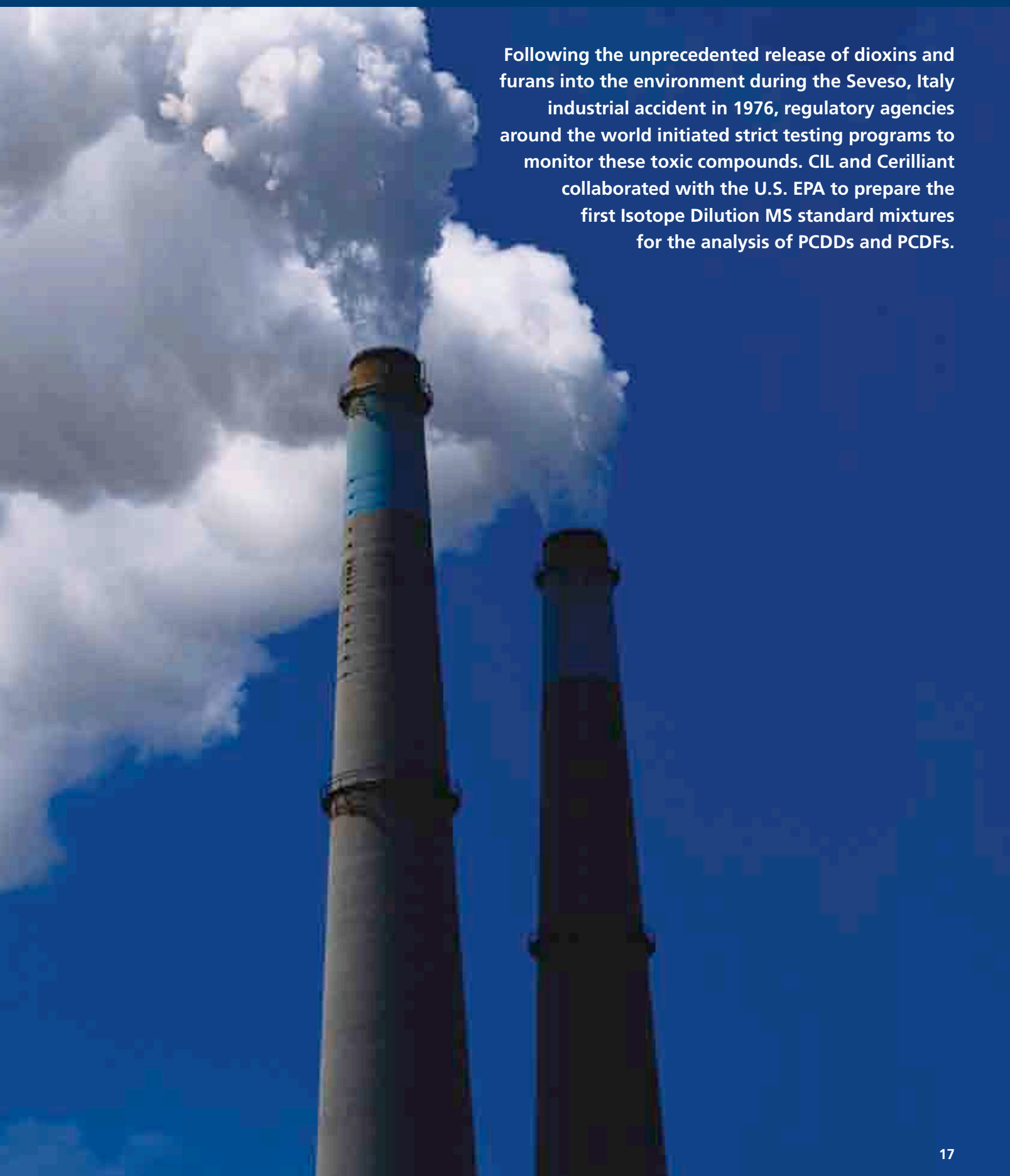


Dioxin and Furan Method Standards, Standard Mixtures and Reference Materials

Following the unprecedented release of dioxins and furans into the environment during the Seveso, Italy industrial accident in 1976, regulatory agencies around the world initiated strict testing programs to monitor these toxic compounds. CIL and Cerilliant collaborated with the U.S. EPA to prepare the first Isotope Dilution MS standard mixtures for the analysis of PCDDs and PCDFs.



U.S. EPA, JIS, and CEN Dioxin and Furan Method Standard Mixtures

In 1990 CIL/Cerilliant (formerly Radian) introduced the first “ready-to-use” standard mixtures for U.S. EPA Method 1613 “High Resolution GC/MS Method for the Determination of Tetra-Octa Chlorinated Dioxins and Furans”. With the effectiveness and popularity of these pre-formulated mixtures, CIL/Cerilliant next developed “ready-to-use” standards for EPA Method 8280 for low resolution GC/MS analysis of dioxins and furans. Today CIL/Cerilliant offer convenient dioxin and furan standard mixtures for EPA Methods 23 and 8290, as well as the Japanese Industrial Standards methods JIS-K0311 and K0312, and the European Community method EN-1948. Copies of these methods are available upon request.

NEW Reference Materials

In 2006 CIL completed an international interlaboratory study for the determination of many environmental pollutants in our three fish reference materials, as well as two RMs for soil and sediment. In 2007 CIL conducted another interlab study, this time evaluating dioxins, furans, and PCBs in a new Fly Ash Reference Material. In 2010, CIL has launched yet another interlaboratory study to develop consensus values for priority pollutants in Cod Liver Oil Reference Material. Results for the CLO RM will be available in autumn of 2010.

Dioxin and Furan plus PCB Standard Mixtures

CIL/Cerilliant have developed several mixtures which include the 2,3,7,8-containing dioxin and furan congeners, as well as the “toxic” PCB congeners. With full calibration series and matching spiking solutions, analysts can test these two commonly combined groups without having to manipulate several different standard sets.

Non-2,3,7,8-Containing Standard Mixtures

With the development of several new ¹³C-labeled “non-2,3,7,8” furan standards, CIL/Cerilliant now offer standard mixtures which contain the traditional 17 “2,3,7,8-containing” standards, as well as the new ¹³C-labeled “non-2,3,7,8-containing” congeners. These standard mixtures allow researchers to use all 17 ¹³C-labeled 2,3,7,8-containing standards as Internal Standards, while utilizing the labeled “non-2,3,7,8-containing” congeners as Recovery/Injection or Cleanup standards.

NEW Two Column Dioxin and Furan Standard Mixtures

Two Column dioxin and furan standard mixtures are combination mixtures used to confirm dioxins and furans and PCBs using only two columns. These standards combine the benefits of both the “Dioxin and Furan plus PCB” mixtures and the “Non-2,3,7,8-Containing” mixtures.

Expanded PBDD/F Standards and Standard Mixtures

Polybrominated dioxins and furans (PBDD/F) can be found at trace levels in technical brominated flame retardant products, and may also be formed from combustion of these materials in the presence of organic compounds. The biological effects of PBDD/Fs are similar to those of their chlorinated analogs which have been regulated for many years. CIL now offers a comprehensive set of labeled and unlabeled standards for PBDD/F analysis, including new calibration series and corresponding spiking solutions containing tetra-octabromo congeners.

ISO Accreditation

Adding to our list of firsts in the field of dioxin and furan reference standards, CIL is pleased to announce the availability of the first dioxin and furan standards manufactured under **ISO/IEC 17025 and ISO Guide 34 accreditation**.

Cerilliant Corporation, CIL's longtime collaborator for dioxin and furan standards, has received accreditation under ISO Guide 34 for Reference Material Producers, as well as ISO/IEC 17025 for Testing and Calibration Laboratories. These two new accreditations provide a powerful boost to their already impressive quality credentials, including ISO-9001:2008.

U.S. EPA Method 1613 Standard Mixtures

Catalog #	Compound	Amount
EDF-9999	Method 1613 Calibration Solutions [CS1-CS5]	Set of 5 x 0.2 mL in Nonane
*EDF-9999-0.1	Method 1613 Calibration Solution [CS0.1]	0.2 mL in Nonane
*EDF-9999-0.2	Method 1613 Calibration Solution [CS0.2]	0.2 mL in Nonane
*EDF-9999-0.5	Method 1613 Calibration Solution [CS0.5]	0.2 mL in Nonane
EDF-9999-1	Method 1613 Calibration Solution [CS1]	0.2 mL in Nonane
EDF-9999-2	Method 1613 Calibration Solution [CS2]	0.2 mL in Nonane
EDF-9999-3	Method 1613 Daily Calibration Check Standard [CS3]	0.2 mL in Nonane
EDF-9999-3-4	Method 1613 Daily Calibration Check Standard [CS3]	Set of 4 x 0.2 mL in Nonane
EDF-9999-4	Method 1613 Calibration Solution [CS4]	0.2 mL in Nonane
EDF-9999-5	Method 1613 Calibration Solution [CS5]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)								
Unlabeled	*CS0.1	*CS0.2	*CS0.5	CS1	CS2	CS3	CS4	CS5
2,3,7,8-TCDD	0.05	0.1	0.25	0.5	2.0	10	40	200
2,3,7,8-TCDF	0.05	0.1	0.25	0.5	2.0	10	40	200
1,2,3,7,8-PeCDD	0.25	0.5	1.25	2.5	10	50	200	1000
1,2,3,7,8-PeCDF	0.25	0.5	1.25	2.5	10	50	200	1000
2,3,4,7,8-PeCDF	0.25	0.5	1.25	2.5	10	50	200	1000
1,2,3,4,7,8-HxCDD	0.25	0.5	1.25	2.5	10	50	200	1000
1,2,3,6,7,8-HxCDD	0.25	0.5	1.25	2.5	10	50	200	1000
1,2,3,7,8,9-HxCDD	0.25	0.5	1.25	2.5	10	50	200	1000
1,2,3,4,7,8-HxCDF	0.25	0.5	1.25	2.5	10	50	200	1000
1,2,3,6,7,8-HxCDF	0.25	0.5	1.25	2.5	10	50	200	1000
1,2,3,7,8,9-HxCDF	0.25	0.5	1.25	2.5	10	50	200	1000
2,3,4,6,7,8-HxCDF	0.25	0.5	1.25	2.5	10	50	200	1000
1,2,3,4,6,7,8-HpCDD	0.25	0.5	1.25	2.5	10	50	200	1000
1,2,3,4,6,7,8-HpCDF	0.25	0.5	1.25	2.5	10	50	200	1000
1,2,3,4,7,8,9-HpCDF	0.25	0.5	1.25	2.5	10	50	200	1000
OCDD	0.5	1.0	2.50	5.0	20	100	400	2000
OCDF	0.5	1.0	2.50	5.0	20	100	400	2000
Labeled								
1,2,3,4-TCDD (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
2,3,7,8-TCDD (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
2,3,7,8-TCDD (³⁷Cl₄,96%)	0.05	0.1	0.25	0.5	2.0	10	40	200
2,3,7,8-TCDF (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
1,2,3,7,8-PeCDD (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
1,2,3,7,8-PeCDF (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
2,3,4,7,8-PeCDF (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
1,2,3,4,7,8-HxCDD (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
1,2,3,6,7,8-HxCDD (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
1,2,3,7,8,9-HxCDD (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
1,2,3,4,7,8-HxCDF (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
1,2,3,6,7,8-HxCDF (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
1,2,3,7,8,9-HxCDF (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
2,3,4,6,7,8-HxCDF (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
1,2,3,4,6,7,8-HpCDD (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
1,2,3,4,6,7,8-HpCDF (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
1,2,3,4,7,8,9-HpCDF (¹³C₁₂,99%)	100	100	100	100	100	100	100	100
OCDD (¹³C₁₂,99%)	200	200	200	200	200	200	200	200

*NOTE: CS0.1, CS0.2, and CS0.5 are optional extensions of the Method 1613 Calibration Curve to extend the MDL and are not required by the method.

EDF-9999-A	Method 1613 Calibration Solutions (1/10 concentration) [CS1-CS5]	Set of 5 x 0.2 mL
EDF-9999-A-3	Method 1613 Calibration Check Standard (1/10 concentration) [CS3]	0.2 mL

EDF-9999-A is a set of calibration solutions with both labeled and unlabeled compounds at 1/10 the concentration of the corresponding calibration solution in EDF-9999.

U.S. EPA Method 1613 Standard Mixtures

Catalog #	Compound	Amount
EDF-4141	Method 1613 Daily Calibration Plus Window Definer and Isomer Specificity Solution	200 µL in Nonane

Daily Calibration Standards	(ng/mL)	Window Defining Standards	(ng/mL)
2,3,7,8-TCDD	10	1,3,6,8-TCDD	10
2,3,7,8-TCDF	10	1,2,8,9-TCDD	10
1,2,3,7,8-PeCDD	50	1,3,6,8-TCDF	10
1,2,3,7,8-PeCDF	50	1,2,8,9-TCDF	10
2,3,4,7,8-PeCDF	50	1,2,4,6,8/1,2,4,7,9-PeCDD	50
1,2,3,4,7,8-HxCDD	50	1,2,3,8,9-PeCDD	50
1,2,3,6,7,8-HxCDD	50	1,3,4,6,8-PeCDF	50
1,2,3,7,8,9-HxCDD	50	1,2,3,8,9-PeCDF	50
1,2,3,4,7,8-HxCDF	50	1,2,4,6,7,9/1,2,4,6,8,9-HxCDD	50
1,2,3,6,7,8-HxCDF	50	1,2,3,4,6,8-HxCDF	50
1,2,3,7,8,9-HxCDF	50	1,2,3,4,8,9-HxCDF	50
2,3,4,6,7,8-HxCDF	50	1,2,3,4,6,7,9-HpCDD	50
1,2,3,4,6,7,8-HpCDD (W.D.)	50		
1,2,3,4,6,7,8-HpCDF (W.D.)	50		
1,2,3,4,7,8,9-HpCDF (W.D.)	50		
OCDD	100		
OCDF	100		
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	100		
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	100		
2,3,7,8-TCDD (³⁷ Cl ₄ ,96%)	10		
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	100		
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	100		
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	100		
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	100		
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	100		
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	100		
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	100		
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	100		
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	100		
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	100		
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	100		
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	100		
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	100		
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	100		
OCDD (¹³ C ₁₂ ,99%)	200		

NOTE: 1,2,3,4,6,7-HxCDD (last eluting HxCDD) not included due to interference with 1,2,3,7,8,9-HxCDD.

TCDD Isomer Specificity Standards

1,2,3,4-TCDD	10
1,2,3,7/1,2,3,8-TCDD	10
1,2,3,9-TCDD	10

This standard allows three functions:

- Daily MS instrument calibration verification
- Daily TCDD column resolution
- Daily window definition

(W.D.) – Window Defining Standard

EDF-6999	Method 1613 Cleanup Standard	7.5 mL in Nonane
EDF-6999-10X	Method 1613 Cleanup Standard (10X concentration)	20 mL in Nonane

Labeled	EDF-6999 (ng/mL)	EDF-6999-10X (ng/mL)
2,3,7,8-TCDD (³⁷ Cl ₄ ,96%)	0.8	8

EDF-5999	Method 1613 Internal Standard Spiking Solution	0.5 mL in Nonane
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Labeled	
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	200
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	200

U.S. EPA Method 1613 Standard Mixtures

Catalog #	Compound	Amount
EDF-8999	Method 1613 Labeled Compound Stock Solution	500 µL in Nonane
EDF-8999-4	Method 1613 Labeled Compound Stock Solution	Set of 4 x 500 µL in Nonane

Labeled	(ng/mL)
2,3,7,8-TCDD (¹³C₁₂,99%)	100
2,3,7,8-TCDF (¹³C₁₂,99%)	100
1,2,3,7,8-PeCDD (¹³C₁₂,99%)	100
1,2,3,7,8-PeCDF (¹³C₁₂,99%)	100
2,3,4,7,8-PeCDF (¹³C₁₂,99%)	100
1,2,3,4,7,8-HxCDD (¹³C₁₂,99%)	100
1,2,3,6,7,8-HxCDD (¹³C₁₂,99%)	100
1,2,3,4,7,8-HxCDF (¹³C₁₂,99%)	100
1,2,3,6,7,8-HxCDF (¹³C₁₂,99%)	100
1,2,3,7,8,9-HxCDF (¹³C₁₂,99%)	100
2,3,4,6,7,8-HxCDF (¹³C₁₂,99%)	100
1,2,3,4,6,7,8-HpCDD (¹³C₁₂,99%)	100
1,2,3,4,6,7,8-HpCDF (¹³C₁₂,99%)	100
1,2,3,4,7,8,9-HpCDF (¹³C₁₂,99%)	100
OCDD (¹³C₁₂,99%)	200

EDF-7999	Method 1613 Precision and Recovery Standard Solution	200 µL in Nonane
EDF-7999-10X	Method 1613 Precision and Recovery Standard Solution (10X concentration)	1.2 mL in Nonane

