



**Dioxin & Furan
Method Standards,
Standard Mixtures
and Reference
Materials**

U.S. EPA Method 1613 Standard Mixtures

In 1990, CIL/Cerilliant introduced the first “ready-to-use” environmental standards for use with the U.S. EPA Method 1613 (High Resolution GC/MS Method for the Determination of Tetra-Octa Chlorinated Dioxins and Furans). Due to the popularity of these standards, CIL/Cerilliant next introduced similar standards for U.S. EPA Method 8280 for low resolution dioxin and furans analysis. Now, CIL/Cerilliant offers “ready-to-use” standards for U.S. EPA Method 23, U.S. EPA Method 8290, European Air Method EN-1948, and Japanese Methods JIS-K0311 and JIS-K0312.

The chart below references the products that follow.

All concentrations are in ng/mL (ppb)

Unlabeled Dioxins & Furans:	*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 Dioxins & Furans:	*CS0.1	*CS0.2	*CS0.5	CS1	CS2	CS3	CS4	CS5
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
2,3,7,8-TCDD (³⁷ Cl ₄ ,96%)	0.05	0.1	0.25	0.5	2.0	10	40	200
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100	100	100	100
OCDD (¹³ C ₁₂ ,99%)	200	200	200	200	200	200	200	200

Dioxin & Furan Method Standards, Standard Mixtures and Reference Materials

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

U.S. EPA Method 1613 Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-9999	Method 1613 Calibration Solutions [CS1-CS5]	Set of 5 x 0.2 mL in Nonane
*EDF-9999-0.1 ^{new}	Method 1613 Calibration Solution [CS0.1]	0.2 mL in Nonane
*EDF-9999-0.2 ^{new}	Method 1613 Calibration Solution [CS0.2]	0.2 mL in Nonane
*EDF-9999-0.5 ^{new}	Method 1613 Calibration Solution [CS0.5] (this product was formerly listed as EDF-4097)	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]	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

*NOTE: CS0.1, CS0.2, +CS0.5 are optional extensions of the Method 1613 Calibration Curve for very low MDL analyses, and are not required by the method. Copies of U.S. EPA Method 1613 are available on request from Cambridge Isotope Laboratories.

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

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 (continued)

CATALOG #	COMPOUND	AMOUNT																																																																																																																																																
EDF-4141	Method 1613 Daily Calibration + Window Definer and Isomer Specificity Solution	200 µl in Nonane																																																																																																																																																
	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Daily Calibration Standards</th> <th style="text-align: left; border-bottom: 1px solid black;">Concentration (ng/mL)</th> <th style="text-align: left; border-bottom: 1px solid black;">Window Defining Standards</th> <th style="text-align: left; border-bottom: 1px solid black;">Concentration (ng/mL)</th> </tr> </thead> <tbody> <tr><td>2,3,7,8-TCDD</td><td>10</td><td>1,3,6,8-TCDD</td><td>10</td></tr> <tr><td>2,3,7,8-TCDF</td><td>10</td><td>1,2,8,9-TCDD</td><td>10</td></tr> <tr><td>1,2,3,7,8-PeCDD</td><td>50</td><td>1,3,6,8-TCDF</td><td>10</td></tr> <tr><td>1,2,3,7,8-PeCDF</td><td>50</td><td>1,2,8,9-TCDF</td><td>10</td></tr> <tr><td>2,3,4,7,8-PeCDF</td><td>50</td><td>1,2,4,6,8/1,2,4,7,9-PeCDD</td><td>50</td></tr> <tr><td>1,2,3,4,7,8-HxCDD</td><td>50</td><td>1,2,3,8,9-PeCDD</td><td>50</td></tr> <tr><td>1,2,3,6,7,8-HxCDD</td><td>50</td><td>1,3,4,6,8-PeCDF</td><td>50</td></tr> <tr><td>1,2,3,7,8,9-HxCDD</td><td>50</td><td>1,2,3,8,9-PeCDF</td><td>50</td></tr> <tr><td>1,2,3,4,7,8-HxCDF</td><td>50</td><td>1,2,4,6,7,9/1,2,4,6,8,9-HxCDD</td><td>50</td></tr> <tr><td>1,2,3,6,7,8-HxCDF</td><td>50</td><td>1,2,3,4,6,8-HxCDF</td><td>50</td></tr> <tr><td>1,2,3,7,8,9-HxCDF</td><td>50</td><td>1,2,3,4,8,9-HxCDF</td><td>50</td></tr> <tr><td>2,3,4,6,7,8-HxCDF</td><td>50</td><td>1,2,3,4,6,7,9-HpCDD</td><td>50</td></tr> <tr><td>1,2,3,4,6,7,8-HpCDD (W.D.)</td><td>50</td><td></td><td></td></tr> <tr><td>1,2,3,4,6,7,8-HpCDF (W.D.)</td><td>50</td><td></td><td></td></tr> <tr><td>1,2,3,4,7,8,9-HpCDF (W.D.)</td><td>50</td><td></td><td></td></tr> <tr><td>OCDD</td><td>100</td><td></td><td></td></tr> <tr><td>OCDF</td><td>100</td><td></td><td></td></tr> <tr><td>1,2,3,4-TCDD (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>2,3,7,8-TCDD (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>2,3,7,8-TCDD (³⁷Cl₄,96%)</td><td>10</td><td></td><td></td></tr> <tr><td>2,3,7,8-TCDF (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>1,2,3,7,8-PeCDD (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>1,2,3,7,8-PeCDF (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>2,3,4,7,8-PeCDF (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>1,2,3,4,7,8-HxCDD (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>1,2,3,6,7,8-HxCDD (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>1,2,3,7,8,9-HxCDD (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>1,2,3,4,7,8-HxCDF (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>1,2,3,6,7,8-HxCDF (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>1,2,3,7,8,9-HxCDF (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>2,3,4,6,7,8-HxCDF (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>1,2,3,4,6,7,8-HpCDD (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>1,2,3,4,6,7,8-HpCDF (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>1,2,3,4,7,8,9-HpCDF (¹³C₁₂,99%)</td><td>100</td><td></td><td></td></tr> <tr><td>OctaCDD (¹³C₁₂,99%)</td><td>200</td><td></td><td></td></tr> </tbody> </table>	Daily Calibration Standards	Concentration (ng/mL)	Window Defining Standards	Concentration (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			OctaCDD (¹³ C ₁₂ ,99%)	200			
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		<p>Note - 1,2,3,4,6,7-HxCDD (last eluting HxCDD) not included due to interference with 1,2,3,7,8,9-HxCDD.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">TCDD Isomer Specificity Standards</th> <th style="text-align: left; border-bottom: 1px solid black;">Concentration (ng/mL)</th> </tr> </thead> <tbody> <tr><td>1,2,3,4-TCDD</td><td>10</td></tr> <tr><td>1,2,3,7/1,2,3,8-TCDD</td><td>10</td></tr> <tr><td>1,2,3,9-TCDD</td><td>10</td></tr> </tbody> </table>	TCDD Isomer Specificity Standards	Concentration (ng/mL)	1,2,3,4-TCDD	10	1,2,3,7/1,2,3,8-TCDD	10	1,2,3,9-TCDD	10																																																																																																																																								
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		<p>This standard allows three functions:</p> <ul style="list-style-type: none"> - Daily MS instrument calibration verification - Daily TCDD column resolution - Daily window definition <p>(W.D.) - Window Defining Standard</p>																																																																																																																																																

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

U.S. EPA Method 1613 Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-8999	Method 1613 Labeled Compound Stock Solution	500 µl in Nonane
EDF-8999-4	Method 1613 Labeled Compound Stock Solution	4 x 500 µl in Nonane

Labeled Dioxins & Furans	Concentration (ng/mL)
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	100
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
1,2,3,4,7,8-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

CATALOG #	COMPOUND	AMOUNT
EDF-6999	Method 1613 Clean-up Standard	7.5 mL in Nonane
EDF-6999-10x ^{new}	Method 1613 Clean-up Standard (10x concentration)	20 mL in Nonane

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

CATALOG #	COMPOUND	AMOUNT
EDF-5999	Method 1613 Internal Standard Spiking Solution	0.5 mL in Nonane

Labeled Dioxins	Concentration (ng/mL)
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 (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-7999	Method 1613 Precision and Recovery Standard Solution	200 µl in Nonane
EDF-7999-10x ^{new}	Method 1613 Precision and Recovery Standard Solution (10x concentration)	1.2 mL in Nonane

Unlabeled Dioxins & Furans	EDF-7999 Concentration (ng/mL)	EDF-7999-10x Concentration (ng/mL)
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

NOTE: Copies of U.S. EPA Methods available on request from Cambridge Isotope Laboratories.

