3H-4,8-dioxanonanoic acid (DONA) (unlabeled)	100 µg/mL in methanol	1.2 mL
ULM-12320-1.2	Perfluoro-2-methoxypropanoic acid (PMPA) (unlabeled) (contains ~1.8% NaPEPA)	50 µg/mL in methanol	1.2 mL
ULM-12321-1.2	Perfluoro-2-ethoxypropanoic acid (PEPA), sodium salt (unlabeled) (contains ~2.4% PMPA)	50 µg/mL in methanol	1.2 mL
Perfluorooctanesulfonamides (FOSA)			
ULM-11309-1.2	Perfluorooctanesulfonamide (PFOSA) (unlabeled) (linear isomer)	50 µg/mL in methanol	1.2 mL
PFAS Mixtures			
ES-5649	PFOS/PFOA/PFHxS Labeled Standard Mixture	in methanol	1.2 mL
ES-5648	PFOS/PFOA/PFHxS Native Analyte Mixture	in methanol	1.2 mL
ES-5576-A	Perfluoroalkylsulfonate (PFAS) C_4-C_{10} Native Mixture	in methanol	1.2 mL
ES-5636-A	PFAS EF-28 Native Mixture	in methanol	1.2 mL
ES-5642	Method 8327 Target Analyte Mixture	in methanol (w/4 molar equiv. NaOH)	1.2 mL
ES-5639-A	PFAS Superfund Mixture 1	in methanol (w/4 molar equiv. NaOH)	1.2 mL
ES-5661	Fluorotelomer Sulfonates (FTS) Labeled Standard Mixture	in methanol	Inquire
ES-5662	Fluorotelomer Sulfonates (FTS) Native Standard Mixture	in methanol	1.2 mL

Biomarkers

CIL now offers standards for 6-sulfatoxymelatonin, which is the major metabolite of melatonin in urine. Analyzing this important metabolite gives insight into the concentration of melatonin in the blood, which can be important for indicators of certain health risks. Read more about CIL's full line of analytical standards for human exposure analysis **here**.

Catalog No.	Description	Concentration	Amount
DLM-12279-1.2	6-Sulfatoxymelatonin, sodium salt (ethyl-D_4, 98%)	100 µg/mL in methanol	1.2 mL
ULM-12285-1.2	6-Sulfatoxymelatonin, sodium salt (unlabeled)	100 µg/mL in methanol	1.2 mL

Industrial Chemicals

6PPD-Quinone, which is an ozonation byproduct of rubber tire additive 6PPD, has been shown to be highly toxic to coho salmon. CIL initially developed a phenyl-$^{13}C_6$-labeled standard and has most recently added a new $^{13}C_{12}$-labeled standard. The two labeling options can be used in combination to offer further improvement of precision for quantitative analysis. 3,3'-Dichlorobenzidine is classified as a probable human carcinogen by the United States Environmental Protection Agency (US EPA). It was mainly used in producing dyes and pigments, though it is no longer authorized for use in the US.

Catalog No.	Description	Concentration	Amount
CLM-11290-1.2	6PPD-Quinone (ring-$^{13}C_{12}$, 99%)	100 µg/mL in acetonitrile	1.2 mL
ULM-12298-1ML	3,3'-Dichlorobenzidine (unlabeled)	2000 µg/mL in methanol	1.2 mL

Priority Pollutants

Polystyrene-D_8 represents our first stable isotope-labeled standard to assist researchers in the rapidly growing field of microplastics research using pyrolysis GC-MS analysis. Ethylene oxide (EtO) is a gas used in the food industry as a preservative and fumigant to control insects and is a classified carcinogen and mutagen with concerns for human exposure and toxicity. Due to airfreight restrictions for the neat material, CIL recently developed EtO and 2-chloroethanol standard solutions which meet transportation exemption quantities and allow for normal airfreight delivery.

Catalog No.	Description	Concentration	Amount
DLM-221-1.2	Poly(styrene) (styrene-D_8, 98%)	1 mg/mL in toluene	1.2 mL
DLM-271-1.2	Ethylene oxide (D_4, 98%) (stabilized with 0.1% hydroquinone)	1000 µg/mL in methylene chloride	1.2 mL

Nitrosamines

CIL has developed multicomponent mixtures to support comprehensive nitrosamine testing in medications, food, water, and other matrices, including mixtures that can be used with US EPA Method 521. Read more about these new mixtures, as well as CIL's full nitrosamine standard product line **here**.