Unlabeled	EDF-7999	EDF-7999-10X
2,3,7,8-TCDD	40	400
2,3,7,8-TCDF	40	400
1,2,3,7,8-PeCDD	200	2000
1,2,3,7,8-PeCDF	200	2000
2,3,4,7,8-PeCDF	200	2000
1,2,3,4,7,8-HxCDD	200	2000
1,2,3,6,7,8-HxCDD	200	2000
1,2,3,7,8,9-HxCDD	200	2000
1,2,3,4,7,8-HxCDF	200	2000
1,2,3,6,7,8-HxCDF	200	2000
1,2,3,7,8,9-HxCDF	200	2000
2,3,4,6,7,8-HxCDF	200	2000
1,2,3,4,6,7,8-HpCDD	200	2000
1,2,3,4,6,7,8-HpCDF	200	2000
1,2,3,4,7,8,9-HpCDF	200	2000
OCDD	400	4000
OCDF	400	4000

NEW EDF-1613-KIT **Method 1613 "Starter Kit"** 1 Kit

Contains one each of the following items:

EDF-9999	Method 1613 Calibration Solutions
EDF-5999	Method 1613 Internal Standard Spiking Solution
EDF-7999	Method 1613 Precision and Recovery Standard Solution
EDF-6999	Method 1613 Cleanup Standard

Contains two of the following item:

EDF-8999	Method 1613 Labeled Compound Stock Solution
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U.S. EPA Method 23 Standard Mixtures

Catalog #	Compound	Amount
EDF-4052	Method 23 Calibration Solutions [CS1-CS5]	Set of 5 x 0.2 mL in Nonane
EDF-4052-1	Method 23 Calibration Solution [CS1]	0.2 mL in Nonane
EDF-4052-2	Method 23 Calibration Solution [CS2]	0.2 mL in Nonane
EDF-4052-3	Method 23 Daily Calibration Check Standard [CS3]	0.2 mL in Nonane
EDF-4052-4	Method 23 Calibration Solution [CS4]	0.2 mL in Nonane
EDF-4052-5	Method 23 Calibration Solution [CS5]	0.2 mL in Nonane

	All concentrations are in pg/μL (ppb)				
Unlabeled	CS1	CS2	CS3	CS4	CS5
2,3,7,8-TCDD	0.5	1	5	50	100
2,3,7,8-TCDF	0.5	1	5	50	100
1,2,3,7,8-PeCDD	2.5	5	25	250	500
1,2,3,7,8-PeCDF	2.5	5	25	250	500
2,3,4,7,8-PeCDF	2.5	5	25	250	500
1,2,3,4,7,8-HxCDD	2.5	5	25	250	500
1,2,3,6,7,8-HxCDD	2.5	5	25	250	500
1,2,3,7,8,9-HxCDD	2.5	5	25	250	500
1,2,3,4,7,8-HxCDF	2.5	5	25	250	500
1,2,3,6,7,8-HxCDF	2.5	5	25	250	500
1,2,3,7,8,9-HxCDF	2.5	5	25	250	500
2,3,4,6,7,8-HxCDF	2.5	5	25	250	500
1,2,3,4,6,7,8-HpCDD	2.5	5	25	250	500
1,2,3,4,6,7,8-HpCDF	2.5	5	25	250	500
1,2,3,4,7,8,9-HpCDF	2.5	5	25	250	500
OCDD	5.0	10	50	500	1000
OCDF	5.0	10	50	500	1000
Internal Standards					
2,3,7,8-TCDD (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,7,8-PeCDD (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,6,7,8-HxCDD (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,4,6,7,8-HpCDD (¹³C₁₂,99%)	100	100	100	100	100
OCDD (¹³C₁₂,99%)	200	200	200	200	200
2,3,7,8-TCDF (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,7,8-PeCDF (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,6,7,8-HxCDF (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,4,6,7,8-HpCDF (¹³C₁₂,99%)	100	100	100	100	100
Surrogate Standards					
2,3,7,8-TCDD (³⁷Cl₄,96%)	0.5	1	5	50	100
2,3,4,7,8-PeCDF (¹³C₁₂,99%)	2.5	5	25	250	500
1,2,3,4,7,8-HxCDD (¹³C₁₂,99%)	2.5	5	25	250	500
1,2,3,4,7,8-HxCDF (¹³C₁₂,99%)	2.5	5	25	250	500
1,2,3,4,7,8,9-HpCDF (¹³C₁₂,99%)	2.5	5	25	250	500
Recovery Standards					
1,2,3,4-TCDD (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,7,8,9-HxCDD (¹³C₁₂,99%)	100	100	100	100	100
Alternate Recovery Standard					
1,2,3,7,8,9-HxCDF (¹³C₁₂,99%)	2.5	5	25	250	500

U.S. EPA Method 23 Standard Mixtures

Catalog #	Compound	Amount
EDF-4053	Method 23 Internal Standard Stock Solution	1.2 mL in Nonane

Labeled	(pg/ μ L)
2,3,7,8-TCDD ($^{13}\text{C}_{12}$,99%)	1000
1,2,3,7,8-PeCDD ($^{13}\text{C}_{12}$,99%)	1000
1,2,3,6,7,8-HxCDD ($^{13}\text{C}_{12}$,99%)	1000
1,2,3,4,6,7,8-HpCDD ($^{13}\text{C}_{12}$,99%)	1000
OCDD ($^{13}\text{C}_{12}$,99%)	2000
2,3,7,8-TCDF ($^{13}\text{C}_{12}$,99%)	1000
1,2,3,7,8-PeCDF ($^{13}\text{C}_{12}$,99%)	1000
1,2,3,6,7,8-HxCDF ($^{13}\text{C}_{12}$,99%)	1000
1,2,3,4,6,7,8-HpCDF ($^{13}\text{C}_{12}$,99%)	1000

EDF-4054	Method 23 Surrogate Standard Stock Solution	1.2 mL in Nonane
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Labeled	
2,3,7,8-TCDD ($^{37}\text{Cl}_4$,96%)	1000
1,2,3,4,7,8-HxCDD ($^{13}\text{C}_{12}$,99%)	1000
2,3,4,7,8-PeCDF ($^{13}\text{C}_{12}$,99%)	1000
1,2,3,4,7,8-HxCDF ($^{13}\text{C}_{12}$,99%)	1000
1,2,3,4,7,8,9-HpCDF ($^{13}\text{C}_{12}$,99%)	1000

EDF-4055	Method 23 Recovery Standard Stock Solution	1.2 mL in Nonane
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Labeled	
1,2,3,4-TCDD ($^{13}\text{C}_{12}$,99%)	500
1,2,3,7,8,9-HxCDD ($^{13}\text{C}_{12}$,99%)	500

EDF-5189	Method 23 Alternate Recovery Stock Solution	1.2 mL in Nonane
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Labeled	
1,2,3,7,8,9-HxCDF ($^{13}\text{C}_{12}$,99%)	1000

U.S. EPA Method 8290 Standard Mixtures

Catalog #	Compound	Amount
EDF-5006	Method 8290 Calibration Solutions [HRCC1-HRCC5]	Set of 5 x 0.2 mL in Nonane
EDF-5006-1	Method 8290 Calibration Solution [HRCC1]	0.2 mL in Nonane
EDF-5006-2	Method 8290 Calibration Solution [HRCC2]	0.2 mL in Nonane
EDF-5006-3	Method 8290 Continuing Calibration Check Standard [HRCC3]	0.2 mL in Nonane
EDF-5006-4	Method 8290 Calibration Solution [HRCC4]	0.2 mL in Nonane
EDF-5006-5	Method 8290 Calibration Solution [HRCC5]	0.2 mL in Nonane

All concentrations are in pg/μL (ppb)

Unlabeled	HRCC1	HRCC2	HRCC3	HRCC4	HRCC5
2,3,7,8-TCDD	1.0	2.5	10	50	200
2,3,7,8-TCDF	1.0	2.5	10	50	200
1,2,3,7,8-PeCDD	2.5	6.25	25	125	500
1,2,3,7,8-PeCDF	2.5	6.25	25	125	500
2,3,4,7,8-PeCDF	2.5	6.25	25	125	500
1,2,3,4,7,8-HxCDD	2.5	6.25	25	125	500
1,2,3,6,7,8-HxCDD	2.5	6.25	25	125	500
1,2,3,7,8,9-HxCDD	2.5	6.25	25	125	500
1,2,3,4,7,8-HxCDF	2.5	6.25	25	125	500
1,2,3,6,7,8-HxCDF	2.5	6.25	25	125	500
1,2,3,7,8,9-HxCDF	2.5	6.25	25	125	500
2,3,4,6,7,8-HxCDF	2.5	6.25	25	125	500
1,2,3,4,6,7,8-HpCDD	2.5	6.25	25	125	500
1,2,3,4,6,7,8-HpCDF	2.5	6.25	25	125	500
1,2,3,4,7,8,9-HpCDF	2.5	6.25	25	125	500
OCDD	5.0	12.5	50	250	1000
OCDF	5.0	12.5	50	250	1000
Internal Standards					
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	50	50	50	50	50
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	50	50	50	50	50
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	50	50	50	50	50
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	50	50	50	50	50
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	125	125	125	125	125
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	125	125	125	125	125
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	125	125	125	125	125
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	125	125	125	125	125
OCDD (¹³ C ₁₂ ,99%)	250	250	250	250	250
Recovery Standards					
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	50	50	50	50	50
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	125	125	125	125	125

U.S. EPA Method 8290 Standard Mixtures

Catalog #	Compound	Amount
ED-5004	Method 8290 Recovery Standard Solution	1.2 mL in Nonane
	Labeled (pg/ μ L)	
	1,2,3,4-TCDD ($^{13}\text{C}_{12}$,99%)	100
	1,2,3,7,8,9-HxCDD ($^{13}\text{C}_{12}$,99%)	250
EDF-5005	Method 8290 Sample Fortification Solution	1.2 mL in Nonane
	Labeled	
	2,3,7,8-TCDD ($^{13}\text{C}_{12}$,99%)	100
	2,3,7,8-TCDF ($^{13}\text{C}_{12}$,99%)	100
	1,2,3,7,8-PeCDD ($^{13}\text{C}_{12}$,99%)	100
	1,2,3,7,8-PeCDF ($^{13}\text{C}_{12}$,99%)	100
	1,2,3,4,7,8-HxCDF ($^{13}\text{C}_{12}$,99%)	250
	1,2,3,6,7,8-HxCDD ($^{13}\text{C}_{12}$,99%)	250
	1,2,3,4,6,7,8-HpCDD ($^{13}\text{C}_{12}$,99%)	250
	1,2,3,4,6,7,8-HpCDF ($^{13}\text{C}_{12}$,99%)	250
	OCDD ($^{13}\text{C}_{12}$,99%)	500
EDF-5008	Method 8290 Matrix Spiking Solution	1.2 mL in Nonane
NEW EDF-5008-50	Method 8290 Matrix Spiking Solution (1:50 dilution)	0.1 mL in Nonane
	Unlabeled	EDF-5008 EDF-5008-50
	2,3,7,8-TCDD	100 2
	2,3,7,8-TCDF	100 2
	1,2,3,7,8-PeCDD	250 5
	1,2,3,7,8-PeCDF	250 5
	2,3,4,7,8-PeCDF	250 5
	1,2,3,4,7,8-HxCDD	250 5
	1,2,3,4,7,8-HxCDF	250 5
	1,2,3,6,7,8-HxCDD	250 5
	1,2,3,6,7,8-HxCDF	250 5
	1,2,3,7,8,9-HxCDD	250 5
	1,2,3,7,8,9-HxCDF	250 5
	2,3,4,6,7,8-HxCDF	250 5
	1,2,3,4,6,7,8-HpCDD	250 5
	1,2,3,4,6,7,8-HpCDF	250 5
	1,2,3,4,7,8,9-HpCDF	250 5
	OCDD	500 10
	OCDF	500 10

U.S. EPA Method 8280 Standard Mixtures

Catalog #	Compound	Amount
EDF-2519-A	Method 8280 Calibration Solutions [CC1-CC5]	Set of 5 x 0.2 mL in Nonane
EDF-2519-1	Method 8280 Calibration Solution [CC1]	0.2 mL in Nonane
EDF-2519-2	Method 8280 Calibration Solution [CC2]	0.2 mL in Nonane
EDF-2519-3	Method 8280 Calibration and Verification Solution [CC3]	0.2 mL in Nonane
EDF-2519-4	Method 8280 Calibration Solution [CC4]	0.2 mL in Nonane
EDF-2519-5	Method 8280 Calibration Solution [CC5]	0.2 mL in Nonane

All concentrations are in ng/ μ L (ppm)

Unlabeled	CC1	CC2	CC3	CC4	CC5
2,3,7,8-TCDD	0.1	0.25	0.5	1.0	2.0
2,3,7,8-TCDF	0.1	0.25	0.5	1.0	2.0
1,2,3,7,8-PeCDF	0.1	0.25	0.5	1.0	2.0
1,2,3,7,8-PeCDD	0.1	0.25	0.5	1.0	2.0
2,3,4,7,8-PeCDF	—	—	0.5	—	—
1,2,3,4,7,8-HxCDF	—	—	1.25	—	—
1,2,3,6,7,8-HxCDF	0.25	0.625	1.25	2.5	5.0
1,2,3,4,7,8-HxCDD	—	—	1.25	—	—
1,2,3,6,7,8-HxCDD	0.25	0.625	1.25	2.5	5.0
1,2,3,7,8,9-HxCDD	—	—	1.25	—	—
2,3,4,6,7,8-HxCDF	—	—	1.25	—	—
1,2,3,7,8,9-HxCDF	—	—	1.25	—	—
1,2,3,4,7,8,9-HpCDF	—	—	1.25	—	—
1,2,3,4,6,7,8-HpCDF	0.25	0.625	1.25	2.5	5.0
1,2,3,4,6,7,8-HpCDD	0.25	0.625	1.25	2.5	5.0
OCDD	0.5	1.25	2.5	5.0	10.0
OCDF	0.5	1.25	2.5	5.0	10.0
Labeled					
2,3,7,8-TCDD ($^{13}\text{C}_{12}$, 99%)	0.5	0.5	0.5	0.5	0.5
2,3,7,8-TCDF ($^{13}\text{C}_{12}$, 99%)	0.5	0.5	0.5	0.5	0.5
1,2,3,6,7,8-HxCDD ($^{13}\text{C}_{12}$, 99%)	0.5	0.5	0.5	0.5	0.5
1,2,3,4,6,7,8-HpCDF ($^{13}\text{C}_{12}$, 99%)	1.0	1.0	1.0	1.0	1.0
OCDD ($^{13}\text{C}_{12}$, 99%)	1.0	1.0	1.0	1.0	1.0
1,2,3,4-TCDD ($^{13}\text{C}_{12}$, 99%)	0.5	0.5	0.5	0.5	0.5
1,2,3,7,8,9-HxCDD ($^{13}\text{C}_{12}$, 99%)	0.5	0.5	0.5	0.5	0.5
2,3,7,8-TCDD ($^{37}\text{Cl}_4$, 96%)	—	—	0.25	—	—

U.S. EPA Method 8280 Standard Mixtures

Catalog #	Compound	Amount
EDF-2520	Method 8280 Internal Standard Solution	1.2 mL in Nonane
	Labeled	(ng/ μ L)
	2,3,7,8-TCDD ($^{13}\text{C}_{12}$,99%)	5
	2,3,7,8-TCDF ($^{13}\text{C}_{12}$,99%)	5
	1,2,3,6,7,8-HxCDD ($^{13}\text{C}_{12}$,99%)	5
	1,2,3,4,6,7,8-HpCDF ($^{13}\text{C}_{12}$,99%)	10
	OCDD ($^{13}\text{C}_{12}$,99%)	10
ED-2521	Method 8280 Recovery Standard Solution	1.2 mL in Nonane
	Labeled	
	1,2,3,4-TCDD ($^{13}\text{C}_{12}$,99%)	5
	1,2,3,7,8,9-HxCDD ($^{13}\text{C}_{12}$,99%)	5
ED-2522	Method 8280 Cleanup Standard Solution	1.2 mL in Nonane
	Labeled	
	2,3,7,8-TCDD ($^{37}\text{Cl}_4$,96%)	5
EDF-2523	Method 8280 Matrix Spiking Solution	1.2 mL in Nonane
	Unlabeled	
	2,3,7,8-TCDD	2.5
	2,3,7,8-TCDF	2.5
	1,2,3,7,8-PeCDF	6.25
	1,2,3,7,8-PeCDD	6.25
	1,2,3,6,7,8-HxCDF	6.25
	1,2,3,6,7,8-HxCDD	6.25
	1,2,3,4,6,7,8-HpCDF	6.25
	1,2,3,4,6,7,8-HpCDD	6.25
	OCDD	12.5
	OCDF	12.5
EDF-2681	Supplemental Internal Standard Solution (Not required by U.S. EPA Method 8280)	1.2 mL in Nonane
	Labeled	
	1,2,3,7,8-PeCDD ($^{13}\text{C}_{12}$,99%)	5
	1,2,3,7,8-PeCDF ($^{13}\text{C}_{12}$,99%)	5
	1,2,3,4,7,8-HxCDF ($^{13}\text{C}_{12}$,99%)	5
	1,2,3,4,6,7,8-HpCDD ($^{13}\text{C}_{12}$,99%)	10
	OCDF ($^{13}\text{C}_{12}$,99%)	10