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

Performance Evaluation Standards

In May of 2003 an announcement was sent to Environmental laboratories around the world for a new 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. Additionally, 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. Additionally, other analyte groups such as Brominated Flame Retardants, Polyaromatic Hydrocarbons, Pesticides, and other Priority Pollutants have had consensus values obtained.

CATALOG #	COMPOUND	AMOUNT
EDF-0000*	Water Performance Evaluation Samples	1 liter
EDF-5183 ^{new}	Natural Matrix Reference Material (soil) 2003	10 g
EDF-5184 ^{new}	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
EDF-4023	Set of 3 Fish [1 each of EDF-2524, EDF-2525, EDF-2526]	3 x 10 g

*Water PE samples are custom prepared and shipped because of the extremely low solubility of dioxins and furans in water. Please contact CIL to discuss your specific requirements.

Participating Laboratories

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

U.S. EPA Method 23 Standard Mixtures

The chart below references the products that follow.

<i>All concentrations are in pg/μl (ppb)</i>					
Unlabeled Dioxins & Furans:	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:	CS1	CS2	CS3	CS4	CS5
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100
OCDD (¹³ C ₁₂ ,99%)	200	200	200	200	200
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100
Surrogate Standards:	CS1	CS2	CS3	CS4	CS5
2,3,7,8-TCDD (³⁷ Cl ₄ ,96%)	0.5	1	5	50	100
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	2.5	5	25	250	500
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	2.5	5	25	250	500
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	2.5	5	25	250	500
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	2.5	5	25	250	500
Recovery Standards:	CS1	CS2	CS3	CS4	CS5
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100
Alternate Standard:	CS1	CS2	CS3	CS4	CS5
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	2.5	5	25	250	500

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

U.S. EPA Method 23 Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-4052	Method 23 Calibration Solutions [CS1-CS5]	Set of 5 x 0.2 mL in Nonane
EDF-4052-3	Method 23 Daily Calibration Check Standard [CS3]	0.2 mL in Nonane

CATALOG #	COMPOUND	AMOUNT
EDF-4053	Method 23 Internal Standard Stock Solution	1.2 mL in Nonane
	Labeled Dioxins & Furans	Concentration (ng/mL)
	2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	1000
	1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	1000
	1,2,3,6,7,8-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
	2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	1000
	1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	1000
	1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1000
	1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	1000

CATALOG #	COMPOUND	AMOUNT
EDF-4054	Method 23 Surrogate Standard Stock Solution	1.2 mL in Nonane
	Labeled Dioxins & Furans	Concentration (ng/mL)
	2,3,7,8-TCDD (³⁷ Cl ₄ ,96%)	1000
	1,2,3,4,7,8-HxCDD (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
	1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	1000

CATALOG #	COMPOUND	AMOUNT
EDF-4055	Method 23 Recovery Standard Stock Solution	1.2 mL in Nonane
	Labeled Dioxins	Concentration (ng/mL)
	1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	500
	1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	500

CATALOG #	COMPOUND	AMOUNT
EDF-5189 ^{new}	Method 23 Alternative Recovery Stock Solution	1.2 mL in Nonane
	Labeled Furans	Concentration (ng/mL)
	1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	1000

U.S. EPA Method 8290 Standard Mixtures

The chart below references the products that follow.

All concentrations are in ng/mL (ppb)

Unlabeled Analytes	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

CATALOG #	COMPOUND	AMOUNT
EDF-5006	Method 8290 Calibration Solutions [HRCC1-HRCC5]	Set of 5 x 0.2 mL in Nonane
EDF-5006-3	Method 8290 Continuing Calibration Check Standard [HRCC3]	0.2 mL in Nonane

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

U.S. EPA Method 8290 Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
ED-5004	Method 8290 Recovery Standard Solution	1.2 mL in Nonane
	Labeled Dioxins	Concentration (ng/mL)
	1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	100
	1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	250

CATALOG #	COMPOUND	AMOUNT
EDF-5005	Method 8290 Sample Fortification Solution	1.2 mL in Nonane
	Labeled Dioxins & Furans	Concentration (ng/mL)
	2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	100
	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
	1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	250
	1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	250
	1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	250
	1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	250
	OCDD (¹³ C ₁₂ ,99%)	500

U.S. EPA Method 8290 Standard Methods (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-5007	Method 8290 HRCC3 + Window Defining and Column Performance Solution	0.2 mL in Nonane

Continuing Calibration Standards	Concentration (ng/mL)	Window Defining Standards	Concentration (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	25	1,3,6,8-TCDF	10
1,2,3,7,8-PeCDF	25	1,2,8,9-TCDF	10
2,3,4,7,8-PeCDF	25	1,2,4,6,8/1,2,4,7,9-PeCDD	25
1,2,3,4,7,8-HxCDD	25	1,2,3,8,9-PeCDD	25
1,2,3,6,7,8-HxCDD	25	1,3,4,6,8-PeCDF	25
1,2,3,7,8,9-HxCDD	25	1,2,3,8,9-PeCDF	25
1,2,3,4,7,8-HxCDF	25	1,2,4,6,7,9/1,2,4,6,8,9-HxCDD	25
1,2,3,6,7,8-HxCDF	25	1,2,3,4,6,7-HxCDD	25
1,2,3,7,8,9-HxCDF	25	1,2,3,4,6,8-HxCDF	25
2,3,4,6,7,8-HxCDF	25	1,2,3,4,8,9-HxCDF	25
1,2,3,4,6,7,8-HpCDD (W.D.)	25	1,2,3,4,6,7,9-HpCDD	25
1,2,3,4,6,7,8-HpCDF (W.D.)	25	Column Performance Standards	Concentration (ng/mL)
1,2,3,4,7,8,9-HpCDF (W.D.)	25	1,2,3,4-TCDD	10
OCDD	50	1,2,3,7/1,2,3,8-TCDD	10
OCDF	50	1,2,3,9-TCDD	10
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	50	1,2,6,7-TCDD	10
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	50	1,2,7,8-TCDD	10
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	50	1,4,7,8-TCDD	10
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	50		
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	125		
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	125		
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	125		
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	125		
OCDD (¹³ C ₁₂ ,99%)	250		
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	50		
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	125		