Catalog No.	Description	Concentration	Amount
ES-5652	Method 521 Nitrosamine Surrogate Mixture	in methylene chloride-D_2	1.2 mL
ES-5653	Method 521 Nitrosamine Native Mixture	in methylene chloride	1.2 mL
ES-5650	Deuterated Nitrosamines Standard Mixture	in methylene chloride-D_2	1.2 mL
ES-5651	Nitrosamines Native Mixture	in methylene chloride	1.2 mL

Pharmaceutical and Personal Care Products (PPCP)

11-Dehydrocorticosterone (4-pregnen-21-ol-3, 11, 20-trione or 17-deoxycortisone) can be metabolized into corticosterones, and as such may have many human health implications.

Catalog No.	Description	Concentration	Amount
ULM-11189-A-1.2	11-Dehydrocorticosterone (unlabeled)	100 µg/mL in acetonitrile	1.2 mL

Phthalates and Phthalate Metabolites

Terephthalate esters have been gaining use as phthalate replacement products as increased scrutiny and restrictions on phthalates occur. CIL has previously synthesized and offered mono-2-ethylhexyl terephthalate standards for human exposure studies and has recently produced a standard for the native parent compound, bis(2-ethylhexyl) terephthalate. Read more about CIL's full line of phthalate and phthalate-related compounds **here**.

Catalog No.	Description	Concentration	Amount
ULM-11303-1.2	Bis(2-ethylhexyl) terephthalate (unlabeled)	100 µg/mL in MTBE	1.2 mL

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Pesticides and Pesticide Metabolites

Neonicotinoids continue to attract a lot of attention, yet pyrethroids are widely used in both agricultural and residential settings, and their metabolites are also of concern. CIL is the only commercial source of chrysanthemum dicarboxylic acid, both in native and stable isotope-labeled forms, and several other pyrethroid metabolites are now available in MTBE for compatibility with related compounds that are prone to decomposition in other polar solvents. Diuron is on the UCMR 1 program Screening Survey (List 2 contaminant). Read more about CIL's line of pyrethroid standards **here**.

Catalog No.	Description	Concentration	Amount
ULM-11209-MT-1.2	2,3,5,6-Tetrafluoro-4-methylbenzoic acid (unlabeled)	100 µg/mL in MTBE	1.2 mL
CDLM-11258-1.2	Chrysanthemum dicarboxylic acid (propenyl-3-^{13}C, 99%; 3,3,3-D_3, 98%)	100 µg/mL in acetonitrile	1.2 mL
CDLM-11258-MT-1.2	Chrysanthemum dicarboxylic acid (propenyl-3-^{13}C, 99%; 3,3,3-D_3, 98%)	100 µg/mL in MTBE	1.2 mL
ULM-11259-1.2	Chrysanthemum dicarboxylic acid (unlabeled)	100 µg/mL in acetonitrile	1.2 mL
ULM-11259-MT-1.2	Chrysanthemum dicarboxylic acid (unlabeled)	100 µg/mL in MTBE	1.2 mL
CDLM-9205-MT-1.2	*cis*-DCCA (1, carboxyl-$^{13}C_2$, 99%; 1-D, 97%)	100 µg/mL in MTBE	1.2 mL
ULM-9176-MT-1.2	*cis*-DCCA (unlabeled)	100 µg/mL in MTBE	1.2 mL
CDLM-9206-MT-1.2	*trans*-DCCA (1, carboxyl-$^{13}C_2$, 99%; 1-D, 97%)	100 µg/mL in MTBE	1.2 mL
ULM-9175-MT-1.2	*trans*-DCCA (unlabeled)	100 µg/mL in MTBE	1.2 mL
CDLM-10692-MT-1.2	*cis*-DBCA (1, carboxyl-$^{13}C_2$, 99%; 1-D, 96%)	100 µg/mL in MTBE	1.2 mL
ULM-10693-MT-1.2	*cis*-DBCA (unlabeled)	100 µg/mL in MTBE	1.2 mL
DLM-7116-1.2	Diuron (dimethyl-D_6, 98%)	100 µg/mL in acetonitrile	1.2 mL
ULM-11278-1.2	Diuron (unlabeled)	100 µg/mL in acetonitrile	1.2 mL

Product Updates

CIL has recently reformulated the dicamba metabolite 3,6-dichlorosalicylic acid (DCSA) in acetonitrile for enhanced stability.

Catalog No.	Description	Concentration	Amount
CLM-9916-A-1.2	3,6-Dichlorosalicylic acid (DCSA) (ring-$^{13}C_6$, 99%)	100 µg/mL in acetonitrile	1.2 mL
ULM-9910-A-1.2	3,6-Dichlorosalicylic acid (DCSA) (unlabeled)	100 µg/mL in acetonitrile	1.2 mL

Environmental products are distributed and sold worldwide via our extensive network. CIL's distributor listing is available at isotope.com.

To request a quotation or place an order, please contact Environmental Sales at:
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