U.S. EPA Method 8280 Standard Mixtures

Catalog #	Compound	Amount
EDF-4095	Modified Method 8280 Calibration Solutions [CC1-CC5] (All 17 toxic congeners at all five levels)	Set of 5 x 0.2 mL in Nonane
EDF-4095-1	Modified Method 8280 Calibration Standard [CC1]	0.2 mL in Nonane
EDF-4095-2	Modified Method 8280 Calibration Standard [CC2]	0.2 mL in Nonane
EDF-4095-3	Modified Method 8280 Calibration Standard [CC3]	0.2 mL in Nonane
EDF-4095-4	Modified Method 8280 Calibration Standard [CC4]	0.2 mL in Nonane
EDF-4095-5	Modified Method 8280 Calibration Standard [CC5]	0.2 mL in Nonane

All concentrations are in ng/μL (ppm)

Unlabeled	CC1	CC2	CC3	CC4	CC5
2,3,7,8-TCDD	0.1	0.25	0.5	1.0	2.0
2,3,7,8-TCDF	0.1	0.25	0.5	1.0	2.0
1,2,3,7,8-PeCDD	0.1	0.25	0.5	1.0	2.0
1,2,3,7,8-PeCDF	0.1	0.25	0.5	1.0	2.0
2,3,4,7,8-PeCDF	0.1	0.25	0.5	1.0	2.0
1,2,3,4,7,8-HxCDD	0.25	0.625	1.25	2.5	5.0
1,2,3,4,7,8-HxCDF	0.25	0.625	1.25	2.5	5.0
1,2,3,6,7,8-HxCDD	0.25	0.625	1.25	2.5	5.0
1,2,3,6,7,8-HxCDF	0.25	0.625	1.25	2.5	5.0
1,2,3,7,8,9-HxCDD	0.25	0.625	1.25	2.5	5.0
1,2,3,7,8,9-HxCDF	0.25	0.625	1.25	2.5	5.0
2,3,4,6,7,8-HxCDF	0.25	0.625	1.25	2.5	5.0
1,2,3,4,6,7,8-HpCDD	0.25	0.625	1.25	2.5	5.0
1,2,3,4,6,7,8-HeptaCDF	0.25	0.625	1.25	2.5	5.0
1,2,3,4,7,8,9-HeptaCDF	0.25	0.625	1.25	2.5	5.0
OCDD	0.5	1.25	2.5	5.0	10.0
OCDF	0.5	1.25	2.5	5.0	10.0
Labeled					
1,2,3,4-TCDD (¹³ C ₁₂ , 99%)	0.5	0.5	0.5	0.5	0.5
2,3,7,8-TCDD (¹³ C ₁₂ , 99%)	0.5	0.5	0.5	0.5	0.5
2,3,7,8-TCDD (³⁷ Cl ₄ , 96%)	0.25	0.25	0.25	0.25	0.25
2,3,7,8-TCDF (¹³ C ₁₂ , 99%)	0.5	0.5	0.5	0.5	0.5
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ , 99%)	0.5	0.5	0.5	0.5	0.5
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ , 99%)	0.5	0.5	0.5	0.5	0.5
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ , 99%)	1.0	1.0	1.0	1.0	10
OCDD (¹³ C ₁₂ , 99%)	1.0	1.0	1.0	1.0	1.0

EDF-4096	Modified Method 8280 Matrix Spiking Solution (All 17 toxic congeners)	1.2 mL in Nonane
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Unlabeled	(ng/μL)
2,3,7,8-TCDD	2.5
2,3,7,8-TCDF	2.5
1,2,3,7,8-PeCDD	6.25
1,2,3,7,8-PeCDF	6.25
2,3,4,7,8-PeCDF	6.25
1,2,3,4,7,8-HxCDD	6.25
1,2,3,4,7,8-HxCDF	6.25
1,2,3,6,7,8-HxCDD	6.25
1,2,3,6,7,8-HxCDF	6.25
1,2,3,7,8,9-HxCDD	6.25
1,2,3,7,8,9-HxCDF	6.25
2,3,4,6,7,8-HxCDF	6.25
1,2,3,4,6,7,8-HpCDD	6.25
1,2,3,4,6,7,8-HpCDF	6.25
1,2,3,4,7,8,9-HpCDF	6.25
OCDD	12.5
OCDF	12.5

JIS Methods K0311 and K0312 Dioxin/Furan Standard Mixtures

Catalog #	Compound	Amount
NEW EDF-5187	JIS Dioxin/Furan Calibration Solutions [ST1-ST5]	Set of 5 x 0.2 mL in Nonane
NEW EDF-5187-1	JIS Dioxin/Furan Calibration Solution [ST1]	0.2 mL in Nonane
NEW EDF-5187-2	JIS Dioxin/Furan Calibration Solution [ST2]	0.2 mL in Nonane
NEW EDF-5187-3	JIS Dioxin/Furan Calibration Solution [ST3]	0.2 mL in Nonane
NEW EDF-5187-4	JIS Dioxin/Furan Calibration Solution [ST4]	0.2 mL in Nonane
NEW EDF-5187-5	JIS Dioxin/Furan Calibration Solution [ST5]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	ST1	ST2	ST3	ST4	ST5
2,3,7,8-TCDD	0.2	1	5	20	100
1,2,3,7,8-PeCDD	0.2	1	5	20	100
1,2,3,4,7,8-HxCDD	0.4	2	10	40	200
1,2,3,6,7,8-HxCDD	0.4	2	10	40	200
1,2,3,7,8,9-HxCDD	0.4	2	10	40	200
1,2,3,4,6,7,8-HpCDD	0.4	2	10	40	200
OCDD	1	5	25	100	500
2,3,7,8-TCDF	0.2	1	5	20	100
1,2,3,7,8-PeCDF	0.2	1	5	20	100
2,3,4,7,8-PeCDF	0.2	1	5	20	100
1,2,3,4,7,8-HxCDF	0.4	2	10	40	200
1,2,3,6,7,8-HxCDF	0.4	2	10	40	200
1,2,3,7,8,9-HxCDF	0.4	2	10	40	200
2,3,4,6,7,8-HxCDF	0.4	2	10	40	200
1,2,3,4,6,7,8-HpCDF	0.4	2	10	40	200
1,2,3,4,7,8,9-HpCDF	0.4	2	10	40	200
OCDF	1	5	25	100	500
Labeled					
2,3,7,8-TCDD (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,7,8-PeCDD (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,4,7,8-HxCDD (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,6,7,8-HxCDD (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,7,8,9-HxCDD (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,4,6,7,8-HpCDD (¹³C₁₂,99%)	10	10	10	10	10
OCDD (¹³C₁₂,99%)	20	20	20	20	20
2,3,7,8-TCDF (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,7,8-PeCDF (¹³C₁₂,99%)	10	10	10	10	10
2,3,4,7,8-PeCDF (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,4,7,8-HxCDF (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,6,7,8-HxCDF (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,7,8,9-HxCDF (¹³C₁₂,99%)	10	10	10	10	10
2,3,4,6,7,8-HxCDF (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,4,6,7,8-HpCDF (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,4,7,8,9-HpCDF (¹³C₁₂,99%)	10	10	10	10	10
OCDF (¹³C₁₂,99%)	20	20	20	20	20

JIS Methods K0311 and K0312 Dioxin/Furan Standard Mixtures

Catalog #	Compound	Amount
EDF-4964-A	JIS Dioxin/Furan Type 1 Cleanup Standard Solution	0.5 mL in Nonane

Labeled	(ng/mL)
2,3,7,8-TCDD ($^{13}\text{C}_{12}$, 99%)	2000
2,3,7,8-TCDF ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,7,8-PeCDD ($^{13}\text{C}_{12}$, 99%)	2000
2,3,4,7,8-PeCDF ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,4,7,8-HxCDD ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,4,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,6,7,8-HxCDD ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,6,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	2000
2,3,4,6,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,4,6,7,8-HpCDD ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,4,6,7,8-HpCDF ($^{13}\text{C}_{12}$, 99%)	2000
OCDD ($^{13}\text{C}_{12}$, 99%)	4000
OCDF ($^{13}\text{C}_{12}$, 99%)	4000

EDF-4965-A	JIS Dioxin/Furan Type 1 and 2 Syringe Standard Solution	0.5 mL in Nonane
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Labeled	
1,2,3,4-TCDD ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,7,8,9-HxCDD ($^{13}\text{C}_{12}$, 99%)	2000

EDF-4967	JIS Dioxin/Furan Type 2 Cleanup Standard Solution	1.2 mL in Nonane
EDF-4967-A	JIS Dioxin/Furan Type 2 Cleanup Standard Solution	0.5 mL in Nonane

Labeled	EDF-4967	EDF-4967-A
2,3,7,8-TCDD ($^{13}\text{C}_{12}$, 99%)	10	2000
2,3,7,8-TCDF ($^{13}\text{C}_{12}$, 99%)	10	2000
1,2,3,7,8-PeCDD ($^{13}\text{C}_{12}$, 99%)	10	2000
1,2,3,7,8-PeCDF ($^{13}\text{C}_{12}$, 99%)	10	2000
1,2,3,6,7,8-HxCDD ($^{13}\text{C}_{12}$, 99%)	10	2000
1,2,3,6,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	10	2000
1,2,3,4,6,7,8-HpCDD ($^{13}\text{C}_{12}$, 99%)	10	2000
1,2,3,4,6,7,8-HpCDF ($^{13}\text{C}_{12}$, 99%)	10	2000
OCDD ($^{13}\text{C}_{12}$, 99%)	20	4000

EDF-4974-A	JIS Wastewater Dioxin/Furan Type 1 Cleanup Standard Solution	0.2 mL in Nonane
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Labeled	
2,3,7,8-TCDD ($^{13}\text{C}_{12}$, 99%)	2000
2,3,7,8-TCDF ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,7,8-PeCDD ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,7,8-PeCDF ($^{13}\text{C}_{12}$, 99%)	2000
2,3,4,7,8-PeCDF ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,4,7,8-HxCDD ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,4,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,6,7,8-HxCDD ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,6,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,7,8,9-HxCDF ($^{13}\text{C}_{12}$, 99%)	2000
2,3,4,6,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,4,6,7,8-HpCDD ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,4,6,7,8-HpCDF ($^{13}\text{C}_{12}$, 99%)	2000
1,2,3,4,7,8,9-HpCDF ($^{13}\text{C}_{12}$, 99%)	2000
OCDD ($^{13}\text{C}_{12}$, 99%)	4000
OCDF ($^{13}\text{C}_{12}$, 99%)	4000

JIS Methods K0311 and K0312 Dioxin/Furan Standard Mixtures

Catalog #	Compound	Amount
EDF-5032	JIS Dioxin/Furan Calibration Solutions [STD1-STD5] – low concentration	Set of 5 x 0.2 mL in Nonane
EDF-5032-1	JIS Dioxin/Furan Calibration Solution [STD1] – low concentration	0.2 mL in Nonane
EDF-5032-2	JIS Dioxin/Furan Calibration Solution [STD2] – low concentration	0.2 mL in Nonane
EDF-5032-3	JIS Dioxin/Furan Calibration Solution [STD3] – low concentration	0.2 mL in Nonane
EDF-5032-4	JIS Dioxin/Furan Calibration Solution [STD4] – low concentration	0.2 mL in Nonane
EDF-5032-5	JIS Dioxin/Furan Calibration Solution [STD5] – low concentration	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	STD1	STD2	STD3	STD4	STD5
2,3,7,8-TCDD	0.4	2	10	40	200
1,2,3,7,8-PeCDD	0.4	2	10	40	200
1,2,3,4,7,8-HxCDD	1	5	25	100	500
1,2,3,6,7,8-HxCDD	1	5	25	100	500
1,2,3,7,8,9-HxCDD	1	5	25	100	500
1,2,3,4,6,7,8-HpCDD	1	5	25	100	500
OCDD	2	10	50	200	1000
2,3,7,8-TCDF	0.4	2	10	40	200
1,2,3,7,8-PeCDF	0.4	2	10	40	200
2,3,4,7,8-PeCDF	0.4	2	10	40	200
1,2,3,4,7,8-HxCDF	1	5	25	100	500
1,2,3,6,7,8-HxCDF	1	5	25	100	500
1,2,3,7,8,9-HxCDF	1	5	25	100	500
2,3,4,6,7,8-HxCDF	1	5	25	100	500
1,2,3,4,6,7,8-HpCDF	1	5	25	100	500
1,2,3,4,7,8,9-HpCDF	1	5	25	100	500
OCDF	2	10	50	200	1000
Labeled					
2,3,7,8-TCDD (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,4-TCDD (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,7,8-PeCDD (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,4,7,8-HxCDD (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,6,7,8-HxCDD (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,7,8,9-HxCDD (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,4,6,7,8-HpCDD (¹³C₁₂,99%)	10	10	10	10	10
OCDD (¹³C₁₂,99%)	20	20	20	20	20
2,3,7,8-TCDF (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,7,8-PeCDF (¹³C₁₂,99%)	10	10	10	10	10
2,3,4,7,8-PeCDF (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,4,7,8-HxCDF (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,6,7,8-HxCDF (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,7,8,9-HxCDF (¹³C₁₂,99%)	10	10	10	10	10
2,3,4,6,7,8-HxCDF (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,4,6,7,8-HpCDF (¹³C₁₂,99%)	10	10	10	10	10
1,2,3,4,7,8,9-HpCDF (¹³C₁₂,99%)	10	10	10	10	10
OCDF (¹³C₁₂,99%)	20	20	20	20	20

European Air Method EN-1948 Standard Mixtures

Catalog #	Compound	Amount
EDF-4947	EN-1948 Calibration Solutions [CS1-CS5]	Set of 5 x 0.2 mL in Nonane
EDF-4947-CS1	EN-1948 Calibration Solution [CS1]	0.2 mL in Nonane
EDF-4947-CS2	EN-1948 Calibration Solution [CS2]	0.2 mL in Nonane
EDF-4947-CS3	EN-1948 Calibration Solution [CS3]	0.2 mL in Nonane
EDF-4947-CS4	EN-1948 Calibration Solution [CS4]	0.2 mL in Nonane
EDF-4947-CS5	EN-1948 Calibration Solution [CS5]	0.2 mL in Nonane

All concentrations are in pg/μL (ppb)

Unlabeled	CS1	CS2	CS3	CS4	CS5
2,3,7,8-TCDD	0.5	2.0	10.0	40.0	200
2,3,7,8-TCDF	0.5	2.0	10.0	40.0	200
1,2,3,7,8-PeCDD	2.5	10.0	50.0	200	1000
1,2,3,7,8-PeCDF	2.5	10.0	50.0	200	1000
2,3,4,7,8-PeCDF	2.5	10.0	50.0	200	1000
1,2,3,4,7,8-HxCDD	2.5	10.0	50.0	200	1000
1,2,3,6,7,8-HxCDD	2.5	10.0	50.0	200	1000
1,2,3,7,8,9-HxCDD	2.5	10.0	50.0	200	1000
1,2,3,4,7,8-HxCDF	2.5	10.0	50.0	200	1000
1,2,3,6,7,8-HxCDF	2.5	10.0	50.0	200	1000
1,2,3,7,8,9-HxCDF	2.5	10.0	50.0	200	1000
2,3,4,6,7,8-HxCDF	2.5	10.0	50.0	200	1000
1,2,3,4,6,7,8-HpCDD	2.5	10.0	50.0	200	1000
1,2,3,4,6,7,8-HpCDF	2.5	10.0	50.0	200	1000
1,2,3,4,7,8,9-HpCDF	2.5	10.0	50.0	200	1000
OCDD	5.0	20.0	100	400	2000
OCDF	5.0	20.0	100	400	2000
Labeled					
1,2,3,4-TCDD (¹³C₁₂,99%)	100	100	100	100	100
2,3,7,8-TCDD (¹³C₁₂,99%)	100	100	100	100	100
2,3,7,8-TCDF (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,7,8-PeCDD (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,7,8-PeCDF (¹³C₁₂,99%)	100	100	100	100	100
2,3,4,7,8-PeCDF (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,4,7,8-HxCDD (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,6,7,8-HxCDD (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,7,8,9-HxCDD (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,4,7,8-HxCDF (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,6,7,8-HxCDF (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,7,8,9-HxCDF (¹³C₁₂,99%)	100	100	100	100	100
2,3,4,6,7,8-HxCDF (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,4,6,7,8-HpCDD (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,4,6,7,8-HpCDF (¹³C₁₂,99%)	100	100	100	100	100
1,2,3,4,7,8,9-HpCDF (¹³C₁₂,99%)	100	100	100	100	100
OCDD (¹³C₁₂,99%)	200	200	200	200	200
OCDF (¹³C₁₂,99%)	200	200	200	200	200