(W.D.) - Window Defining Standard

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

U.S. EPA Method 8290 Standard Methods (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-5008	Method 8290 Matrix Spiking Solution	1.2 mL in Nonane
	Unlabeled Dioxins and Furans	Concentration (ng/mL)
	2,3,7,8-TCDD	100
	2,3,7,8-TCDF	100
	1,2,3,7,8-PeCDD	250
	1,2,3,7,8-PeCDF	250
	2,3,4,7,8-PeCDF	250
	1,2,3,4,7,8-HxCDD	250
	1,2,3,4,7,8-HxCDF	250
	1,2,3,6,7,8-HxCDD	250
	1,2,3,6,7,8-HxCDF	250
	1,2,3,7,8,9-HxCDD	250
	1,2,3,7,8,9-HxCDF	250
	2,3,4,6,7,8-HxCDF	250
	1,2,3,4,6,7,8-HpCDD	250
	1,2,3,4,6,7,8-HpCDF	250
	1,2,3,4,7,8,9-HpCDF	250
	OCDD	500
	OCDF	500

U.S. EPA Method 8280 Standard Methods

These standard solutions have been specifically prepared for the Low-Resolution GC/MS determination of tetra-octa chlorinated dioxins and furans. Use of these carefully prepared and verified solutions avoids any possible error in dilution/cocktail preparation. Certificates of Analysis and full Technical Data Sheets as well as MSDS are supplied with each set. Complete traceability is shown to the 1987 International Round-Robin study consensus standards.¹

CATALOG #	COMPOUND	AMOUNT
EDF-2519-A	Method 8280 Calibration Solutions [CC1-CC5]	Set of 5 x 0.2 mL in Nonane
EDF-2519-B	Method 8280 Calibration Solutions [CC1-CC6]	Set of 6 x 0.2 mL in Nonane
EDF-2519-3	Method 8280 Calibration and Verification Solution [CC3]	0.2 mL in Nonane

All concentrations are in ng/μl (ppm)

Unlabeled Dioxins & Furans:	CC1	CC2	CC3	CC4	CC5	CC6*
2,3,7,8-TCDD	0.1	0.25	0.5	1.0	2.0	4.0
2,3,7,8-TCDF	0.1	0.25	0.5	1.0	2.0	4.0
1,2,3,7,8-PeCDF	0.1	0.25	0.5	1.0	2.0	4.0
1,2,3,7,8-PeCDD	0.1	0.25	0.5	1.0	2.0	4.0
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	10.0
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	10.0
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	10.0
1,2,3,4,6,7,8-HpCDD	0.25	0.625	1.25	2.5	5.0	10.0
OCDD	0.5	1.25	2.5	5.0	10.0	20.0
OCDF	0.5	1.25	2.5	5.0	10.0	20.0
Labeled Dioxins & Furans:	CC1	CC2	CC3	CC4	CC5	CC6*
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	0.5	0.5	0.5	0.5	0.5	0.5
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	0.5	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	0.5
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	1.0	1.0	1.0	1.0	1.0	1.0
OCDD (¹³ C ₁₂ ,99%)	1.0	1.0	1.0	1.0	1.0	1.0
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	0.5	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	0.5
2,3,7,8-TCDD (³⁷ Cl ₄ ,96%)	—	—	0.25	—	—	—

¹Bradley, J.C., Nichols, A.W., *et al*, Chemosphere 1990, Vol. 20, No. 5, pp. 487-493.

*NOTE: CC6 is offered as an optional extension of the calibration curve.

This addition is the result of customer requests and is not required by US EPA Method 8280.

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

U.S. EPA Method 8280 Standard Methods (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-2520	Method 8280 Internal Standard Solution	1.2 mL in Nonane
	Labeled Dioxins & Furans	Concentration (ng/μl)
	2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	5
	2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	5
	1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	5
	1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	10
	OCDD (¹³ C ₁₂ ,99%)	10

CATALOG #	COMPOUND	AMOUNT
ED-2521	Method 8280 Recovery Standard Solution	1.2 mL in Nonane
	Labeled Dioxins	Concentration (ng/μl)
	1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	5
	1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	5

CATALOG #	COMPOUND	AMOUNT
ED-2522	Method 8280 Cleanup Standard Solution	1.2 mL in Nonane
	Labeled Dioxin	Concentration (ng/μl)
	2,3,7,8-TCDD (³⁷ Cl ₄ ,96%)	5

CATALOG #	COMPOUND	AMOUNT
EDF-2523	Method 8280 Matrix Spiking Solution	1.2 mL in Nonane
	Unlabeled Dioxins & Furans	Concentration (ng/μl)
	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

U.S. EPA Method 8280 Standard Methods (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-2681	Supplemental Internal Standard Solution (not required by U.S. EPA Method 8280)	1.2 mL in Nonane
	Labeled Dioxins & Furans	Concentration (ng/μl)
	1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	5
	1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	5
	1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	5
	1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	10
	OCDF (¹³ C ₁₂ ,99%)	10

CATALOG #	COMPOUND	AMOUNT
EDF-4096	Modified Method 8280 Matrix Spiking Solution (All 17 toxic congeners)	1.2 mL in Nonane
	Unlabeled Dioxins & Furans	Concentration (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

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

U.S. EPA Method 8280 Standard Methods (continued)

CATALOG #	COMPOUND	AMOUNT				
EDF-4095	Modified Method 8280 Calibration Solutions [CC1-CC5] (All 17 toxic congeners in CC1-CC5)	5 x 0.2 mL in Nonane				
<i>All Concentrations are in ng/μl (ppm)</i>						
	Unlabeled Dioxins & Furans	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 Dioxins & Furans	CC1	CC2	CC3	CC4	CC5
	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

JIS Methods K0311 And K0312 Dioxin/Furan Standard Mixtures

The chart below references the products that follow.

Unlabeled Dioxins & Furans	All Concentrations are in ng/mL (ppb)						
	STD0.1	STD0.25	STD1	STD2	STD3	STD4	STD5
2,3,7,8-TCDD	0.04	0.1	0.4	2.0	10	40	200
2,3,7,8-TCDF	0.04	0.1	0.4	2.0	10	40	200
1,2,3,7,8-PeCDD	0.04	0.1	0.4	2.0	10	40	200
1,2,3,7,8-PeCDF	0.04	0.1	0.4	2.0	10	40	200
2,3,4,7,8-PeCDF	0.04	0.1	0.4	2.0	10	40	200
1,2,3,4,7,8-HxCDD	0.1	0.25	1.0	5.0	25	100	500
1,2,3,4,7,8-HxCDF	0.1	0.25	1.0	5.0	25	100	500
1,2,3,6,7,8-HxCDD	0.1	0.25	1.0	5.0	25	100	500
1,2,3,6,7,8-HxCDF	0.1	0.25	1.0	5.0	25	100	500
1,2,3,7,8,9-HxCDD	0.1	0.25	1.0	5.0	25	100	500
1,2,3,7,8,9-HxCDF	0.1	0.25	1.0	5.0	25	100	500
2,3,4,6,7,8-HxCDF	0.1	0.25	1.0	5.0	25	100	500
1,2,3,4,6,7,8-HpCDD	0.1	0.25	1.0	5.0	25	100	500
1,2,3,4,6,7,8-HpCDF	0.1	0.25	1.0	5.0	25	100	500
1,2,3,4,7,8,9-HpCDF	0.1	0.25	1.0	5.0	25	100	500
OCDD	0.1	0.25	2.0	10	50	200	1000
OCDF	0.2	0.5	2.0	10	50	200	1000
Labeled Dioxins & Furans	STD0.1	STD0.25	STD1	STD2	STD3	STD4	STD5
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	10	10	100	100	100	100	100
OCDD (¹³ C ₁₂ ,99%)	20	20	200	200	200	200	200
OCDF (¹³ C ₁₂ ,99%)	20	20	200	200	200	200	200

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

JIS Methods K0311 And K0312 Dioxin/Furan Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-4961	JIS Dioxin/Furan Calibration Solutions [STD1-STD5]	Set of 5 x 0.2 mL in Nonane
EDF-4961-3	JIS Dioxin/Furan Daily Calibration Solution [STD3]	0.2 mL in Nonane
EDF-4961-0.1 ^{new}	JIS Dioxin/Furan Calibration Solution with native analytes at 0.1 x concentrations of STD1 and labeled analytes at 0.1x concentration of STD1	0.2 mL in Nonane
EDF-4961-0.25 ^{new}	JIS Dioxin/Furan Calibration Solution with native analytes at 0.25 x concentrations of STD1 and labeled analytes at 0.1x concentration of STD1	0.2 mL in Nonane

CATALOG #	COMPOUND	AMOUNT
EDF-4964	JIS Dioxin/Furan Type 1 Clean-up Standard Solution	1.2 mL in Nonane
EDF-4964-A	JIS Dioxin/Furan Type 1 Clean-up Standard Solution	0.5 mL in Nonane

Labeled Dioxins & Furans	EDF-4964 Concentration (ng/mL)	EDF-4964-A Concentration (ng/mL)
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	10	2000
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	10	2000
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	10	2000
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	10	2000
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	2000
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	10	2000
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	10	2000
OCDD (¹³ C ₁₂ ,99%)	20	4000
OCDF (¹³ C ₁₂ ,99%)	20	4000

JIS Methods K0311 And K0312 Dioxin/Furan Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-4963	JIS Dioxin/Furan Type 1 Sampling Standard Solution	1.2 mL in Nonane
EDF-4963-A	JIS Dioxin/Furan Type 1 Sampling Standard Solution	0.5 mL in Nonane

Labeled Furans	EDF-4963 Concentration (ng/mL)	EDF-4963-A Concentration (ng/mL)
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	10	2000

CATALOG #	COMPOUND	AMOUNT
EDF-4965	JIS Dioxin/Furan Type 1 & 2 Syringe Standard Solution	1.2 mL in Nonane
EDF-4965-A	JIS Dioxin/Furan Type 1 & 2 Syringe Standard Solution	0.5 mL in Nonane

Labeled Dioxins	EDF-4965 Concentration (ng/mL)	EDF-4965-A Concentration (ng/mL)
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	10	2000
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	10	2000

CATALOG #	COMPOUND	AMOUNT
EDF-4966	JIS Dioxin/Furan Type 2 Sampling Standard Solution	1.2 mL in Nonane
EDF-4966-A	JIS Dioxin/Furan Type 2 Sampling Standard Solution	0.5 mL in Nonane

Labeled Furans	EDF-4966 Concentration (ng/mL)	EDF-4966-A Concentration (ng/mL)
1,2,7,8-TCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	10	2000

CATALOG #	COMPOUND	AMOUNT
EDF-4975	JIS Wastewater Dioxin/Furan Type 2 Syringe Standard Solution	1.2 mL in Nonane
EDF-4975-A	JIS Wastewater Dioxin/Furan Type 2 Syringe Standard Solution	0.5 mL in Nonane

Labeled Dioxins	EDF-4975 Concentration (ng/mL)	EDF-4975-A Concentration (ng/mL)
2,3,7,8-TCDD (³⁷ Cl ₄ ,96%)	10	2000
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	10	2000

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

JIS Methods K0311 And K0312 Dioxin/Furan Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-4967	JIS Dioxin/Furan Type 2 Clean-up Standard Solution	1.2 mL in Nonane
EDF-4967-A	JIS Dioxin/Furan Type 2 Clean-up Standard Solution	0.5 mL in Nonane

Labeled Dioxins & Furans	EDF-4967 Concentration (ng/mL)	EDF-4967-A Concentration (ng/mL)
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	10	2000
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	10	2000
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	10	2000
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	10	2000
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	10	2000
OCDD (¹³ C ₁₂ ,99%)	20	4000

CATALOG #	COMPOUND	AMOUNT
EDF-4974	JIS Wastewater Dioxin/Furan Type 1 Clean-up Standard Solution	1.2 mL in Nonane
EDF-4974-A	JIS Wastewater Dioxin/Furan Type 1 Clean-up Standard Solution	0.2 mL in Nonane

Labeled Dioxins & Furans	EDF-4974 Concentration (ng/mL)	EDF-4974-A Concentration (ng/mL)
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	10	2000
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	10	2000
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	10	2000
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	10	2000
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	10	2000
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	10	2000
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	10	2000
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	10	2000
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	10	2000
OCDD (¹³ C ₁₂ ,99%)	20	4000
OCDF (¹³ C ₁₂ ,99%)	20	4000

JIS Methods K0311 And K0312 Dioxin/Furan Standard Mixtures (continued)

The chart below references the products that follow.

Unlabeled Dioxins & Furans	All Concentrations are in ng/μl (ppm)				
	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 Dioxins & Furans	STD1	STD2	STD3	STD4	STD5
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	10	10	10	10	10
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
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
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	10	10	10	10	10
OCDF (¹³ C ₁₂ ,99%)	20	20	20	20	20

Dioxin & Furan Method Standards, Standard Mixtures and Reference Materials

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

JIS Methods K0311 And K0312 Dioxin/Furan Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-5032 ^{new}	JIS Dioxin/Furan Calibration Solution [STD1-STD5] low concentration	5x 0.2 mL in Nonane
EDF-5032-1 ^{new}	JIS Dioxin/Furan Calibration Solution [STD1] low concentration	0.2 mL in Nonane
EDF-5032-2 ^{new}	JIS Dioxin/Furan Calibration Solution [STD2] low concentration	0.2 mL in Nonane
EDF-5032-3 ^{new}	JIS Dioxin/Furan Calibration Solution [STD3] low concentration	0.2 mL in Nonane
EDF-5032-4 ^{new}	JIS Dioxin/Furan Calibration Solution [STD4] I low concentration	0.2 mL in Nonane
EDF-5032-5 ^{new}	JIS Dioxin/Furan Calibration Solution [STD5] low concentration	0.2 mL in Nonane

European Air Method EN-1948 Standard Mixtures

The chart below references the products that follow.

Unlabeled Dioxins & Furans	All Concentrations are in ng/mL (ppb)				
	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 Dioxins & Furans	CS1	CS2	CS3	CS4	CS5
1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	100	100	100	100	100
OCDD (¹³ C ₁₂ ,99%)	200	200	200	200	200
OCDF (¹³ C ₁₂ ,99%)	200	200	200	200	200

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

European Air Method EN-1948 Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-4947	EN-1948 Calibration Solutions [CS1-CS5]	Set of 5 x 0.2 mL in Nonane

CATALOG #	COMPOUND	AMOUNT
EF-4138	EN-1948 Sampling Standard Solution	1.2 mL in Nonane

Labeled Furans	Concentration (ng/mL)
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	100
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	100
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	200

CATALOG #	COMPOUND	AMOUNT
EDF-4139	EN-1948 Extraction Standard Solution	1.2 mL in Nonane

Labeled Dioxins & Furans	Concentration (ng/mL)
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	100
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	100
1,2,3,7,8-PeCDD (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
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	100
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	100
1,2,3,6,7,8-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%)	200
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	200
OCDD (¹³ C ₁₂ ,99%)	200
OCDF (¹³ C ₁₂ ,99%)	200

European Air Method EN-1948 Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
ED-4140	EN-1948 Syringe Standard Solution	1.2 mL in Nonane
	Labeled Dioxins	Concentration (ng/mL)
	1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	400
	1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	400