European Air Method EN-1948 Standard Mixtures

Catalog #	Compound	Amount
EF-4138	EN-1948 Sampling Standard Solution	1.2 mL in Nonane
NEW EF-4138-10	EN-1948 Sampling Standard Solution	2 x 5 mL in Nonane
	Labeled	(pg/ μ L)
	1,2,3,7,8-PeCDF ($^{13}\text{C}_{12}$, 99%)	100
	1,2,3,7,8,9-HxCDF ($^{13}\text{C}_{12}$, 99%)	100
	1,2,3,4,7,8,9-HpCDF ($^{13}\text{C}_{12}$, 99%)	200
EDF-4139	EN-1948 Extraction Standard Solution	1.2 mL in Nonane
NEW EDF-4139-10	EN-1948 Extraction Standard Solution	2 x 5 mL in Nonane
	Labeled	
	2,3,7,8-TCDD ($^{13}\text{C}_{12}$, 99%)	100
	2,3,7,8-TCDF ($^{13}\text{C}_{12}$, 99%)	100
	1,2,3,7,8-PeCDD ($^{13}\text{C}_{12}$, 99%)	100
	2,3,4,7,8-PeCDF ($^{13}\text{C}_{12}$, 99%)	100
	1,2,3,4,7,8-HxCDD ($^{13}\text{C}_{12}$, 99%)	100
	1,2,3,4,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	100
	1,2,3,6,7,8-HxCDD ($^{13}\text{C}_{12}$, 99%)	100
	1,2,3,6,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	100
	2,3,4,6,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	100
	1,2,3,4,6,7,8-HpCDD ($^{13}\text{C}_{12}$, 99%)	200
	1,2,3,4,6,7,8-HpCDF ($^{13}\text{C}_{12}$, 99%)	200
	OCDD ($^{13}\text{C}_{12}$, 99%)	200
	OCDF ($^{13}\text{C}_{12}$, 99%)	200
ED-4140	EN-1948 Syringe Standard Solution	1.2 mL in Nonane
	Labeled	
	1,2,3,4-TCDD ($^{13}\text{C}_{12}$, 99%)	400
	1,2,3,7,8,9-HxCDD ($^{13}\text{C}_{12}$, 99%)	400
EDF-4175	EN-1948 Native Stock Response Factor Solution	0.5 mL in Nonane
	Unlabeled	
	2,3,7,8-TCDD	1000
	2,3,7,8-TCDF	1000
	1,2,3,7,8-PeCDD	1000
	1,2,3,7,8-PeCDF	1000
	2,3,4,7,8-PeCDF	1000
	1,2,3,4,7,8-HxCDD	1000
	1,2,3,6,7,8-HxCDD	1000
	1,2,3,7,8,9-HxCDD	4000
	1,2,3,4,7,8-HxCDF	1000
	1,2,3,6,7,8-HxCDF	1000
	1,2,3,7,8,9-HxCDF	1000
	2,3,4,6,7,8-HxCDF	1000
	1,2,3,4,6,7,8-HpCDD	2000
	1,2,3,4,6,7,8-HpCDF	2000
	1,2,3,4,7,8,9-HpCDF	2000
	OCDD	2000
	OCDF	2000

Performance Evaluation Reference Materials

Fish Tissue, Soil, and Sediment Reference Materials

In May of 2003, environmental laboratories around the world participated in an interlaboratory study conducted by CIL and Cerilliant. The purpose of this study was to characterize dioxin, PCB, pesticide, and other organic contaminant levels in soil, sediment, and fish tissue reference materials.

The objectives of this interlaboratory study were to quantitate the levels of a wide variety of environmental contaminants in two new matrices: a sample taken from river sediment in an area known to have PCB contamination and a soil sample taken from a location where no known contamination had occurred. The three Fish Performance Evaluation samples were re-evaluated with new consensus values added to the existing consensus values. The existing analyte list has been expanded to include additional Dioxins, Furans, and PCBs. Consensus values for other analyte groups such as Brominated Flame Retardants, Polyaromatic Hydrocarbons, Pesticides, and other Priority Pollutants were generated.

Catalog #	Compound	Amount
EDF-5183	Natural Matrix Reference Material (Soil)	10 g
EDF-5184	Heavily Contaminated Sediment Reference Material	10 g
EDF-2524	Clean Natural Matrix Reference Material (Fish)	10 g
EDF-2525	Contaminated Natural Matrix Reference Material (Fish)	10 g
EDF-2526	Fortified Natural Matrix Reference Material (Fish)	10 g

Participating Laboratories

AgriQuality New Zealand LTD.	New Zealand	Government Laboratory	China
Alta Analytical Laboratory (now Vista Analytical)	USA	GSF – National Research Center	
AnalyCen Nordic AB	Sweden	for Environment & Health	Germany
Analytical Solutions	Brazil	I.N.E.R.I.S.	France
Anfaco-Cecopesca	Spain	Instituto Salud Carlos III	Spain
Australian Government Analytical Laboratory (AGAL)		Institut Pasteur de Lille, Laboratoire	
Australia		d'Etudes de Trace Organiques	France
Axys Analytical Services	Canada	Institute of Ecology & Evolution	
CARSO	France	of Russian Academy of Science (IPEE-RAS)	Russia
Center for Environmental Safety and		Institute of Public Health (IPH)	Belgium
Health Technology Development/ITRI	Taiwan	LABERCA	France
Centro Oceanografico de Vigo	Spain	Maxxam Analytics, Inc.	Canada
CERVA-CODA-VAR	Belgium	Mississippi State Chemical Laboratory	USA
Chinese Academy of Sciences	China	National Center for Scientific Research "Demokritos"	Greece
Ciba Specialty Chemical, Inc.	Switzerland	National Institute of Nutrition and Food Safety	China
CIEMAT (Energy, Environmental &		National Public Health Institute	Finland
Technological Research Center)	Spain	Norwegian Institute for Air Research (NILU)	Norway
Clean Harbors Environmental Services	USA	Oekometric GmbH	Germany
Columbia Analytical Services, Inc.	USA	Ontario Ministry of Environment	Canada
Department of Toxic Substance Control	USA	Pace Analytical Services, Inc.	USA
Dow Chemical Company	USA	PSC Analytical Services (now Maxxam Analytics)	Canada
ECOCHM, A.S.	Czech Republic	Research & Productivity Council (RPC)	Canada
Environmental Protection Authority Victoria	Australia	RIKILT Institute for Food Safety	The Netherlands
Enviro-Test Laboratories (now ALS Canada)	Canada	Severn Trent Laboratories (now TestAmerica)	USA
Freshwater Institute	Canada	Shenzhen POPs Laboratory	China
Frontier Analytical Laboratory	USA	Triangle Laboratories, Inc.	USA
GfA (Gesellschaft für Arbeitsplatz		UFR Sciences	France
und Umweltanalytik) mbH	Germany	Worthies Engineering Consultants Corporation	Taiwan

Performance Evaluation Reference Materials

Fly Ash Reference Material

In 2007, Cambridge Isotope Laboratories performed an international interlaboratory study on Fly Ash Reference Material purchased from Consorzio INCA in Italy. The ash comes from the filter of a municipal waste incinerator in northern Italy, and has been analyzed and given consensus values for numerous dioxin, furan, and PCB congeners. This sample is meant to be used to evaluate the performance of an analytical laboratory for the analytes given.

	Catalog #	Compound	Amount
NEW	EDF-5369	Fly Ash Reference Material	10 g

Participating Laboratories

AgriQuality Limited – Wellington Laboratory	New Zealand	Murata Keisokuki Service	Japan
AIKEN	Japan	Nagasaki Food Hygiene Association	Japan
ALS Czech Republic s.r.o.	Czech Republic	National Central University Graduate Institute	
ARPAT	Italy	of Environmental Engineering	Taiwan
Cheng-Shiu University	Taiwan	Niigata Kankyo Bunseki Center	Japan
China Steel Cooperation	Taiwan	Nippon Steel Techno Research	Japan
Clean Harbors Environmental Services	USA	Nittech Research Corporation	Japan
Dalian Institute of Chemical Physics, CAS	China	Oekometric GmbH	Germany
The Dow Chemical Company	USA	RCLAB Srl	Italy
Environmental Science Laboratory	Japan	SGS Institut Fresenius GmbH Bayreuth	Germany
Environment Canada	Ontario	Shimadzu Techno-Research, Inc.	Japan
Hiyoshi Corporation	Japan	Sogo Mizu Kenkyusho	Japan
Hokuriku Kankyo Kagaku Kenkyusho	Japan	Sumika Chemical Analysis Service	Japan
Ishikawaken Prefectural Institute of Public Health		Sun Dream Environmental Technology Corporation	Taiwan
and Environmental Services	Japan	Teijin Eco-Science Limited	Japan
Joetsu Kankyo Kagaku Center	Japan	Term Corporation	Japan
Kankyo Techno Co., LTD	Japan	Tokyo Kensa Center Co., LTD	Japan
KOBELCO Research Institute, Inc.	Japan	Tokyo Technical Service Co., LTD	Japan
Maxxam Analytics, Inc.	Canada	Toyo Giken Corporation	Japan
Miyagi Prefectural Institute of Public Health		Yunitika Environmental Technical Center	Japan
and Environment	Japan		

Cod Liver Oil Reference Materials

In 2010, Cambridge Isotope Laboratories organized an international interlaboratory study on Cod Liver Oil Reference Materials purchased from TestAmerica Laboratories in TN, USA. Commercially available Cod Liver Oil was spiked with known amounts of Dioxins, Furans, and PCBs for the Fortified Cod Liver Oil reference material. A separate standard with no spike was also prepared as a blank. These samples are meant to be used to evaluate the performance of an analytical laboratory for the analytes given.

NEW	EDF-5462	Fortified Cod Liver Oil Reference Material	10 g
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Dioxin and Furan plus PCB Standard Mixtures

Catalog #	Compound	Amount
EDF-4143	Calibration Curve for Dioxin, Furan and PCB in Tissue [CS1-CS9]	Set of 9 x 0.2 mL in Nonane

NOTE: Individual calibration levels are available upon request.

		All concentrations are in ng/mL (ppb)								
Unlabeled	IUPAC	CDC1	CDC2	CDC3	CDC4	CDC5	CDC6	CDC7	CDC8	CDC9
2,3,7,8-TCDD		0.04	0.10	0.20	1.00	2.00	7.00	20.0	35.0	50.0
2,3,7,8-TCDF		0.04	0.10	0.20	0.50	1.00	2.00	5.00	7.50	10.0
1,2,3,7,8-PeCDD		0.04	0.10	0.20	0.50	1.00	2.00	5.00	10.0	20.0
1,2,3,7,8-PeCDF		0.04	0.10	0.20	0.50	1.00	2.00	5.00	7.50	10.0
2,3,4,7,8-PeCDF		0.04	0.10	0.20	0.50	1.00	2.00	5.00	7.50	10.0
1,2,3,4,7,8-HxCDD		0.04	0.10	0.20	0.50	1.00	2.00	5.00	10.0	20.0
1,2,3,4,7,8-HxCDF		0.04	0.10	0.20	0.50	1.00	2.00	5.00	7.50	10.0
1,2,3,6,7,8-HxCDD		0.10	0.25	0.50	1.25	2.50	5.00	12.5	25.0	50.0
1,2,3,6,7,8-HxCDF		0.04	0.10	0.20	0.50	1.00	2.00	5.00	7.50	10.0
1,2,3,7,8,9-HxCDD		0.20	0.50	1.00	2.00	5.00	10.0	20.0	25.0	30.0
1,2,3,7,8,9-HxCDF		0.04	0.10	0.20	0.50	1.00	2.00	5.00	7.50	10.0
2,3,4,6,7,8-HxCDF		0.04	0.10	0.20	0.50	1.00	2.00	5.00	7.50	10.0
1,2,3,4,6,7,8-HpCDD		1.00	2.00	5.00	10.0	20.0	25.0	50.0	100	200
1,2,3,4,6,7,8-HpCDF		0.20	0.50	1.00	2.00	5.00	10.0	20.0	25.0	30.0
1,2,3,4,6,7,9-HpCDD		0.04	0.10	0.20	0.50	1.00	2.00	5.00	10.0	20.0
1,2,3,4,7,8,9-HpCDF		0.04	0.10	0.20	0.50	1.00	2.00	5.00	7.50	10.0
OCDD		10.0	20.0	50.0	100	200	300	400	500	600
OCDF		0.04	0.10	0.20	0.50	1.00	2.00	5.00	7.50	10.0
3,3',4,4'-TetraCB	77	0.80	1.60	4.00	8.00	16.0	20.0	40.0	80.0	160
3,4,4',5-TetraCB	81	0.80	1.60	4.00	8.00	16.0	20.0	40.0	80.0	160
3,3',4,4',5-PentaCB	126	0.80	1.60	4.00	8.00	16.0	20.0	40.0	80.0	160
3,3',4,4',5,5'-HexaCB	169	0.80	1.60	4.00	8.00	16.0	20.0	40.0	80.0	160
Labeled										
1,2,3,4-TCDD (¹³ C ₆ ,99%)		25	25	25	25	25	25	25	25	25
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)		50	50	50	50	50	50	50	50	50
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)		50	50	50	50	50	50	50	50	50
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)		50	50	50	50	50	50	50	50	50
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)		50	50	50	50	50	50	50	50	50
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)		50	50	50	50	50	50	50	50	50
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)		120	120	120	120	120	120	120	120	120
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)		125	125	125	125	125	125	125	125	125
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)		120	120	120	120	120	120	120	120	120
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)		125	125	125	125	125	125	125	125	125
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)		120	120	120	120	120	120	120	120	120
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)		125	125	125	125	125	125	125	125	125
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)		125	125	125	125	125	125	125	125	125
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)		120	120	120	120	120	120	120	120	120
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)		125	125	125	125	125	125	125	125	125
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)		62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5	62.5
OCDD (¹³ C ₁₂ ,99%)		250	250	250	250	250	250	250	250	250
OCDF (¹³ C ₁₂ ,99%)		250	250	250	250	250	250	250	250	250
3,3',4,4'-TetraCB (¹³ C ₁₂ ,99%)	77	48	48	48	48	48	48	48	48	48
3,3',5,5'-TetraCB (¹³ C ₁₂ ,99%)	80	48	48	48	48	48	48	48	48	48
3,4,4',5-TetraCB (¹³ C ₁₂ ,99%)	81	48	48	48	48	48	48	48	48	48
3,3',4,4',5-PentaCB (¹³ C ₁₂ ,99%)	126	72	72	72	72	72	72	72	72	72
3,3',4,4',5,5'-HexaCB (¹³ C ₁₂ ,99%)	169	96	96	96	96	96	96	96	96	96

Dioxin and Furan plus PCB Standard Mixtures

Catalog #	Compound	Amount
EDF-4144	Internal Standard for Dioxin, Furan and PCB in Tissue	750 µL in Nonane

Labeled	IUPAC	(ng/mL)
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)		25.0
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)		25.0
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)		25.0
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)		25.0
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)		25.0
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)		60.0
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)		62.5
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)		60.0
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)		62.5
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)		60.0
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)		62.5
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)		62.5
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)		60.0
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)		62.5
OCDD (¹³ C ₁₂ ,99%)		125
OCDF (¹³ C ₁₂ ,99%)		125
3,3',4,4'-TetraCB (¹³ C ₁₂ ,99%)	77	24.0
3,4,4',5-TetraCB (¹³ C ₁₂ ,99%)	81	24.0
3,3',4,4',5-PentaCB (¹³ C ₁₂ ,99%)	126	36.0
3,3',4,4',5,5'-HexaCB (¹³ C ₁₂ ,99%)	169	48.0

NEW EDF-4144-B	Internal Standard for Dioxin, Furan and PCB in Tissue	0.5 mL in 97.5% Methanol/2.5% Nonane
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Labeled		
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)		2.5
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)		2.5
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)		6
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)		6
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)		6
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)		6
OCDD (¹³ C ₁₂ ,99%)		12.5
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)		2.5
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)		2.5
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)		2.5
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)		6.25
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)		6.25
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)		6.25
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)		6.25
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)		6.25
OCDF (¹³ C ₁₂ ,99%)		12.5
3,3',4,4'-TetraCB (¹³ C ₁₂ ,99%)	77	2.4
3,4,4',5-TetraCB (¹³ C ₁₂ ,99%)	81	2.4
3,3',4,4',5-PentaCB (¹³ C ₁₂ ,99%)	126	3.6
3,3',4,4',5,5'-HexaCB (¹³ C ₁₂ ,99%)	169	4.8

Dioxin and Furan plus PCB Standard Mixtures

Catalog #	Compound	Amount
EDF-4145	Recovery Standard for Dioxin, Furan and PCB in Tissue	750 µL in Nonane

Labeled	IUPAC	(ng/mL)
1,2,3,4-TCDD (¹³C₆,99%)		25.0
1,2,3,4,7,8,9-HpCDF (¹³C₁₂,99%)		62.5
3,3',5,5'-TetraCB (¹³C₁₂,99%)	80	48.0

NEW EDF-4145-A	Recovery Standard for Dioxin, Furan and PCB in Tissue	0.5 mL in Nonane
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Labeled		
1,2,3,4-TCDD (¹³C₆,99%)		25.0
1,2,3,4,7,8,9-HpCDF (¹³C₁₂,99%)		62.5
3,3',5,5'-TetraCB (¹³C₁₂,99%)	80	48.0
2,4,6,8-TBDF (¹³C₁₂,99%)		20.0

NEW ES-5321	Multi-Analyte Recovery Spiking Standard	10 mL in 88% Hexane/ 2% Dodecane/10% Nonane
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Labeled		
1,2,3,4-TCDD (¹³C₆,99%)		2.5
2,2',3,3',4,5,5',6,6'-NonaCB (¹³C₁₂,99%)	208	10.0
3,3',4,4'-TetraBDE (¹³C₁₂,99%)	77	7.5
2,2',3,4,4',6-HexaBDE (¹³C₁₂,99%)	139	7.5