CATALOG #	COMPOUND	AMOUNT
EDF-4175	EN-1948 Native Stock Response Factor Solution	0.5 mL in Nonane
	Unlabeled Dioxins & Furans	Concentration (µg/mL)
	2,3,7,8-TCDD	1.0
	2,3,7,8-TCDF	1.0
	1,2,3,7,8-PeCDD	1.0
	1,2,3,7,8-PeCDF	1.0
	2,3,4,7,8-PeCDF	1.0
	1,2,3,4,7,8-HxCDD	1.0
	1,2,3,6,7,8-HxCDD	1.0
	1,2,3,7,8,9-HxCDD	4.0
	1,2,3,4,7,8-HxCDF	1.0
	1,2,3,6,7,8-HxCDF	1.0
	1,2,3,7,8,9-HxCDF	1.0
	2,3,4,6,7,8-HxCDF	1.0
	1,2,3,4,6,7,8-HpCDD	2.0
	1,2,3,4,6,7,8-HpCDF	2.0
	1,2,3,4,7,8,9-HpCDF	2.0
	OCDD	2.0
	OCDF	2.0

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

Unlabeled Dioxin & 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 Dioxins	ED-906B-5 Concentration (µg/mL)	ED-906B-25 Concentration (µg/mL)
2,3,7,8-TCDD	5	25
1,2,3,7,8-PeCDD	5	25
1,2,3,4,7,8-HxCDD	5	25
1,2,3,6,7,8-HxCDD	5	25
1,2,3,7,8,9-HxCDD	5	25
1,2,3,4,6,7,8-HpCDD	5	25

CATALOG #	COMPOUND	AMOUNT
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 Furans	EF-909B-5 Concentration (µg/mL)	EF-909B-25 Concentration (µg/mL)
2,3,7,8-TCDF	5	25
1,2,3,7,8-PeCDF	5	25
2,3,4,7,8-PeCDF	5	25
1,2,3,4,7,8-HxCDF	5	25
1,2,3,6,7,8-HxCDF	5	25
1,2,3,7,8,9-HxCDF	5	25
2,3,4,6,7,8-HxCDF	5	25
1,2,3,4,6,7,8-HpCDF	5	25
1,2,3,4,7,8,9-HpCDF	5	25

Unlabeled Dioxin & Furan Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-949	Native Quantifying Cocktail (2,3,7,8-PCDD/PCDF isomers)	Set of 3 x 0.4 mL in Nonane
	Unlabeled Dioxins & Furans	Concentration (µg/mL)
	2,3,7,8-TCDD	1
	2,3,7,8-TCDF	1
	1,2,3,7,8-PeCDD	1
	1,2,3,7,8-PeCDF	1
	1,2,3,6,7,8-HxCDD	1
	1,2,3,4,7,8-HxCDF	1
	1,2,3,4,6,7,8-HpCDD	1
	1,2,3,4,6,7,8-HpCDF	1
	OCDD	1
	OCDF	1

CATALOG #	COMPOUND	AMOUNT
EDF-4903	Tetra-OctaCDD & CDF Standard Solution (2,3,7,8 isomers + 1,3,6,8 - TCDD)	1.2 mL in Nonane
	Labeled Dioxins & Furans	Concentration (µg/mL)
	1,3,6,8-TCDD (¹³ C ₁₂ ,99%)	1
	2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	1
	2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	1
	2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	1
	2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	1
	OCDD (¹³ C ₁₂ ,99%)	2
	OCDF (¹³ C ₁₂ ,99%)	2

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

Isotope Labeled Dioxin & 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 Dioxins & Furans	Concentration (µg/mL)
	2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	1
	2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	1
	OCDD (¹³ C ₁₂ ,99%)	1
	OCDF (¹³ C ₁₂ ,99%)	1

CATALOG #	COMPOUND	AMOUNT
EDF-957-A	Carbon-13 Quantifying Cocktail (River Road Surrogate Spike)	Set of 3 x 0.4 mL in Nonane
	Labeled Dioxins & Furans	Concentration (µg/mL)
	2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	1
	2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	1
	OCDD (¹³ C ₁₂ ,99%)	2

Isotope Labeled Dioxin & Furan Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-4067	Tetra-OctaCDD and CDF Standard Solution (2,3,7,8-isomers)	1.2 mL in Nonane
	Labeled Dioxins & Furans	Concentration (µg/mL)
	2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	1
	2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	1
	2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	1
	2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	1
	OCDD (¹³ C ₁₂ ,99%)	1
	OCDF (¹³ C ₁₂ ,99%)	1

CATALOG #	COMPOUND	AMOUNT
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 Dioxins & Furans	Concentration (µg/mL)
	2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	1
	2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	1
	2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	1
	2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	1
	1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	1
	OCDD (¹³ C ₁₂ ,99%)	2
	OCDF (¹³ C ₁₂ ,99%)	2

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

Isotope Labeled Dioxin & Furan Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
ED-998	TCDD-OCDD Standard Solution (2,3,7,8 isomers)	1.2 mL in Nonane

Labeled Dioxins	Concentration (µg/mL)
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	1
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	1
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	1
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	1
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	1
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	1
OCDD (¹³ C ₁₂ ,99%)	1

CATALOG #	COMPOUND	AMOUNT
EF-999	TCDF-OCDF Standard Solution (2,3,7,8 isomers excluding 2,3,4,6,7,8-HxCDF)	1.2 mL in Nonane

Labeled Furans	Concentration (µg/mL)
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	1
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	1
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	1
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	1
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	1
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	1
OCDF (¹³ C ₁₂ ,99%)	1

Isotope Labeled Dioxin & Furan Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EF-979	TCDF-HpCDF Standard Solution (2,3,7,8 isomers excluding 2,3,4,6,7,8-HxCDF and OCDF)	1.2 mL in Nonane
	¹³C-Labeled Furans	Concentration (µg/mL)
	2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	1
	2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	1
	1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	1

Mono-Tri Dioxin & Furan Standard Mixtures

CATALOG #	COMPOUND	AMOUNT
EDF-4954	Mono-TriCDD/CDF Native Solution	1.2 mL in Nonane
	Dioxins & Furans	Concentration (µg/mL)
	2-MonoCDD	1
	2-MonoCDF	1
	2,3-DiCDD	1
	2,8-DiCDF	1
	2,3,7-TriCDD	1
	2,4,8-TriCDF	1

CATALOG #	COMPOUND	AMOUNT
EDF-4955	Mono-TriCDD/CDF ¹³ C-Labeled Solution	1.2 mL in Nonane
	Labeled Dioxins & Furans	Concentration (µg/mL)
	2-MonoCDD (¹³ C ₁₂ ,99%)	1
	2-MonoCDF (¹³ C ₁₂ ,99%)	1
	2,3-DiCDD (¹³ C ₁₂ ,99%)	1
	2,8-DiCDF (¹³ C ₁₂ ,99%)	1
	2,3,7-TriCDD (¹³ C ₁₂ ,99%)	1
	2,4,8-TriCDF (¹³ C ₁₂ ,99%)	1

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

Dioxin & Furan + PCB Standard Mixtures

CATALOG #	COMPOUND	AMOUNT
EDF-4144	Internal Standard for Dioxin, Furan and PCB in Tissue	750 µl in Nonane
	Labeled Dioxins & Furans	Concentration (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
	Labeled PCBs	Concentration (ng/mL)
	3,3',4,4'-TCB (¹³ C ₁₂ ,99%)	24.0
	3,4,4',5-TCB (¹³ C ₁₂ ,99%)	24.0
	3,3',4,4',5-PeCB (¹³ C ₁₂ ,99%)	36.0
	3,3',4,4',5,5'-HxCB (¹³ C ₁₂ ,99%)	48.0

CATALOG #	COMPOUND	AMOUNT
EDF-4145	Recovery Standard for Dioxin, Furan and PCB in Tissue	750 µl in Nonane
	Labeled Compounds	Concentration (ng/mL)
	1,2,3,4-TCDD (¹³ C ₆ ,99%)	25.0
	1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	62.5
	3,3',5,5'-TCB (¹³ C ₁₂ ,99%)	48.0

Dioxin & Furan + PCB Standard Mixtures

CATALOG #	COMPOUND	AMOUNT
EDF-4143	Calibration Curve for Dioxin, Furan & PCB in Tissue [CDC1-CDC9]	Set of 9 x 0.2 mL in Nonane

Unlabeled Dioxins & Furans	All Concentrations are in ng/mL (ppb)								
	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
Unlabeled PCBs	CDC1	CDC2	CDC3	CDC4	CDC5	CDC6	CDC7	CDC8	CDC9
3,3',4,4'-TCB (PCB-77)	0.80	1.60	4.00	8.00	16.0	20.0	40.0	80.0	160
3,4,4',5'-TCB (PCB-81)	0.80	1.60	4.00	8.00	16.0	20.0	40.0	80.0	160
3,3',4,4',5'-PeCB (PCB-126)	0.80	1.60	4.00	8.00	16.0	20.0	40.0	80.0	160
3,3',4,4',5,5'-HxCB (PCB-169)	0.80	1.60	4.00	8.00	16.0	20.0	40.0	80.0	160

list continues on next page (EDF-4143 product specification)

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

Dioxin & Furan + PCB Standard Mixtures (continued)

list continues from previous page (EDF-4143 product specification)

Labeled Dioxins & Furans	All Concentrations are in ng/mL (ppb)								
	CDC1	CDC2	CDC3	CDC4	CDC5	CDC6	CDC7	CDC8	CDC9
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
Labeled PCBs	CDC1	CDC2	CDC3	CDC4	CDC5	CDC6	CDC7	CDC8	CDC9
3,3',4,4'-TCB (¹³ C ₁₂ ,99%)	48	48	48	48	48	48	48	48	48
3,3',5,5'-TCB (¹³ C ₁₂ ,99%)	48	48	48	48	48	48	48	48	48
3,4,4',5'-TCB (¹³ C ₁₂ ,99%)	48	48	48	48	48	48	48	48	48
3,3',4,4',5'-PeCB (¹³ C ₁₂ ,99%)	72	72	72	72	72	72	72	72	72
3,3',4,4',5,5'-HxCB (¹³ C ₁₂ ,99%)	96	96	96	96	96	96	96	96	96

Dioxin & Furan + PCB Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-5086 ^{new}	PCB & Dioxin/Furan Calibration Verification Standard	1.2 mL in Nonane
	Labeled Dioxins, Furans, & PCBs	IUPAC#
		Concentration (ng/mL)
	1,3,6,8-TCDD (¹³ C ₁₂ ,99%)	10
	1,2,3,4-TCDD (¹³ C ₁₂ ,99%)	10
	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-HxCDF (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
	3,4,4',5-TetraCB (¹³ C ₁₂ ,99%)	81
	2,3,3',4,4'-PentaCB (¹³ C ₁₂ ,99%)	105
	2,3,4,4',5-PentaCB (¹³ C ₁₂ ,99%)	114
	2,3',4,4',5-PentaCB (¹³ C ₁₂ ,99%)	118
	2',3,4,4',5-PentaCB (¹³ C ₁₂ ,99%)	123
	3,3',4,4',5-PentaCB (¹³ C ₁₂ ,99%)	126
	2,3,3',4,4',5-HexaCB (¹³ C ₁₂ ,99%)	156
	2,3,3',4,4',5'-HexaCB (¹³ C ₁₂ ,99%)	157
	2,3',4,4',5,5'-HexaCB (¹³ C ₁₂ ,99%)	167
	3,3',4,4',5,5'-HexaCB (¹³ C ₁₂ ,99%)	169
	2,2',3,3',4,4',5-HeptaCB (¹³ C ₁₂ ,99%)	170
	2,2',3,4,4',5,5'-HeptaCB (¹³ C ₁₂ ,99%)	180
	2,3,3',4,4',5,5'-HeptaCB (¹³ C ₁₂ ,99%)	189

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

Dioxin & Furan + PCB Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-5086-A ^{new}	Alternate PCB & Dioxin/Furan Calibration Verification Standard	1.2 mL in Nonane
Labeled Dioxins, Furans, & PCBs	IUPAC#	Concentration (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-HxCDF (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

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

The chart below references the products that follow.

All concentrations are in ng/mL

Unlabeled Dioxins and Furans	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	2	10	50	200	1000
Labeled Dioxins & Furans	CS1	CS2	CS3	CS4	CS5
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

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

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

CATALOG #	COMPOUND	AMOUNT
EDF-5040 ^{new}	Non-2,3,7,8-Containing PCDF Calibration Solutions [CS1-CS5]	5 x 0.2 mL in Nonane

CATALOG #	COMPOUND	AMOUNT
EDF-5041 ^{new}	Non-2,3,7,8-Containing PCDF Clean-Up Standard	1.2 mL in Nonane

Labeled Dioxins & Furans	Concentration (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

Non-2,3,7,8-Containing Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EF-5042 ^{new}	Non-2,3,7,8-Containing PCDF Syringe Standard	1.2 mL in Nonane
	Labeled Furan	Concentration (µg/mL)
	1,2,7,8-TCDF (¹³ C ₁₂ ,99%)	2
	1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	2

CATALOG #	COMPOUND	AMOUNT
EDF-5043 ^{new}	Non-2,3,7,8-Containing PCDF Sampling Standard	1.2 mL in Nonane
	Labeled Dioxins & Furans	Concentration (ng/mL)
	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

CATALOG #	COMPOUND	AMOUNT
EF-5188 ^{new}	Non-2,3,7,8-Containing ¹³ C Furan Syringe Spike	1.2 mL in Nonane
	Labeled Furans	Concentration (ng/mL)
	1,2,3,4,6-PeCDF (¹³ C ₁₂ ,99%)	1000
	1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	1000

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

Non-2,3,7,8-Containing Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-5174 ^{new}	1,3,6,8-TCDD/F Containing Clean-Up Spike	1.2 mL in Nonane
EDF-5174-40X ^{new}	1,3,6,8-TCDD/F Containing Clean-Up Spike (40x stock solution)	1.2 mL in Nonane

Labeled Dioxins & Furans	EDF-5174 Concentration (ng/mL)	EDF-5174-40X Concentration (ng/mL)
1,3,6,8-TCDD (¹³ C ₁₂ ,99%)	5	200
2,3,7,8-TCDD (¹³ C ₁₂ ,99%)	5	200
1,2,3,7,8-PeCDD (¹³ C ₁₂ ,99%)	5	200
1,2,3,4,7,8-HxCDD (¹³ C ₁₂ ,99%)	5	200
1,2,3,6,7,8-HxCDD (¹³ C ₁₂ ,99%)	5	200
1,2,3,7,8,9-HxCDD (¹³ C ₁₂ ,99%)	5	200
1,2,3,4,6,7,8-HpCDD (¹³ C ₁₂ ,99%)	5	200
OCDD (¹³ C ₁₂ ,99%)	10	400
1,3,6,8-TCDF (¹³ C ₁₂ ,99%)	5	200
2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	5	200
1,2,3,7,8-PeCDF (¹³ C ₁₂ ,99%)	5	200
2,3,4,7,8-PeCDF (¹³ C ₁₂ ,99%)	5	200
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)	5	200
1,2,3,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	5	200
1,2,3,7,8,9-HxCDF (¹³ C ₁₂ ,99%)	5	200
2,3,4,6,7,8-HxCDF (¹³ C ₁₂ ,99%)	5	200
1,2,3,4,6,7,8-HpCDF (¹³ C ₁₂ ,99%)	5	200
1,2,3,4,7,8,9-HpCDF (¹³ C ₁₂ ,99%)	5	200
OCDF (¹³ C ₁₂ ,99%)	10	400

CATALOG #	COMPOUND	AMOUNT
EF-5175 ^{new}	Non-2,3,7,8-Containing Internal Standard Spiking Solution	1.2 mL in Nonane
EF-5175-40X ^{new}	Non-2,3,7,8-Containing Internal Standard Spiking Solution (40x stock solution)	1.2 mL in Nonane

Labeled Furans	EF-5175 Concentration (ng/mL)	EF-5175-40X Concentration (ng/mL)
1,2,7,8-TCDF (¹³ C ₁₂ ,99%)	5	200
1,2,3,4,6,8,9-HpCDF (¹³ C ₁₂ ,99%)	5	200

Non-2,3,7,8-Containing Standard Mixtures (continued)

The chart below references the products that follow.