Dioxin and Furan plus PCB Standard Mixtures

Catalog #	Compound	Amount
EDF-5086-A	Alternate PCB and Dioxin/Furan Calibration Verification Standard	1.2 mL in Nonane

Labeled	IUPAC	(ng/mL)
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)		10
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)		10
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)		10
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)		10
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)		10
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)		10
OCDD (¹³ C ₁₂ ,99%)		20
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)		10
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)		10
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)		10
1,2,3,4,7,8-HxBDF (¹³ C ₁₂ ,99%)		10
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)		10
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)		10
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)		10
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)		10
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)		10
OCDF (¹³ C ₁₂ ,99%)		20
3,3',4,4'-TetraCB (¹³ C ₁₂ ,99%)	77	10
3,4,4',5-TetraCB (¹³ C ₁₂ ,99%)	81	10
2,3,3',4,4'-PentaCB (¹³ C ₁₂ ,99%)	105	10
2,3,4,4',5-PentaCB (¹³ C ₁₂ ,99%)	114	10
2,3',4,4',5-PentaCB (¹³ C ₁₂ ,99%)	118	10
2',3,4,4',5-PentaCB (¹³ C ₁₂ ,99%)	123	10
3,3',4,4',5-PentaCB (¹³ C ₁₂ ,99%)	126	10
2,3,3',4,4',5-HexaCB (¹³ C ₁₂ ,99%)	156	10
2,3,3',4,4',5'-HexaCB (¹³ C ₁₂ ,99%)	157	10
2,3',4,4',5,5'-HexaCB (¹³ C ₁₂ ,99%)	167	10
3,3',4,4',5,5'-HexaCB (¹³ C ₁₂ ,99%)	169	10
2,2',3,3',4,4',5-HeptaCB (¹³ C ₁₂ ,99%)	170	10
2,2',3,4,4',5,5'-HeptaCB (¹³ C ₁₂ ,99%)	180	10
2,3,3',4,4',5,5'-HeptaCB (¹³ C ₁₂ ,99%)	189	10

Dioxin and Furan plus PCB Standard Mixtures

Catalog #	Compound	Amount																																																																																																						
NEW EDF-5393	Dioxin Cleanup Spike	1.2 mL in Nonane																																																																																																						
	<table><tr><th>Labeled</th><th>IUPAC</th><th>(ng/mL)</th></tr><tr><td>2,3,7,8-TCDD (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>1,3,6,8-TCDD (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>1,2,3,7,8-PeCDD (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>1,2,3,4,7,8-HxCDD (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>1,2,3,6,7,8-HxCDD (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>1,2,3,7,8,9-HxCDD (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>1,2,3,4,6,7,8-HpCDD (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>OCDD (¹³C₁₂,99%)</td><td></td><td>40</td></tr><tr><td>2,3,7,8-TCDF (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>1,3,6,8-TCDF (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>1,2,3,7,8-PeCDF (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>2,3,4,7,8-PeCDF (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>1,2,3,4,7,8-HxCDF (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>1,2,3,6,7,8-HxCDF (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>2,3,4,6,7,8-HxCDF (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>1,2,3,7,8,9-HxCDF (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>1,2,3,4,6,7,8-HpCDF (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>1,2,3,4,7,8,9-HpCDF (¹³C₁₂,99%)</td><td></td><td>20</td></tr><tr><td>OCDF (¹³C₁₂,99%)</td><td></td><td>40</td></tr><tr><td>3,4,4',5-TetraCB (¹³C₁₂,99%)</td><td>81</td><td>20</td></tr><tr><td>3,3',4,4'-TetraCB (¹³C₁₂,99%)</td><td>77</td><td>20</td></tr><tr><td>3,3',4,4',5-PentaCB (¹³C₁₂,99%)</td><td>126</td><td>20</td></tr><tr><td>3,3',4,4',5,5'-HexaCB (¹³C₁₂,99%)</td><td>169</td><td>20</td></tr><tr><td>2',3,4,4',5-PentaCB (¹³C₁₂,99%)</td><td>123</td><td>20</td></tr><tr><td>2,3',4,4',5-PentaCB (¹³C₁₂,99%)</td><td>118</td><td>20</td></tr><tr><td>2,3,3',4,4'-PentaCB (¹³C₁₂,99%)</td><td>105</td><td>20</td></tr><tr><td>2,3,4,4',5-PentaCB (¹³C₁₂,99%)</td><td>114</td><td>20</td></tr><tr><td>2,3',4,4',5,5'-HexaCB (¹³C₁₂,99%)</td><td>167</td><td>20</td></tr><tr><td>2,3,3',4,4',5-HexaCB (¹³C₁₂,99%)</td><td>156</td><td>20</td></tr><tr><td>2,3,3',4,4',5'-HexaCB (¹³C₁₂,99%)</td><td>157</td><td>20</td></tr><tr><td>2,3,3',4,4',5,5'-HeptaCB (¹³C₁₂,99%)</td><td>189</td><td>20</td></tr><tr><td>2,2',3,3',4,4',5-HeptaCB (¹³C₁₂,99%)</td><td>170</td><td>20</td></tr><tr><td>2,2',3,4,4',5,5'-HeptaCB (¹³C₁₂,99%)</td><td>180</td><td>20</td></tr></table>	Labeled	IUPAC	(ng/mL)	2,3,7,8-TCDD (¹³ C ₁₂ ,99%)		20	1,3,6,8-TCDD (¹³ C ₁₂ ,99%)		20	1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)		20	1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)		20	1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)		20	1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)		20	1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)		20	OCDD (¹³ C ₁₂ ,99%)		40	2,3,7,8-TCDF (¹³ C ₁₂ ,99%)		20	1,3,6,8-TCDF (¹³ C ₁₂ ,99%)		20	1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)		20	2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)		20	1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)		20	1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)		20	2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)		20	1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)		20	1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)		20	1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)		20	OCDF (¹³ C ₁₂ ,99%)		40	3,4,4',5-TetraCB (¹³ C ₁₂ ,99%)	81	20	3,3',4,4'-TetraCB (¹³ C ₁₂ ,99%)	77	20	3,3',4,4',5-PentaCB (¹³ C ₁₂ ,99%)	126	20	3,3',4,4',5,5'-HexaCB (¹³ C ₁₂ ,99%)	169	20	2',3,4,4',5-PentaCB (¹³ C ₁₂ ,99%)	123	20	2,3',4,4',5-PentaCB (¹³ C ₁₂ ,99%)	118	20	2,3,3',4,4'-PentaCB (¹³ C ₁₂ ,99%)	105	20	2,3,4,4',5-PentaCB (¹³ C ₁₂ ,99%)	114	20	2,3',4,4',5,5'-HexaCB (¹³ C ₁₂ ,99%)	167	20	2,3,3',4,4',5-HexaCB (¹³ C ₁₂ ,99%)	156	20	2,3,3',4,4',5'-HexaCB (¹³ C ₁₂ ,99%)	157	20	2,3,3',4,4',5,5'-HeptaCB (¹³ C ₁₂ ,99%)	189	20	2,2',3,3',4,4',5-HeptaCB (¹³ C ₁₂ ,99%)	170	20	2,2',3,4,4',5,5'-HeptaCB (¹³ C ₁₂ ,99%)	180	20	
Labeled	IUPAC	(ng/mL)																																																																																																						
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)		20																																																																																																						
1,3,6,8-TCDD (¹³ C ₁₂ ,99%)		20																																																																																																						
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)		20																																																																																																						
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)		20																																																																																																						
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)		20																																																																																																						
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)		20																																																																																																						
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)		20																																																																																																						
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NEW EDF-5395	Dioxin Sampling Spike	1.2 mL in Nonane																																																																																																						
	<table><tr><td>Labeled</td><td></td></tr><tr><td>1,2,3,4-TCDF (¹³C₁₂,99%)</td><td>50</td></tr><tr><td>1,2,3,4-TCDD (¹³C₁₂,99%)</td><td>50</td></tr><tr><td>3,3',4,5'-TetraCB (¹³C₁₂,99%)</td><td>79</td></tr></table>	Labeled		1,2,3,4-TCDF (¹³ C ₁₂ ,99%)	50	1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	50	3,3',4,5'-TetraCB (¹³ C ₁₂ ,99%)	79																																																																																															
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1,2,3,4-TCDF (¹³ C ₁₂ ,99%)	50																																																																																																							
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3,3',4,5'-TetraCB (¹³ C ₁₂ ,99%)	79																																																																																																							
NEW EF-5394	Dioxin Syringe Spike	1.2 mL in Nonane																																																																																																						
	<table><tr><td>Labeled</td><td></td></tr><tr><td>1,2,7,8-TCDF (¹³C₁₂,99%)</td><td>20</td></tr><tr><td>1,2,3,4,6,9-HxCDF (¹³C₁₂,99%)</td><td>20</td></tr><tr><td>1,2,3,4,6,8,9-HpCDF (¹³C₁₂,99%)</td><td>20</td></tr></table>	Labeled		1,2,7,8-TCDF (¹³ C ₁₂ ,99%)	20	1,2,3,4,6,9-HxCDF (¹³ C ₁₂ ,99%)	20	1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	20																																																																																															
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1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	20																																																																																																							
NEW EDF-5338	Dioxin/Furan Syringe Spike	1.2 mL in Nonane																																																																																																						
	<table><tr><td>Labeled</td><td></td></tr><tr><td>1,2,7,8-TCDF (¹³C₁₂,99%)</td><td>1000</td></tr><tr><td>1,2,3,4,6-PeCDF (¹³C₁₂,99%)</td><td>1000</td></tr><tr><td>1,2,3,4,6,9-HxCDF (¹³C₁₂,99%)</td><td>1000</td></tr><tr><td>1,2,3,4,6,8,9-HpCDF (¹³C₁₂,99%)</td><td>1000</td></tr></table>	Labeled		1,2,7,8-TCDF (¹³ C ₁₂ ,99%)	1000	1,2,3,4,6-PeCDF (¹³ C ₁₂ ,99%)	1000	1,2,3,4,6,9-HxCDF (¹³ C ₁₂ ,99%)	1000	1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	1000																																																																																													
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1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	1000																																																																																																							

Non-2,3,7,8-Containing Standard Mixtures

Catalog #	Compound	Amount
NEW EDF-5392	Dioxin/Furan Calibration Solutions [CS1-CS6]	Set of 6 x 0.2 mL in Nonane
NEW EDF-5392-1	Dioxin/Furan Calibration Solution [CS1]	0.2 mL in Nonane
NEW EDF-5392-2	Dioxin/Furan Calibration Solution [CS2]	0.2 mL in Nonane
NEW EDF-5392-3	Dioxin/Furan Calibration Solution [CS3]	0.2 mL in Nonane
NEW EDF-5392-4	Dioxin/Furan Calibration Solution [CS4]	0.2 mL in Nonane
NEW EDF-5392-5	Dioxin/Furan Calibration Solution [CS5]	0.2 mL in Nonane
NEW EDF-5392-6	Dioxin/Furan Calibration Solution [CS6]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	CS1	CS2	CS3	CS4	CS5	CS6
2,3,7,8-TCDD	0.1	0.5	2	10	50	200
1,3,6,8-TCDD	0.1	0.5	2	10	50	200
1,3,7,9-TCDD	0.1	0.5	2	10	50	200
1,2,8,9-TCDD	0.1	0.5	2	10	50	200
1,2,3,7,8-PeCDD	0.1	0.5	2	10	50	200
1,2,3,4,7,8-HxCDD	0.2	1	4	20	100	400
1,2,3,6,7,8-HxCDD	0.2	1	4	20	100	400
1,2,3,7,8,9-HxCDD	0.2	1	4	20	100	400
1,2,3,4,6,7,8-HpCDD	0.2	1	4	20	100	400
OCDD	0.5	2.5	10	50	250	1000
2,3,7,8-TCDF	0.1	0.5	2	10	50	200
1,3,6,8-TCDF	0.1	0.5	2	10	50	200
1,2,7,8-TCDF	0.1	0.5	2	10	50	200
1,2,8,9-TCDF	0.1	0.5	2	10	50	200
1,2,3,7,8-PeCDF	0.1	0.5	2	10	50	200
2,3,4,7,8-PeCDF	0.1	0.5	2	10	50	200
1,2,3,4,7,8-HxCDF	0.2	1	4	20	100	400
1,2,3,6,7,8-HxCDF	0.2	1	4	20	100	400
2,3,4,6,7,8-HxCDF	0.2	1	4	20	100	400
1,2,3,7,8,9-HxCDF	0.2	1	4	20	100	400
1,2,3,4,6,7,8-HpCDF	0.2	1	4	20	100	400
1,2,3,4,7,8,9-HpCDF	0.2	1	4	20	100	400
OCDF	0.5	2.5	10	50	250	1000
Labeled						
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,3,6,8-TCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
OCDD (¹³ C ₁₂ ,99%)	20	20	20	20	20	20
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,3,6,8-TCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,4-TCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,7,8-TCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,4,6-PeCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,4,6,9-HxCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10
OCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20	20

Non-2,3,7,8-Containing Standard Mixtures

Catalog #	Compound	Amount
NEW EDF-5314	Dioxin/Furan Calibration Solutions [CS1-CS5]	Set of 5 x 0.2 mL in Nonane
NEW EDF-5314-1	Dioxin/Furan Calibration Solution [CS1]	0.2 mL in Nonane
NEW EDF-5314-2	Dioxin/Furan Calibration Solution [CS2]	0.2 mL in Nonane
NEW EDF-5314-3	Dioxin/Furan Calibration Solution [CS3]	0.2 mL in Nonane
NEW EDF-5314-4	Dioxin/Furan Calibration Solution [CS4]	0.2 mL in Nonane
NEW EDF-5314-5	Dioxin/Furan Calibration Solution [CS5]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	CS1	CS2	CS3	CS4	CS5
1,3,6,8-TCDD	0.2	1.0	5.0	20	100
1,3,7,9-TCDD	0.2	1.0	5.0	20	100
1,2,8,9-TCDD	0.2	1.0	5.0	20	100
2,3,7,8-TCDD	0.2	1.0	5.0	20	100
1,2,3,7,8-PeCDD	0.2	1.0	5.0	20	100
1,2,3,4,7,8-HxCDD	0.2	1.0	5.0	20	100
1,2,3,6,7,8-HxCDD	0.2	1.0	5.0	20	100
1,2,3,7,8,9-HxCDD	0.2	1.0	5.0	20	100
1,2,3,4,6,7,8-HpCDD	0.2	1.0	5.0	20	100
OCDD	0.4	2.0	10	40	200
1,3,6,8-TCDF	0.2	1.0	5.0	20	100
1,2,7,8-TCDF	0.2	1.0	5.0	20	100
1,2,8,9-TCDF	0.2	1.0	5.0	20	100
2,3,7,8-TCDF	0.2	1.0	5.0	20	100
1,2,3,7,8-PeCDF	0.2	1.0	5.0	20	100
2,3,4,7,8-PeCDF	0.2	1.0	5.0	20	100
1,2,3,4,7,8-HxBDF	0.2	1.0	5.0	20	100
1,2,3,6,7,8-HxCDF	0.2	1.0	5.0	20	100
1,2,3,7,8,9-HxCDF	0.2	1.0	5.0	20	100
2,3,4,6,7,8-HxCDF	0.2	1.0	5.0	20	100
1,2,3,4,6,7,8-HpCDF	0.2	1.0	5.0	20	100
1,2,3,4,7,8,9-HpCDF	0.2	1.0	5.0	20	100
OCDF	0.4	2.0	10	40	200
Labeled					
1,3,6,8-TCDD (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,4-TCDD (¹³ C ₁₂ , 99%)	10	10	10	10	10
2,3,7,8-TCDD (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,7,8-PeCDD (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ , 99%)	10	10	10	10	10
OCDD (¹³ C ₁₂ , 99%)	20	20	20	20	20
1,3,6,8-TCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,4-TCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,7,8-TCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
2,3,7,8-TCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,4,6-PeCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,7,8-PeCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
2,3,4,7,8-PeCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,4,6,9-HxCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,4,7,8-HxBDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ , 99%)	10	10	10	10	10
OCDF (¹³ C ₁₂ , 99%)	20	20	20	20	20