All concentrations are in ng/mL

Unlabeled Dioxins & Furans	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 Dioxins & Furans	CS1	CS2	CS3	CS4	CS5
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

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

Non-2,3,7,8-Containing Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-5185 ^{new}	Dioxin Furan Calibration Solutions with first and closest TCDD [CS1-CS5] Eluters & Non-2,3,7,8-Containing ¹³ C PCDFs	5 x 0.2 mL in Nonane
EDF-5185-1 ^{new}	Dioxin Furan Calibration Solutions with first and closest TCDD [CS1] Eluters & Non-2,3,7,8-Containing ¹³ C PCDFs	0.2 mL in Nonane
EDF-5185-2 ^{new}	Dioxin Furan Calibration Solutions with first and closest TCDD [CS2] Eluters & Non-2,3,7,8-Containing ¹³ C PCDFs	0.2 mL in Nonane
EDF-5185-3 ^{new}	Dioxin Furan Calibration Solutions with first and closest TCDD [CS3] Eluters & Non-2,3,7,8-Containing ¹³ C PCDFs	0.2 mL in Nonane
EDF-5185-4 ^{new}	Dioxin Furan Calibration Solutions with first and closest TCDD [CS4] Eluters & Non-2,3,7,8-Containing ¹³ C PCDFs	0.2 mL in Nonane
EDF-5185-5 ^{new}	Dioxin Furan Calibration Solutions with first and closest TCDD [CS5] Eluters & Non-2,3,7,8-Containing ¹³ C PCDFs	0.2 mL in Nonane

Chlorodioxin & 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
	Dioxins & Furans	Concentration (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

Chlorodioxin & Chlorofuran Window Defining Mixtures *(continued)*

CATALOG #	COMPOUND	AMOUNT
ED-1732-A	TCDD-HpCDD Window Defining Mixture (DB-5) (First and last eluting isomers on DB-5 type GC/MS columns)	1 vial Crystalline
	Unlabeled Dioxins	Amount (ng)
	1,3,6,8-TCDD	400
	1,2,8,9-TCDD	400
	1,2,4,6,8/1,2,4,7,9-PeCDD	400
	1,2,3,8,9-PeCDD	400
	1,2,4,6,7,9/1,2,4,6,8,9-HxCDD	400
	1,2,3,4,6,7-HxCDD	400
	1,2,3,4,6,7,9-HpCDD	400
	1,2,3,4,7,8,9-HpCDD	400

CATALOG #	COMPOUND	AMOUNT
ED-1732-B	TCDD-HpCDD Window Defining Mixture (DB-5) (First and last eluting isomers on DB-5 type GC/MS columns)	Set of 4 vials Crystalline
	Unlabeled Dioxins	Amount (ng)
	Vial A contains the following:	
	1,3,6,8-TCDD	400
	1,2,8,9-TCDD	400
	Vial B contains the following:	
	1,2,4,6,8/1,2,4,7,9-PeCDD	400
	1,2,3,8,9-PeCDD	400
	Vial C contains the following:	
	1,2,4,6,7,9/1,2,4,6,8,9-HxCDD	400
	1,2,3,4,6,7-HxCDD	400
	Vial D contains the following:	
	1,2,3,4,6,7,9-HpCDD	400
	1,2,3,4,7,8,9-HpCDD	400

NOTE: Sub-milligram and sub-microgram quantities of neat material are unlikely to be visible in the vial.

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

Chlorodioxin & Chlorofuran Window Defining Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EF-1731-A	TCDF-HpCDF Window Defining Mixture (DB-5) (First and last eluting isomers on DB-5 type GC/MS columns)	1 vial Crystalline
	Unlabeled Furans	Amount (ng)
	1,3,6,8-TCDF	400
	1,2,8,9-TCDF	400
	1,3,4,6,8-PeCDF	400
	1,2,3,8,9-PeCDF	400
	1,2,3,4,6,8-HxCDF	400
	1,2,3,4,8,9-HxCDF	400
	1,2,3,4,6,7,8-HpCDF	400
	1,2,3,4,7,8,9-HpCDF	400

CATALOG #	COMPOUND	AMOUNT
EF-1731-B	TCDF-HpCDF Window Defining Mixture (DB-5) (First and last eluting isomers on DB-5 type GC/MS columns)	Set of 4 vials Crystalline
	Unlabeled Furans	Amount (ng)
	Vial A contains the following:	
	1,3,6,8-TCDF	400
	1,2,8,9-TCDF	400
	Vial B contains the following:	
	1,3,4,6,8-PeCDF	400
	1,2,3,8,9-PeCDF	400
	Vial C contains the following:	
	1,2,3,4,6,8-HxCDF	400
	1,2,3,4,8,9-HxCDF	400
	Vial D contains the following:	
	1,2,3,4,6,7,8-HpCDF	400
	1,2,3,4,7,8,9-HpCDF	400

NOTE: Sub-milligram and sub-microgram quantities of neat material are unlikely to be visible in the vial.

TCDD & TCDF Column Performance Mixtures

CATALOG #	COMPOUND	AMOUNT
ED-908	TCDD Column Performance Solution Mixture	1.2 mL in Nonane
	Unlabeled Dioxins	Concentration (µg/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

CATALOG #	COMPOUND	AMOUNT
ED-908-C	TCDD Column Performance Crystalline Mixture	1 vial Crystalline
	Unlabeled Dioxins	Amount (ng)
	1,2,3,4-TCDD	100
	1,2,3,7/1,2,3,8-TCDD	100
	1,2,6,7-TCDD	200
	1,2,7,8-TCDD	200
	1,4,7,8-TCDD	100
	2,3,7,8-TCDD	100

CATALOG #	COMPOUND	AMOUNT
ED-935	TCDD Column Performance Check Solution	550 µl in Nonane
	Dioxins	Concentration (ng/mL)
	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	100
	1,2,7,8-TCDD	200
	1,2,6,7-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

NOTE: Sub-milligram and sub-microgram quantities of neat material are unlikely to be visible in the vial.

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

TCDD & TCDF Column Performance Mixtures (continued)

These solutions contain the two isomers which elute most closely to 2,3,7,8-TCDF on the GC/MS columns specified. This allows the user to determine the column's resolution efficiency of 2,3,7,8-TCDF from other TCDF isomers. In addition, the carbon-13 spiked solutions allow the user to validate which peak corresponds to 2,3,7,8-TCDF by monitoring the proper ion(s) in the mass spectrum.