Non-2,3,7,8-Containing Standard Mixtures

Catalog #	Compound	Amount
EDF-5185	Dioxin Furan Calibration Solutions with first and closest TCDD Eluters and Non-2,3,7,8-Containing ¹³ C PCDFs [CS1-CS5]	Set of 5 x 0.2 mL in Nonane
EDF-5185-1	Dioxin Furan Calibration Solution with first and closest TCDD Eluters and Non-2,3,7,8-Containing ¹³ C PCDFs [CS1]	0.2 mL in Nonane
EDF-5185-2	Dioxin Furan Calibration Solution with first and closest TCDD Eluters and Non-2,3,7,8-Containing ¹³ C PCDFs [CS2]	0.2 mL in Nonane
EDF-5185-3	Dioxin Furan Calibration Solution with first and closest TCDD Eluters and Non-2,3,7,8-Containing ¹³ C PCDFs [CS3]	0.2 mL in Nonane
EDF-5185-4	Dioxin Furan Calibration Solution with first and closest TCDD Eluters and Non-2,3,7,8-Containing ¹³ C PCDFs [CS4]	0.2 mL in Nonane
EDF-5185-5	Dioxin Furan Calibration Solution with first and closest TCDD Eluters and Non-2,3,7,8-Containing ¹³ C PCDFs [CS5]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	CS1	CS2	CS3	CS4	CS5
1,3,6,8-TCDD	0.2	1	5	20	100
1,3,7,9-TCDD	0.2	1	5	20	100
1,2,8,9-TCDD	0.2	1	5	20	100
2,3,7,8-TCDD	0.2	1	5	20	100
1,2,3,7,8-PeCDD	0.2	1	5	20	100
1,2,3,4,7,8-HxCDD	0.4	2	10	40	200
1,2,3,6,7,8-HxCDD	0.4	2	10	40	200
1,2,3,7,8,9-HxCDD	0.4	2	10	40	200
1,2,3,4,6,7,8-HpCDD	0.4	2	10	40	200
OCDD	1	5	25	100	500
1,3,6,8-TCDF	0.2	1	5	20	100
1,2,7,8-TCDF	0.2	1	5	20	100
1,2,8,9-TCDF	0.2	1	5	20	100
2,3,7,8-TCDF	0.2	1	5	20	100
1,2,3,7,8-PeCDF	0.2	1	5	20	100
2,3,4,7,8-PeCDF	0.2	1	5	20	100
1,2,3,4,7,8-HxCDF	0.4	2	10	40	200
1,2,3,6,7,8-HxCDF	0.4	2	10	40	200
1,2,3,7,8,9-HxCDF	0.4	2	10	40	200
2,3,4,6,7,8-HxCDF	0.4	2	10	40	200
1,2,3,4,6,7,8-HpCDF	0.4	2	10	40	200
1,2,3,4,7,8,9-HpCDF	0.4	2	10	40	200
OCDF	1	5	25	100	500
Labeled					
1,3,6,8-TCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10
OCDD (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,3,6,8-TCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,7,8-TCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10
OCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20

Non-2,3,7,8-Containing Standard Mixtures

Catalog #	Compound	Amount
EDF-5040	Non-2,3,7,8-Containing PCDF Calibration Solutions [CS1-CS5]	Set of 5 x 0.2 mL in Nonane
NEW EDF-5040-1	Non-2,3,7,8-Containing PCDF Calibration Solution [CS1]	0.2 mL in Nonane
NEW EDF-5040-2	Non-2,3,7,8-Containing PCDF Calibration Solution [CS2]	0.2 mL in Nonane
NEW EDF-5040-3	Non-2,3,7,8-Containing PCDF Calibration Solution [CS3]	0.2 mL in Nonane
NEW EDF-5040-4	Non-2,3,7,8-Containing PCDF Calibration Solution [CS4]	0.2 mL in Nonane
NEW EDF-5040-5	Non-2,3,7,8-Containing PCDF Calibration Solution [CS5]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	CS1	CS2	CS3	CS4	CS5
2,3,7,8-TCDD	0.2	1	5	20	100
1,2,3,7,8-PeCDD	0.2	1	5	20	100
1,2,3,4,7,8-HxCDD	0.4	2	10	40	200
1,2,3,6,7,8-HxCDD	0.4	2	10	40	200
1,2,3,7,8,9-HxCDD	0.4	2	10	40	200
1,2,3,4,6,7,8-HpCDD	0.4	2	10	40	200
OCDD	1	5	25	100	500
2,3,7,8-TCDF	0.2	1	5	20	100
1,2,3,7,8-PeCDF	0.2	1	5	20	100
2,3,4,7,8-PeCDF	0.2	1	5	20	100
1,2,3,4,7,8-HxCDF	0.4	2	10	40	200
1,2,3,6,7,8-HxCDF	0.4	2	10	40	200
1,2,3,7,8,9-HxCDF	0.4	2	10	40	200
2,3,4,6,7,8-HxCDF	0.4	2	10	40	200
1,2,3,4,6,7,8-HpCDF	0.4	2	10	40	200
1,2,3,4,7,8,9-HpCDF	0.4	2	10	40	200
OCDF	1	5	25	100	500
Labeled					
1,3,6,8-TCDD (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	20	20	20	20	20
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	20	20	20	20	20
OCDD (¹³ C ₁₂ ,99%)	40	40	40	40	40
1,3,6,8-TCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,4-TCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,7,8-TCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,4,6-PeCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,4,6,9-HxCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20
OCDF (¹³ C ₁₂ ,99%)	40	40	40	40	40

Non-2,3,7,8-Containing Standard Mixtures

Catalog #	Compound	Amount
EDF-5041	Non-2,3,7,8-Containing PCDF Cleanup Standard	1.2 mL in Nonane

Labeled	(ng/mL)
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	2000
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	2000
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	2000
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	2000
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	2000
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	2000
OCDD (¹³ C ₁₂ ,99%)	4000
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	2000
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	2000
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	2000
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	2000
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	2000
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	2000
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	2000
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	2000
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	2000
OCDF (¹³ C ₁₂ ,99%)	4000

EF-5042	Non-2,3,7,8-Containing PCDF Syringe Standard	1.2 mL in Nonane
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Labeled	
1,2,7,8-TCDF (¹³ C ₁₂ ,99%)	2000
1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	2000

EDF-5043	Non-2,3,7,8-Containing PCDF Sampling Standard	1.2 mL in Nonane
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Labeled	
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	2000
1,2,3,4-TCDF (¹³ C ₁₂ ,99%)	2000
1,2,3,4,6-PeCDF (¹³ C ₁₂ ,99%)	2000
1,2,3,4,6,9-HxCDF (¹³ C ₁₂ ,99%)	2000

EF-5188	Non-2,3,7,8-Containing ¹³ C Furan Syringe Spike	1.2 mL in Nonane
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Labeled	
1,2,3,4,6-PeCDF (¹³ C ₁₂ ,99%)	1000
1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	1000

Two Column Dioxin and Furan Standard Mixtures

Catalog #	Compound	Amount
NEW EDF-5429-6H	Two Column Dioxin and Furan Calibration Solutions [CS1H-CS6H]	Set of 6 x 0.2 mL in Nonane
NEW EDF-5429-7H	Two Column Dioxin and Furan Calibration Solutions [CS1H-CS7H]	Set of 7 x 0.2 mL in Nonane
NEW EDF-5429-CS1H	Two Column Dioxin and Furan Calibration Solution [CS1H]	0.2 mL in Nonane
NEW EDF-5429-CS2H	Two Column Dioxin and Furan Calibration Solution [CS2H]	0.2 mL in Nonane
NEW EDF-5429-CS3H	Two Column Dioxin and Furan Calibration Solution [CS3H]	0.2 mL in Nonane
NEW EDF-5429-CS4H	Two Column Dioxin and Furan Calibration Solution [CS4H]	0.2 mL in Nonane
NEW EDF-5429-CS5H	Two Column Dioxin and Furan Calibration Solution [CS5H]	0.2 mL in Nonane
NEW EDF-5429-CS6H	Two Column Dioxin and Furan Calibration Solution [CS6H]	0.2 mL in Nonane
NEW EDF-5429-CS7H	Two Column Dioxin and Furan Calibration Solution [CS7H]	0.2 mL in Nonane
NEW EDF-5429-CS8H	Two Column Dioxin and Furan Calibration Solution [CS8H]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	CS1H	CS2H	CS3H	CS4H	CS5H	CS6H	CS7H	CS8H
2,3,7,8-TCDF	0.1	0.5	2.0	10	50	200	500	1000
1,3,6,8-TCDF	0.1	0.5	2.0	10	50	200	500	1000
1,2,7,8-TCDF	0.1	0.5	2.0	10	50	200	500	1000
1,2,8,9-TCDF	0.1	0.5	2.0	10	50	200	500	1000
1,2,3,7,8-PeCDF	0.1	0.5	2.0	10	50	200	500	1000
2,3,4,7,8-PeCDF	0.1	0.5	2.0	10	50	200	500	1000
1,2,3,4,7,8-HxCDF	0.2	1.0	4.0	20	100	400	1000	2000
1,2,3,6,7,8-HxCDF	0.2	1.0	4.0	20	100	400	1000	2000
2,3,4,6,7,8-HxCDF	0.2	1.0	4.0	20	100	400	1000	2000
1,2,3,7,8,9-HxCDF	0.2	1.0	4.0	20	100	400	1000	2000
1,2,3,4,6,7,8-HpCDF	0.2	1.0	4.0	20	100	400	1000	2000
1,2,3,4,7,8,9-HpCDF	0.2	1.0	4.0	20	100	400	1000	2000
OCDF	0.5	2.5	10	50	250	1000	2500	5000
2,3,7,8-TCDD	0.1	0.5	2.0	10	50	200	500	1000
1,3,6,8-TCDD	0.1	0.5	2.0	10	50	200	500	1000
1,3,7,9-TCDD	0.1	0.5	2.0	10	50	200	500	1000
1,2,8,9-TCDD	0.1	0.5	2.0	10	50	200	500	1000
1,2,3,7,8-PeCDD	0.1	0.5	2.0	10	50	200	500	1000
1,2,3,4,7,8-HxCDD	0.2	1.0	4.0	20	100	400	1000	2000
1,2,3,6,7,8-HxCDD	0.2	1.0	4.0	20	100	400	1000	2000
1,2,3,7,8,9-HxCDD	0.2	1.0	4.0	20	100	400	1000	2000
1,2,3,4,6,7,8-HpCDD	0.2	1.0	4.0	20	100	400	1000	2000
OCDD	0.5	2.5	10	50	250	1000	2500	5000
Labeled								
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,3,6,8-TCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,7,8-TCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,4,6-PeCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
OCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20	20	20	20
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,4,6,7-HxCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10	10	10	10
OCDD (¹³ C ₁₂ ,99%)	20	20	20	20	20	20	20	20

Two Column Dioxin and Furan Standard Mixtures

Catalog #	Compound	Amount
NEW EDF-5430	Two Column Dioxin and Furan Cleanup Spike	1.2 mL in Nonane

Labeled	(ng/mL)
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	50
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	50
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	50
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	50
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	50
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	50
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	50
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	50
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	50
OCDF (¹³ C ₁₂ ,99%)	100
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	50
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	50
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	50
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	50
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	50
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	50
OCDD (¹³ C ₁₂ ,99%)	100

NEW EDF-5431	Two Column Dioxin and Furan Syringe Spike	1.2 mL in Nonane
NEW EDF-5431-20X	Two Column Dioxin and Furan Syringe Spike	1.2 mL in Nonane

Labeled	EDF-5431	EDF-5431-20X
1,2,7,8-TCDF (¹³ C ₁₂ ,99%)	50	1000
1,2,3,4,6-PeCDF (¹³ C ₁₂ ,99%)	50	1000
1,2,3,4,6,7-HxCDD (¹³ C ₁₂ ,99%)	50	1000
1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	50	1000

NEW EDF-5444	Two Column Dioxin and Furan and PCB Cleanup Spike	0.5 mL in Nonane
NEW EDF-5444-A	Two Column Dioxin and Furan and PCB Cleanup Spike	0.6 mL in Nonane

Labeled	EDF-5444	EDF-5444-A
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	1000	1000
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	1000	1000
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	1000	1000
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	1000	1000
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	1000	1000
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	1000	1000
OCDD (¹³ C ₁₂ ,99%)	2000	2000
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	1000	1000
1,3,6,8-TCDF (¹³ C ₁₂ ,99%)	—	1000
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	1000	1000
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	1000	1000
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	1000	1000
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1000	1000
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	1000	1000
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1000	1000
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	1000	1000
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	1000	1000
OCDF (¹³ C ₁₂ ,99%)	2000	2000

Two Column Dioxin and Furan Standard Mixtures

Catalog #	Compound	Amount
NEW EDF-5443	Two Column Dioxin and Furan and PCB Calibration Solutions [CS1H-CS6H]	Set of 6 x 0.2 mL in
NEW EDF-5443-CS1H	Two Column Dioxin and Furan and PCB Calibration Solution [CS1H]	0.2 mL in Nonane
NEW EDF-5443-CS2H	Two Column Dioxin and Furan and PCB Calibration Solution [CS2H]	0.2 mL in Nonane
NEW EDF-5443-CS3H	Two Column Dioxin and Furan and PCB Calibration Solution [CS3H]	0.2 mL in Nonane
NEW EDF-5443-CS4H	Two Column Dioxin and Furan and PCB Calibration Solution [CS4H]	0.2 mL in Nonane
NEW EDF-5443-CS5H	Two Column Dioxin and Furan and PCB Calibration Solution [CS5H]	0.2 mL in Nonane
NEW EDF-5443-CS6H	Two Column Dioxin and Furan and PCB Calibration Solution [CS6H]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	IUPAC	CS1H	CS2H	CS3H	CS4H	CS5H	CS6H
2,3,7,8-TCDF		0.1	0.5	2.0	10	50	200
1,3,6,8-TCDF		0.1	0.5	2.0	10	50	200
1,2,7,8-TCDF		0.1	0.5	2.0	10	50	200
1,2,8,9-TCDF		0.1	0.5	2.0	10	50	200
1,2,3,7,8-PeCDF		0.1	0.5	2.0	10	50	200
2,3,4,7,8-PeCDF		0.1	0.5	2.0	10	50	200
1,2,3,4,7,8-HxCDF		0.2	1.0	4.0	20	100	400
1,2,3,6,7,8-HxCDF		0.2	1.0	4.0	20	100	400
2,3,4,6,7,8-HxCDF		0.2	1.0	4.0	20	100	400
1,2,3,7,8,9-HxCDF		0.2	1.0	4.0	20	100	400
1,2,3,4,6,7,8-HpCDF		0.2	1.0	4.0	20	100	400
1,2,3,4,7,8,9-HpCDF		0.2	1.0	4.0	20	100	400
OCDF		0.5	2.5	10	50	250	1000
2,3,7,8-TCDD		0.1	0.5	2.0	10	50	200
1,3,6,8-TCDD		0.1	0.5	2.0	10	50	200
1,3,7,9-TCDD		0.1	0.5	2.0	10	50	200
1,2,8,9-TCDD		0.1	0.5	2.0	10	50	200
1,2,3,7,8-PeCDD		0.1	0.5	2.0	10	50	200
1,2,3,4,7,8-HxCDD		0.2	1.0	4.0	20	100	400
1,2,3,6,7,8-HxCDD		0.2	1.0	4.0	20	100	400
1,2,3,7,8,9-HxCDD		0.2	1.0	4.0	20	100	400
1,2,3,4,6,7,8-HpCDD		0.2	1.0	4.0	20	100	400
OCDD		0.5	2.5	10	50	250	1000
3,4,4',5-TetraCB	81	0.2	1.0	4.0	20	100	400
3,3',4,4'-TetraCB	77	0.2	1.0	4.0	20	100	400
3,3',4,4',5-PentaCB	126	0.2	1.0	4.0	20	100	400
3,3',4,4',5,5'-HexaCB	169	0.2	1.0	4.0	20	100	400
2',3,4,4',5-PentaCB	123	0.2	1.0	4.0	20	100	400
2,3',4,4',5-PentaCB	118	0.2	1.0	4.0	20	100	400
2,3,3',4,4'-PentaCB	105	0.2	1.0	4.0	20	100	400
2,3,4,4',5-PentaCB	114	0.2	1.0	4.0	20	100	400
2,3',4,4',5,5'-HexaCB	167	0.2	1.0	4.0	20	100	400
2,3,3',4,4',5-HexaCB	156	0.2	1.0	4.0	20	100	400
2,3,3',4,4',5'-HexaCB	157	0.2	1.0	4.0	20	100	400
2,3,3',4,4',5,5'-HeptaCB	189	0.2	1.0	4.0	20	100	400
2,2',3,3',4,4',5-HeptaCB	170	0.2	1.0	4.0	20	100	400
2,2',3,4,4',5,5'-HeptaCB	180	0.2	1.0	4.0	20	100	400

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Two Column Dioxin and Furan Standard Mixtures

(continued from previous page)

All concentrations are in ng/mL (ppb)

Labeled	IUPAC	CS1H	CS2H	CS3H	CS4H	CS5H	CS6H
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,3,6,8-TCDD (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,4,6,7-HxCDD (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
OCDD (¹³ C ₁₂ ,99%)		20	20	20	20	20	20
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,7,8-TCDF (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,4,6-PeCDF (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)		10	10	10	10	10	10
OCDF (¹³ C ₁₂ ,99%)		20	20	20	20	20	20
3,4,4',5-TetraCB (¹³ C ₁₂ ,99%)	81	10	10	10	10	10	10
3,3',4,4'-TetraCB (¹³ C ₁₂ ,99%)	77	10	10	10	10	10	10
3,3',4,4',5-PentaCB (¹³ C ₁₂ ,99%)	126	10	10	10	10	10	10
3,3',4,4',5,5'-HexaCB (¹³ C ₁₂ ,99%)	169	10	10	10	10	10	10
2',3,4,4',5-PentaCB (¹³ C ₁₂ ,99%)	123	10	10	10	10	10	10
2,3',4,4',5-PentaCB (¹³ C ₁₂ ,99%)	118	10	10	10	10	10	10
2,3,3',4,4'-PentaCB (¹³ C ₁₂ ,99%)	105	10	10	10	10	10	10
2,3,4,4',5-PentaCB (¹³ C ₁₂ ,99%)	114	10	10	10	10	10	10
2,3',4,4',5,5'-HexaCB (¹³ C ₁₂ ,99%)	167	10	10	10	10	10	10
2,3,3',4,4',5-HexaCB (¹³ C ₁₂ ,99%)	156	10	10	10	10	10	10
2,3,3',4,4',5'-HexaCB (¹³ C ₁₂ ,99%)	157	10	10	10	10	10	10
2,3,3',4,4',5,5'-HeptaCB (¹³ C ₁₂ ,99%)	189	10	10	10	10	10	10
2,2',3,3',4,4',5-HeptaCB (¹³ C ₁₂ ,99%)	170	10	10	10	10	10	10
2,2',3,4,4',5,5'-HeptaCB (¹³ C ₁₂ ,99%)	180	10	10	10	10	10	10
2,3',4',5-TetraCB (¹³ C ₁₂ ,99%)	70	10	10	10	10	10	10
2,3,3',5,5'-PentaCB (¹³ C ₁₂ ,99%)	111	10	10	10	10	10	10
2,2',3,4,4',5'-HexaCB (¹³ C ₁₂ ,99%)	138	10	10	10	10	10	10
2,2',3,3',5,5',6-HeptaCB (¹³ C ₁₂ ,99%)	178	10	10	10	10	10	10
3,3',4,5'-TetraCB (¹³ C ₁₂ ,99%)	79	10	10	10	10	10	10

Mono-Tri Dioxin and Furan Standard Mixtures

Catalog #	Compound	Amount
EDF-4954	Mono-TriCDD/CDF Native Solution	1.2 mL in Nonane

Unlabeled	(ng/mL)
2-MCDD	1000
2-MCDF	1000
2,3-DiCDD	1000
2,8-DiCDF	1000
2,3,7-TrCDD	1000
2,4,8-TrCDF	1000

EDF-4955	Mono-TriCDD/CDF ¹³C-Labeled Solution	1.2 mL in Nonane
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Labeled	
2-MCDD (¹³C₁₂, 99%)	1000
2-MCDF (¹³C₁₂, 99%)	1000
2,3-DiCDD (¹³C₁₂, 99%)	1000
2,8-DiCDF (¹³C₁₂, 99%)	1000
2,3,7-TrCDD (¹³C₁₂, 99%)	1000
2,4,8-TrCDF (¹³C₁₂, 99%)	1000

Isotope Labeled Dioxin and Furan Standard Mixtures

Catalog #	Compound	Amount
EDF-957	Carbon-13 Quantifying Cocktail (2,3,7,8-PCDD/PCDF isomers)	Set of 3 x 0.4 mL in Nonane
	Labeled (ng/mL)	
	2,3,7,8-TCDD ($^{13}\text{C}_{12}$,99%)	1000
	2,3,7,8-TCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,7,8-PeCDD ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,7,8-PeCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,6,7,8-HxCDD ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,4,7,8-HxCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,4,6,7,8-HpCDD ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,4,6,7,8-HpCDF ($^{13}\text{C}_{12}$,99%)	1000
	OCDD ($^{13}\text{C}_{12}$,99%)	1000
	OCDF ($^{13}\text{C}_{12}$,99%)	1000
EDF-4067	Tetra-OctaCDD and CDF Standard Solution (2,3,7,8-isomers)	1.2 mL in Nonane
	Labeled	
	2,3,7,8-TCDD ($^{13}\text{C}_{12}$,99%)	1000
	2,3,7,8-TCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,7,8-PeCDD ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,7,8-PeCDF ($^{13}\text{C}_{12}$,99%)	1000
	2,3,4,7,8-PeCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,4,7,8-HxCDD ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,6,7,8-HxCDD ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,7,8,9-HxCDD ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,4,7,8-HxCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,6,7,8-HxCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,7,8,9-HxCDF ($^{13}\text{C}_{12}$,99%)	1000
	2,3,4,6,7,8-HxCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,4,6,7,8-HpCDD ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,4,6,7,8-HpCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,4,7,8,9-HpCDF ($^{13}\text{C}_{12}$,99%)	1000
	OCDD ($^{13}\text{C}_{12}$,99%)	1000
	OCDF ($^{13}\text{C}_{12}$,99%)	1000
EDF-4067-A	Tetra-OctaCDD and CDF Standard Solution (2,3,7,8-isomers excluding 1,2,3,7,8,9-HxCDD)	1.2 mL in Nonane
	Labeled	
	2,3,7,8-TCDD ($^{13}\text{C}_{12}$,99%)	1000
	2,3,7,8-TCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,7,8-PeCDD ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,7,8-PeCDF ($^{13}\text{C}_{12}$,99%)	1000
	2,3,4,7,8-PeCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,4,7,8-HxCDD ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,6,7,8-HxCDD ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,4,7,8-HxCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,6,7,8-HxCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,7,8,9-HxCDF ($^{13}\text{C}_{12}$,99%)	1000
	2,3,4,6,7,8-HxCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,4,6,7,8-HpCDD ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,4,6,7,8-HpCDF ($^{13}\text{C}_{12}$,99%)	1000
	1,2,3,4,7,8,9-HpCDF ($^{13}\text{C}_{12}$,99%)	1000
	OCDD ($^{13}\text{C}_{12}$,99%)	2000
	OCDF ($^{13}\text{C}_{12}$,99%)	2000

Isotope Labeled Dioxin and Furan Standard Mixtures

Catalog #	Compound	Amount
EDF-4903	Tetra-OctaCDD and CDF Standard Solution (2,3,7,8 isomers + 1,3,6,8-TCDD)	1.2 mL in Nonane

Labeled	(ng/mL)
1,3,6,8-TCDD (¹³ C ₁₂ ,99%)	1000
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	1000
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	1000
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	1000
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	1000
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	1000
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	1000
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	1000
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	1000
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1000
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	1000
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	1000
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1000
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	1000
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	1000
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	1000
OCDD (¹³ C ₁₂ ,99%)	2000
OCDF (¹³ C ₁₂ ,99%)	2000

NEW EDF-5304	Dioxin and Furan Cleanup Spike	1.2 mL in Nonane
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Labeled	
1,3,6,8-TCDD (¹³ C ₁₂ ,99%)	1000
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	1000
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	1000
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	1000
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	1000
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	1000
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	1000
OCDD (¹³ C ₁₂ ,99%)	2000
1,3,6,8-TCDF (¹³ C ₁₂ ,99%)	1000
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	1000
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	1000
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	1000
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	1000
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1000
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	1000
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1000
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	1000
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	1000
OCDF (¹³ C ₁₂ ,99%)	2000

Isotope Labeled Dioxin and Furan Standard Mixtures

Catalog #	Compound	Amount
ED-998	TCDD-OCDD Standard Solution (2,3,7,8 isomers)	1.2 mL in Nonane

Labeled	(ng/mL)
2,3,7,8-TCDD ($^{13}\text{C}_{12}$, 99%)	1000
1,2,3,7,8-PeCDD ($^{13}\text{C}_{12}$, 99%)	1000
1,2,3,4,7,8-HxCDD ($^{13}\text{C}_{12}$, 99%)	1000
1,2,3,6,7,8-HxCDD ($^{13}\text{C}_{12}$, 99%)	1000
1,2,3,7,8,9-HxCDD ($^{13}\text{C}_{12}$, 99%)	1000
1,2,3,4,6,7,8-HpCDD ($^{13}\text{C}_{12}$, 99%)	1000
OCDD ($^{13}\text{C}_{12}$, 99%)	1000

EF-999	TCDF-OCDF Standard Solution (2,3,7,8 isomers excluding 2,3,4,6,7,8-HxCDF)	1.2 mL in Nonane
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Labeled	
2,3,7,8-TCDF ($^{13}\text{C}_{12}$, 99%)	1000
1,2,3,7,8-PeCDF ($^{13}\text{C}_{12}$, 99%)	1000
2,3,4,7,8-PeCDF ($^{13}\text{C}_{12}$, 99%)	1000
1,2,3,4,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	1000
1,2,3,6,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	1000
1,2,3,7,8,9-HxCDF ($^{13}\text{C}_{12}$, 99%)	1000
1,2,3,4,6,7,8-HpCDF ($^{13}\text{C}_{12}$, 99%)	1000
1,2,3,4,7,8,9-HpCDF ($^{13}\text{C}_{12}$, 99%)	1000
OCDF ($^{13}\text{C}_{12}$, 99%)	1000

NEW EDF-4136-A	Pre-Sampling Spike Mix	1.2 mL in Nonane
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Labeled	
2,3-DiCDD ($^{13}\text{C}_{12}$, 99%)	2500
2,8-DiCDF ($^{13}\text{C}_{12}$, 99%)	2500
2,3,7-TrCDD ($^{13}\text{C}_{12}$, 99%)	2500
2,3,7,8-TCDD ($^{37}\text{Cl}_4$, 96%)	1250
2,3,4,7,8-PeCDF ($^{13}\text{C}_{12}$, 99%)	2500
1,2,3,4,7,8-HxCDD ($^{13}\text{C}_{12}$, 99%)	2500
1,2,3,4,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	2500
1,2,3,4,7,8,9-HpCDF ($^{13}\text{C}_{12}$, 99%)	2500

NEW EDF-4137-A	Internal Standard Mix – High	1.2 mL in Nonane
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Labeled	
2-MCDD ($^{13}\text{C}_{12}$, 99%)	2500
2-MCDF ($^{13}\text{C}_{12}$, 99%)	2500
2,7/2,8-DiCDD ($^{13}\text{C}_{12}$, 99%)	2500
2,4-DiCDF ($^{13}\text{C}_{12}$, 99%)	2500
2,4,8-TRCDF ($^{13}\text{C}_{12}$, 99%)	2500
2,3,7,8-TCDD ($^{13}\text{C}_{12}$, 99%)	1250
2,3,7,8-TCDF ($^{13}\text{C}_{12}$, 99%)	1250
1,2,3,7,8-PeCDD ($^{13}\text{C}_{12}$, 99%)	2500
1,2,3,7,8-PeCDF ($^{13}\text{C}_{12}$, 99%)	2500
1,2,3,6,7,8-HxCDD ($^{13}\text{C}_{12}$, 99%)	2500
1,2,3,6,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	2500
1,2,3,4,6,7,8-HpCDD ($^{13}\text{C}_{12}$, 99%)	2500
1,2,3,4,6,7,8-HpCDF ($^{13}\text{C}_{12}$, 99%)	2500
OCDD ($^{13}\text{C}_{12}$, 99%)	5000

Isotope Labeled Dioxin and Furan Standard Mixtures

Catalog #	Compound	Amount
NEW EDF-5192	Dioxin and Furan Cleanup Spike	1.2 mL in Nonane

Labeled	(ng/mL)
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	200
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	200
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	200
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	200
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	200
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	200
OCDD (¹³ C ₁₂ ,99%)	400
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	200
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	200
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	200
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	200
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	200
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	200
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	200
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	200
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	200
OCDF (¹³ C ₁₂ ,99%)	400

EDF-5174-40X	1,3,6,8-TCDD/F Containing Cleanup Spike – 40X Stock Solution	1.2 mL in Nonane
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Labeled	
1,3,6,8-TCDD (¹³ C ₁₂ ,99%)	200
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	200
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	200
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	200
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	200
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	200
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	200
OCDD (¹³ C ₁₂ ,99%)	400
1,3,6,8-TCDF (¹³ C ₁₂ ,99%)	200
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	200
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	200
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	200
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	200
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	200
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	200
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	200
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	200
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	200
OCDF (¹³ C ₁₂ ,99%)	400

Unlabeled Dioxin and Furan Standard Mixtures

Catalog #	Compound	Amount
ED-906B-5	TCDD-HpCDD Standard Solution (B) (2,3,7,8 isomers)	1.2 mL in Nonane
ED-906B-25	TCDD-HpCDD Standard Solution (B) (2,3,7,8 isomers)	1.2 mL in Nonane

Unlabeled	ED-906B-5 (ng/mL)	ED-906B-25 (ng/mL)
2,3,7,8-TCDD	5000	25,000
1,2,3,7,8-PeCDD	5000	25,000
1,2,3,4,7,8-HxCDD	5000	25,000
1,2,3,6,7,8-HxCDD	5000	25,000
1,2,3,7,8,9-HxCDD	5000	25,000
1,2,3,4,6,7,8-HpCDD	5000	25,000

EF-909B-5	TCDF-HpCDF Standard Solution (B) (2,3,7,8 isomers)	1.2 mL in Nonane
EF-909B-25	TCDF-HpCDF Standard Solution (B) (2,3,7,8 isomers)	1.2 mL in Nonane

Unlabeled	ED-909B-5	ED-909B-25
2,3,7,8-TCDF	5000	25,000
1,2,3,7,8-PeCDF	5000	25,000
2,3,4,7,8-PeCDF	5000	25,000
1,2,3,4,7,8-HxCDF	5000	25,000
1,2,3,6,7,8-HxCDF	5000	25,000
1,2,3,7,8,9-HxCDF	5000	25,000
2,3,4,6,7,8-HxCDF	5000	25,000
1,2,3,4,6,7,8-HpCDF	5000	25,000
1,2,3,4,7,8,9-HpCDF	5000	25,000

NEW ED-4135	Chlorodioxin Mix – High	1 mL in Nonane
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Unlabeled	
2-MonoCDD	5000
2,8-DiCDD	5000
2,3,7-TrCDD	5000
2,3,7,8-TCDD	5000
1,2,3,7,8-PeCDD	5000
1,2,3,4,7,8-HxCDD	5000
1,2,3,6,7,8-HxCDD	5000
1,2,3,7,8,9-HxCDD	5000
1,2,3,4,6,7,8-HpCDD	5000
OCDD	5000

NEW EF-4134	Chlorodibenzofuran Mix – High	1 mL in Nonane
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Unlabeled	
2-MCDF	5000
2,4-DiCDF	5000
2,4,6-TrCDF	5000
2,3,7,8-TCDF	5000
1,2,3,7,8-PeCDF	5000
2,3,4,7,8-PeCDF	5000
1,2,3,4,7,8-HxCDF	5000
1,2,3,6,7,8-HxCDF	5000
2,3,4,6,7,8-HxCDF	5000
1,2,3,7,8,9-HxCDF	5000
1,2,3,4,6,7,8-HpCDF	5000
1,2,3,4,7,8,9-HpCDF	5000
OCDF	5000

Chlorodioxin and Chlorofuran Window Defining Mixtures

Catalog #	Compound	Amount
EDF-4147	PCDD/PCDF Window Defining and Isomer Specificity Mix (DB-5 and DB-225 Columns)	1.2 mL in Nonane

Congeners	(ng/mL)
1,3,6,8-TCDD	200
1,2,8,9-TCDD	200
2,3,7,8-TCDD	200
2,3,7,8-TCDD (¹³ C ₁₂ , 99%)	200
1,2,3,7/1,2,3,8-TCDD	200
1,2,3,9-TCDD	200
1,3,6,8-TCDF	200
1,2,8,9-TCDF	200
2,3,7,8-TCDF	200
2,3,7,8-TCDF (¹³ C ₁₂ , 99%)	200
2,3,4,7-TCDF	200
1,2,3,9-TCDF	200
1,2,4,6,8/1,2,4,7,9-PeCDD	200
1,2,3,8,9-PeCDD	200
1,3,4,6,8-PeCDF	200
1,2,3,8,9-PeCDF	200
1,2,4,6,7,9/1,2,4,6,8,9-HxCDD	200
1,2,3,4,6,7-HxCDD	200
1,2,3,4,6,8-HxCDF	200
1,2,3,4,8,9-HxCDF	200
1,2,3,4,6,7,9-HpCDD	200
1,2,3,4,6,7,8-HpCDF	200
1,2,3,4,6,7,8-HpCDD	200
1,2,3,4,7,8,9-HpCDF	200

NEW	ED-1732-S	TCDD-HpCDD Window Defining Mixture (DB-5)	0.5 mL in Nonane
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Unlabeled	
1,3,6,8-TCDD	800
1,2,8,9-TCDD	800
1,2,4,6,8/1,2,4,7,9-PeCDD	800
1,2,3,8,9-PeCDD	800
1,2,3,4,6,7-HxCDD	800
1,2,4,6,7,9/1,2,4,6,8,9-HxCDD	800
1,2,3,4,6,7,8-HpCDD	800
1,2,3,4,6,7,9-HpCDD	800

NEW	EF-1731-S	TCDF-HpCDF Window Defining Mixture (DB-5)	0.5 mL in Nonane
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Unlabeled	
1,3,6,8-TCDF	800
1,2,8,9-TCDF	800
1,3,4,6,8-PeCDF	800
1,2,3,8,9-PeCDF	800
1,2,3,4,6,8-HxCDF	800
1,2,3,4,8,9-HxCDF	800
1,2,3,4,6,7,8-HpCDF	800
1,2,3,4,7,8,9-HpCDF	800