CATALOG #	COMPOUND	AMOUNT
EF-937	TCDF Column Performance Solution (DB-225) (For use with DB-225 type GC/MS columns)	1.2 mL in Nonane
	Unlabeled Furans	Concentration (µg/mL)
	1,2,3,9-TCDF	5
	2,3,7,8-TCDF	5
	2,3,4,7-TCDF	5

CATALOG #	COMPOUND	AMOUNT
EF-938	TCDF Carbon-13 Spiked CP Solution (DB-225) (For use with DB-225 type GC/MS columns)	1.2 mL in Nonane
	Furans	Concentration (µg/mL)
	1,2,3,9-TCDF	5
	2,3,7,8-TCDF	5
	2,3,4,7-TCDF	5
	2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	1

CATALOG #	COMPOUND	AMOUNT
EF-934	TCDF Column Performance Solution (SP-2330) (For use with SP-2330 type GC/MS columns)	1.2 mL in Nonane
	Unlabeled Furans	Concentration (µg/mL)
	1,2,6,9-TCDF	5
	2,3,7,8-TCDF	5
	2,3,4,8-TCDF	5

CATALOG #	COMPOUND	AMOUNT
EF-936	TCDF Carbon-13 Spiked CP Solution (SP-2330) (For use with SP-2330 type GC/MS columns)	1.2 mL in Nonane
	Furans	Concentration (µg/mL)
	1,2,6,9-TCDF	5
	2,3,7,8-TCDF	5
	2,3,4,8-TCDF	5
	2,3,7,8-TCDF (¹³ C ₁₂ ,99%)	1

NOTE: Sub-milligram and sub-microgram quantities of neat material are unlikely to be visible in the vial.

Bromodioxin & Bromofuran Standard Mixtures

CATALOG #	COMPOUND	AMOUNT				
EDF-5070 ^{new}	Brominated Dioxin/Furan Calibration Solution [BCS1-BCS5]	5 x 0.2 mL in Nonane				
<i>All concentrations are in ng/mL</i>						
Unlabeled Dioxins & Furans		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 Dioxins & Furans		BCS1	BCS2	BCS3	BCS4	BCS5
1,2,3,7,8-PeBDD (¹³ C ₁₂ ,99%)		100	100	100	100	100
2,3,7,8-TBDF (¹³ C ₁₂ ,99%)		100	100	100	100	100
1,2,3,7,8-PeBDF (¹³ C ₁₂ ,99%)		100	100	100	100	100
2,3,4,7,8-PeBDF (¹³ C ₁₂ ,99%)		100	100	100	100	100
1,2,3,4,7,8-HxCDF (¹³ C ₁₂ ,99%)		100	100	100	100	100
Clean-Up Standard		BCS1	BCS2	BCS3	BCS4	BCS5
1,2,3,4,7,8-HxBDD (¹³ C ₁₂ ,99%)		0.5	2	10	40	100
Internal Standards		BCS1	BCS2	BCS3	BCS4	BCS5
2,3,7,8-TBDD (¹³ C ₁₂ ,99%)		100	100	100	100	100
1,2,3,6,7,8-HxBDD (¹³ C ₁₂ ,99%)		25	25	25	25	25
1,2,3,7,8,9-HxBDD (¹³ C ₁₂ ,99%)		75	75	75	75	75

CATALOG #	COMPOUND	AMOUNT				
EDF-5058 ^{new}	Tetra-Hexa Brominated Dioxin and Furan Standard Solution	1.2 mL in Nonane				
Labeled Dioxins & Furans		Concentration (µg/mL)				
2,3,7,8-TBDD (¹³ C ₁₂ ,99%)		1				
1,2,3,7,8-PeBDD (¹³ C ₁₂ ,99%)		1				
1,2,3,4,7,8-HxBDD (¹³ C ₁₂ ,99%)		1				
2,3,7,8-TBDF (¹³ C ₁₂ ,99%)		1				
2,3,4,7,8-PeBDF (¹³ C ₁₂ ,99%)		1				

Dioxin & Furan Method Standards, Standard Mixtures & Reference Materials

Bromodioxin & Bromofuran Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-5071 ^{new}	Brominated Dioxin/Furan Labeled Compounds	1.2 mL in Nonane
	Labeled Dioxins & Furans	Concentration (ng/mL)
	1,2,3,7,8-PeBDD (¹³ C ₁₂ ,99%)	100
	2,3,7,8-TBDF (¹³ C ₁₂ ,99%)	100
	1,2,3,7,8-PeBDF (¹³ C ₁₂ ,99%)	100
	2,3,4,7,8-PeBDF (¹³ C ₁₂ ,99%)	100
	1,2,3,4,7,8-HxBDF (¹³ C ₁₂ ,99%)	100

CATALOG #	COMPOUND	AMOUNT
EDF-2530	Tetra-Penta Brominated Dioxin and Furan Standard Solution	1.2 mL in Nonane
	Labeled Dioxins & Furans	Concentration (µg/mL)
	2,3,7,8-TBDD (¹³ C ₁₂ ,99%)	0.1
	2,3,7,8-TBDF (¹³ C ₁₂ ,99%)	1.0
	1,2,3,7,8-PeBDD (¹³ C ₁₂ ,99%)	0.5
	2,3,4,7,8-PeBDF (¹³ C ₁₂ ,99%)	5.0

CATALOG #	COMPOUND	AMOUNT
EDF-4153	PBDD/PBDF Surrogate Spiking Solution	1 mL in Nonane
	Labeled Dioxins & Furans	Concentration (ng/mL)
	2,3,7,8-TBDD (¹³ C ₁₂ ,99%)	20
	2,3,7,8-TBDF (¹³ C ₁₂ ,99%)	20
	1,2,3,7,8-PeBDD (¹³ C ₁₂ ,99%)	20
	1,2,3,7,8-PeBDF (¹³ C ₁₂ ,99%)	20
	1,2,3,6,7,8/1,2,3,7,8,9-HxBDD (¹³ C ₁₂ ,99%)	40

CATALOG #	COMPOUND	AMOUNT
EDF-4154	PBDD/PBDF Performance Standard Mixture	1 mL in Nonane
	Labeled Dioxins & Furans	Concentration (ng/mL)
	2,3,4,7,8-PeBDF (¹³ C ₁₂ ,99%)	100
	1,2,3,4,7,8-HxBDD (¹³ C ₁₂ ,99%)	100

Bromodioxin & Bromofuran Standard Mixtures (continued)

CATALOG #	COMPOUND	AMOUNT
EDF-2046-A ^{new}	Polybrominated Dioxin and Furan Mixture	1.2 mL in 50:50 Nonane/Toluene
	Unlabeled Dioxins & Furans	Concentration (µg/mL)
	2,3,7,8-TBDD	0.1
	2,3,7,8-TBDF	1.0
	1,2,3,7,8-PeBDD	0.5
	1,2,3,7,8-PeBDF	5.0
	2,3,4,7,8-PeBDF	5.0
	1,2,3,4,7,8-HxBDD	2.5
	1,2,3,6,7,8-HxBDD	2.5
	1,2,3,7,8,9-HxBDD	2.5
	1,2,3,4,7,8-HxBDF	4.0
	1,2,3,4,6,7,8-HpBDF	10.0

CATALOG #	COMPOUND	AMOUNT
EDF-5059 ^{new}	Polybrominated Dioxin and Furan Mixture	1.2 mL in Nonane
	Unlabeled Dioxins & Furans	Concentration (µg/mL)
	2,3,7,8-TBDD	1
	1,2,3,7,8-PeBDD	1
	1,2,3,4,7,8-HxBDD	1
	1,2,3,6,7,8-HxBDD	1
	1,2,3,7,8,9-HxBDD	1
	OBDD	1
	2,3,7,8-TBDF	1
	1,2,3,7,8-PeBDF	1
	2,3,4,7,8-PeBDF	1
	1,2,3,4,7,8-HxBDF	1
	1,2,3,4,6,7,8-HpBDF	1

CATALOG #	COMPOUND	AMOUNT
EDF-5074 ^{new}	Brominated Dioxin/Furan PAR Solution	1.2 mL in Nonane
	Unlabeled Dioxins & Furans	Concentration (ng/mL)
	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