TCDD and TCDF Column Performance Mixtures

ED-908	TCDD Column Performance Solution Mixture	1.2 mL in Nonane
	Unlabeled	(ng/mL)
	1,2,3,4-TCDD	10
	1,2,3,7/1,2,3,8-TCDD	10
	1,2,7,8-TCDD	10
	1,4,7,8-TCDD	10
	2,3,7,8-TCDD	10
NEW ED-935-A	Modified TCDD Column Performance Check Solution	0.5 mL in Nonane
	Congeners	
	2,3,7,8-TCDD	100
	1,2,3,4-TCDD	100
	1,4,7,8-TCDD	100
	1,2,3,7/1,2,3,8-TCDD pair	100
	1,2,7,8-TCDD	200
	2,3,7,8-TCDD (¹³ C ₁₂ , 99%)	250
	2,3,7,8-TCDD (³⁷ Cl ₄ , 96%)	7
	1,2,3,4-TCDD (¹³ C ₁₂ , 99%)	500

Bromodioxin/Furan Calibration Solutions

Catalog #	Compound	Amount
NEW EDF-5407	Bromodioxin/Furan Calibration Standard Solutions [CS1-CS5]	Set of 5 x 0.2 mL in Nonane
NEW EDF-5407-1	Bromodioxin/Furan Calibration Standard Solution [CS1]	0.2 mL in Nonane
NEW EDF-5407-2	Bromodioxin/Furan Calibration Standard Solution [CS2]	0.2 mL in Nonane
NEW EDF-5407-3	Bromodioxin/Furan Calibration Standard Solution [CS3]	0.2 mL in Nonane
NEW EDF-5407-4	Bromodioxin/Furan Calibration Standard Solution [CS4]	0.2 mL in Nonane
NEW EDF-5407-5	Bromodioxin/Furan Calibration Standard Solution [CS5]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	CS1	CS2	CS3	CS4	CS5
2,3,7,8-TBDD	0.1	0.4	2.0	10	50
1,2,3,7,8-PeBDD	0.2	0.8	4.0	20	100
1,2,3,4,7,8-HxBDD	0.6	2.4	12.0	60	300
1,2,3,6,7,8-HxBDD	0.6	2.4	12.0	60	300
1,2,3,7,8,9-HxBDD	0.6	2.4	12.0	60	300
1,2,3,4,6,7,8-HpBDD	0.75	3.0	15.0	75	375
OBDD	1.0	4.0	20.0	100	500
2,3,7,8-TBDF	0.2	0.8	4.0	20	100
2,4,6,8-TBDF	0.2	0.8	4.0	20	100
1,2,3,7,8-PeBDF	0.4	1.6	8.0	40	200
2,3,4,7,8-PeBDF	0.4	1.6	8.0	40	200
1,2,3,4,7,8-HxCDF	0.6	2.4	12.0	60	300
1,2,3,4,6,7,8-HpBDF	0.75	3.0	15.0	75	375
OBDF	1.0	4.0	20.0	100	500
Labeled					
2,3,7,8-TBDD (¹³C₁₂,99%)	20	20	20	20	20
1,2,3,7,8-PeBDD (¹³C₁₂,99%)	20	20	20	20	20
1,2,3,4,7,8-HxBDD (¹³C₁₂,99%)	50	50	50	50	50
1,2,3,6,7,8-HxBDD (¹³C₁₂,99%)	50	50	50	50	50
1,2,3,7,8,9-HxBDD (¹³C₁₂,99%)	50	50	50	50	50
1,2,3,4,6,7,8-HpBDD (¹³C₁₂,99%)	100	100	100	100	100
OBDD (¹³C₁₂,99%)	150	150	150	150	150
2,3,7,8-TBDF (¹³C₁₂,99%)	20	20	20	20	20
2,4,6,8-TBDF (¹³C₁₂,99%)	20	20	20	20	20
1,2,3,7,8-PeBDF (¹³C₁₂,99%)	20	20	20	20	20
2,3,4,7,8-PeBDF (¹³C₁₂,99%)	20	20	20	20	20
1,2,3,4,7,8-HxCDF (¹³C₁₂,99%)	50	50	50	50	50
1,2,3,4,6,7,8-HpBDF (¹³C₁₂,99%)	100	100	100	100	100
OBDF (¹³C₁₂,99%)	150	150	150	150	150

Bromodioxin/Furan Standard Mixtures

Catalog #	Compound	Amount
NEW EDF-5408	Bromodioxin/Furan Cleanup Spike	0.5 mL in Nonane
	Labeled	(ng/mL)
	2,3,7,8-TBDD ($^{13}\text{C}_{12}$, 99%)	100
	1,2,3,7,8-PeBDD ($^{13}\text{C}_{12}$, 99%)	100
	1,2,3,4,7,8-HxBDD ($^{13}\text{C}_{12}$, 99%)	250
	1,2,3,6,7,8-HxBDD ($^{13}\text{C}_{12}$, 99%)	250
	1,2,3,4,6,7,8-HpBDD ($^{13}\text{C}_{12}$, 99%)	500
	OBDD ($^{13}\text{C}_{12}$, 99%)	750
	2,3,7,8-TBDF ($^{13}\text{C}_{12}$, 99%)	100
	2,3,4,7,8-PeBDF ($^{13}\text{C}_{12}$, 99%)	100
	1,2,3,4,7,8-HxCDF ($^{13}\text{C}_{12}$, 99%)	250
	1,2,3,4,6,7,8-HpBDF ($^{13}\text{C}_{12}$, 99%)	500
	OBDF ($^{13}\text{C}_{12}$, 99%)	750
NEW EDF-5409	Bromodioxin/Furan Syringe Spike	1.2 mL in Nonane
	Labeled	
	1,2,3,7,8,9-HxBDD ($^{13}\text{C}_{12}$, 99%)	500
	1,2,3,7,8-PeBDF ($^{13}\text{C}_{12}$, 99%)	200
NEW EF-5410	Bromodioxin/Furan Sampling Spike	1.2 mL in Nonane
	Labeled	
	2,4,6,8-TBDF ($^{13}\text{C}_{12}$, 99%)	200

Bromodioxin/Furan Calibration Solutions

Catalog #	Compound	Amount
NEW EDF-5381	PBDD/F Calibration Solutions [CS1-CS7]	Set of 7 x 0.2 mL in Nonane
NEW EDF-5381-CS1	PBDD/F Calibration Solution [CS1]	0.2 mL in Nonane
NEW EDF-5381-CS2	PBDD/F Calibration Solution [CS2]	0.2 mL in Nonane
NEW EDF-5381-CS3	PBDD/F Calibration Solution [CS3]	0.2 mL in Nonane
NEW EDF-5381-CS4	PBDD/F Calibration Solution [CS4]	0.2 mL in Nonane
NEW EDF-5381-CS5	PBDD/F Calibration Solution [CS5]	0.2 mL in Nonane
NEW EDF-5381-CS6	PBDD/F Calibration Solution [CS6]	0.2 mL in Nonane
NEW EDF-5381-CS7	PBDD/F Calibration Solution [CS7]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	CS1	CS2	CS3	CS4	CS5	CS6	CS7
2,3,7,8-TeBDD	0.1	0.4	2	10	20	40	—
1,2,3,7,8-PeBDD	0.2	0.8	4	20	40	80	—
1,2,3,4,7,8-HxBDD	0.75	3	15	75	150	300	—
1,2,3,6,7,8-HxBDD	0.75	3	15	75	150	300	—
1,2,3,7,8,9-HxBDD	0.75	3	15	75	150	300	—
OBDD	1	4	20	100	200	400	800
2,3,7,8-TeBDF	0.5	2	10	50	100	200	—
2,4,6,8-TeBDF	0.5	2	10	50	100	200	—
1,2,3,7,8-PeBDF	0.5	2	10	50	100	200	—
2,3,4,7,8-PeBDF	0.5	2	10	50	100	200	—
1,2,3,4,7,8-HxCDF	0.75	3	15	75	150	300	—
1,2,3,4,6,7,8-HpBDF	0.75	3	15	75	150	300	600
OBDF	1	4	20	100	200	400	800
Labeled							
2,3,7,8-TeBDD (¹³C₁₂,99%)	10	10	10	10	10	10	—
1,2,3,7,8-PeBDD (¹³C₁₂,99%)	20	20	20	20	20	20	—
1,2,3,4,7,8-HxBDD (¹³C₁₂,99%)	75	75	75	75	75	75	—
1,2,3,6,7,8-HxBDD (¹³C₁₂,99%)	75	75	75	75	75	75	—
1,2,3,7,8,9-HxBDD (¹³C₁₂,99%)	100	100	100	100	100	100	—
OBDD (¹³C₁₂,99%)	225	225	225	225	225	225	225
2,3,7,8-TeBDF (¹³C₁₂,99%)	40	40	40	40	40	40	—
2,4,6,8-TeBDF (¹³C₁₂,99%)	40	40	40	40	40	40	—
1,2,3,7,8-PeBDF (¹³C₁₂,99%)	40	40	40	40	40	40	—
2,3,4,7,8-PeBDF (¹³C₁₂,99%)	40	40	40	40	40	40	—
1,2,3,4,7,8-HxCDF (¹³C₁₂,99%)	40	40	40	40	40	40	—
1,2,3,4,6,7,8-HpBDF (¹³C₁₂,99%)	100	100	100	100	100	100	—
OBDF (¹³C₁₂,99%)	225	225	225	225	225	225	225

Bromodioxin/Furan Standard Mixtures

Catalog #	Compound	Amount	
NEW EDF-5382	PBDD/F Cleanup Spike	0.5 mL in Nonane	
	Labeled	(ng/mL)	
	2,3,7,8-TeBDD (¹³ C ₁₂ ,99%)	50	
	1,2,3,7,8-PeBDD (¹³ C ₁₂ ,99%)	100	
	1,2,3,4,7,8-HxBDD (¹³ C ₁₂ ,99%)	375	
	1,2,3,6,7,8-HxBDD (¹³ C ₁₂ ,99%)	375	
	OBDD (¹³ C ₁₂ ,99%)	1125	
	2,3,7,8-TeBDF (¹³ C ₁₂ ,99%)	200	
	2,3,4,7,8-PeBDF (¹³ C ₁₂ ,99%)	200	
	1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	375	
	1,2,3,4,6,7,8-HpBDF (¹³ C ₁₂ ,99%)	500	
	OBDF (¹³ C ₁₂ ,99%)	1125	
NEW EDF-5383	PBDD/F Syringe Spike Stock	1.2 mL in Nonane	
NEW EDF-5383-4X	PBDD/F Syringe Spike Stock	1.2 mL in Nonane	
	Labeled	EDF-5383	EDF-5383-4X
	1,2,3,7,8,9-HxBDD (¹³ C ₁₂ ,99%)	500	2000
	1,2,3,7,8-PeBDF (¹³ C ₁₂ ,99%)	200	800
NEW EF-5384	PBDD/F Sampling Stock	1.2 mL in Nonane	
NEW EF-5384-4X	PBDD/F Sampling Stock	1.2 mL in Nonane	
	Labeled	EF-5384	EF-5384-4X
	2,4,6,8-TeBDF (¹³ C ₁₂ ,99%)	200	800

Bromodioxin/Furan Calibration Solutions

Catalog #	Compound	Amount
EDF-5070	Brominated Dioxin/Furan Calibration Solutions [BCS1-BCS5]	Set of 5 x 0.2 mL in Nonane
EDF-5070-1	Brominated Dioxin/Furan Calibration Solution [BCS1]	0.2 mL in Nonane
EDF-5070-2	Brominated Dioxin/Furan Calibration Solution [BCS2]	0.2 mL in Nonane
EDF-5070-3	Brominated Dioxin/Furan Calibration Solution [BCS3]	0.2 mL in Nonane
EDF-5070-4	Brominated Dioxin/Furan Calibration Solution [BCS4]	0.2 mL in Nonane
EDF-5070-5	Brominated Dioxin/Furan Calibration Solution [BCS5]	0.2 mL in Nonane

All concentrations are in ng/mL (ppb)

Unlabeled	BCS1	BCS2	BCS3	BCS4	BCS5
2,3,7,8-TBDD	0.5	2	10	40	100
1,2,3,7,8-PeBDD	2.5	10	50	200	500
1,2,3,4,7,8-HxBDD	2.5	10	50	200	500
1,2,3,6,7,8-HxBDD	2.5	10	50	200	500
1,2,3,7,8,9-HxBDD	2.5	10	50	200	500
2,3,7,8-TBDF	0.5	2	10	40	100
1,2,3,7,8-PeBDF	2.5	10	50	200	500
2,3,4,7,8-PeBDF	2.5	10	50	200	500
Labeled					
1,2,3,7,8-PeBDD (¹³C₁₂, 99%)	100	100	100	100	100
2,3,7,8-TBDF (¹³C₁₂, 99%)	100	100	100	100	100
1,2,3,7,8-PeBDF (¹³C₁₂, 99%)	100	100	100	100	100
2,3,4,7,8-PeBDF (¹³C₁₂, 99%)	100	100	100	100	100
1,2,3,4,7,8-HxBDF (¹³C₁₂, 99%)	100	100	100	100	100
Cleanup Standard					
1,2,3,4,7,8-HxBDD (¹³C₁₂, 99%)	0.5	2	10	40	100
Internal Standards					
2,3,7,8-TBDD (¹³C₁₂, 99%)	100	100	100	100	100
1,2,3,6,7,8-HxBDD (¹³C₁₂, 99%)	25	25	25	25	25

Bromodioxin/Furan Standard Mixtures

Catalog #	Compound	Amount
EDF-5058	Tetra-Hexa Brominated Dioxin and Furan Standard Solution	1.2 mL in Nonane

Labeled	(ng/mL)
2,3,7,8-TBDD (¹³C₁₂,99%)	1000
1,2,3,7,8-PeBDD (¹³C₁₂,99%)	1000
1,2,3,4,7,8-HxBDD (¹³C₁₂,99%)	1000
2,3,7,8-TBDF (¹³C₁₂,99%)	1000
2,3,4,7,8-PeBDF (¹³C₁₂,99%)	1000

NEW EDF-5073	Brominated Dioxin/Furan Internal Standard	1.2 mL in Nonane
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Labeled	
2,3,7,8-TBDD (¹³C₁₂,99%)	200
1,2,3,6,7,8-HxBDD (¹³C₁₂,99%)	50
1,2,3,7,8,9-HxBDD (¹³C₁₂,99%)	150

EDF-5071	Brominated Dioxin/Furan Labeled Compounds	1.2 mL in Nonane
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Labeled	
1,2,3,7,8-PeBDD (¹³C₁₂,99%)	100
2,3,7,8-TBDF (¹³C₁₂,99%)	100
1,2,3,7,8-PeBDF (¹³C₁₂,99%)	100
2,3,4,7,8-PeBDF (¹³C₁₂,99%)	100
1,2,3,4,7,8-HxBDF (¹³C₁₂,99%)	100

EDF-2530	Tetra-Penta Brominated Dioxin and Furan Standard Solution	1.2 mL in Nonane
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Labeled	
2,3,7,8-TBDD (¹³C₁₂,99%)	100
2,3,7,8-TBDF (¹³C₁₂,99%)	1000
1,2,3,7,8-PeBDD (¹³C₁₂,99%)	500
2,3,4,7,8-PeBDF (¹³C₁₂,99%)	5000

EDF-4153	PBDD/PBDF Surrogate Spiking Solution	1 mL in Nonane
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NEW EDF-4153-10X	PBDD/PBDF Surrogate Spiking Solution	0.5 mL in Nonane
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Labeled	EDF-4153	EDF-4153-10X
2,3,7,8-TBDD (¹³C₁₂,99%)	20	200
2,3,7,8-TBDF (¹³C₁₂,99%)	20	200
1,2,3,7,8-PeBDD (¹³C₁₂,99%)	20	200
1,2,3,7,8-PeBDF (¹³C₁₂,99%)	20	200
1,2,3,6,7,8/1,2,3,7,8,9-HxBDD (¹³C₁₂,99%)	40	400

EDF-4154	PBDD/PBDF Performance Standard Mixture	1 mL in Nonane
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Labeled	
2,3,4,7,8-PeBDF (¹³C₁₂,99%)	100
1,2,3,4,7,8-HxBDD (¹³C₁₂,99%)	100

Bromodioxin/Furan Standard Mixtures

Catalog #	Compound	Amount
EDF-5059	Polybrominated Dioxin and Furan Mixture	1.2 mL in Nonane

Unlabeled	(ng/mL)
2,3,7,8-TBDD	1000
1,2,3,7,8-PeBDD	1000
1,2,3,4,7,8-HxBDD	1000
1,2,3,6,7,8-HxBDD	1000
1,2,3,7,8,9-HxBDD	1000
OBDD	1000
2,3,7,8-TBDF	1000
1,2,3,7,8-PeBDF	1000
2,3,4,7,8-PeBDF	1000
1,2,3,4,7,8-HxBDF	1000
1,2,3,4,6,7,8-HpBDF	1000

EDF-5074	Brominated Dioxin/Furan PAR Solution	1.2 mL in Nonane
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Unlabeled	
2,3,7,8-TBDD	100
1,2,3,7,8-PeBDD	500
1,2,3,4,7,8-HxBDD	500
1,2,3,6,7,8-HxBDD	500
1,2,3,7,8,9-HxBDD	500
2,3,7,8-TBDF	100
1,2,3,7,8-PeBDF	500
2,3,4,7,8-PeBDF	500