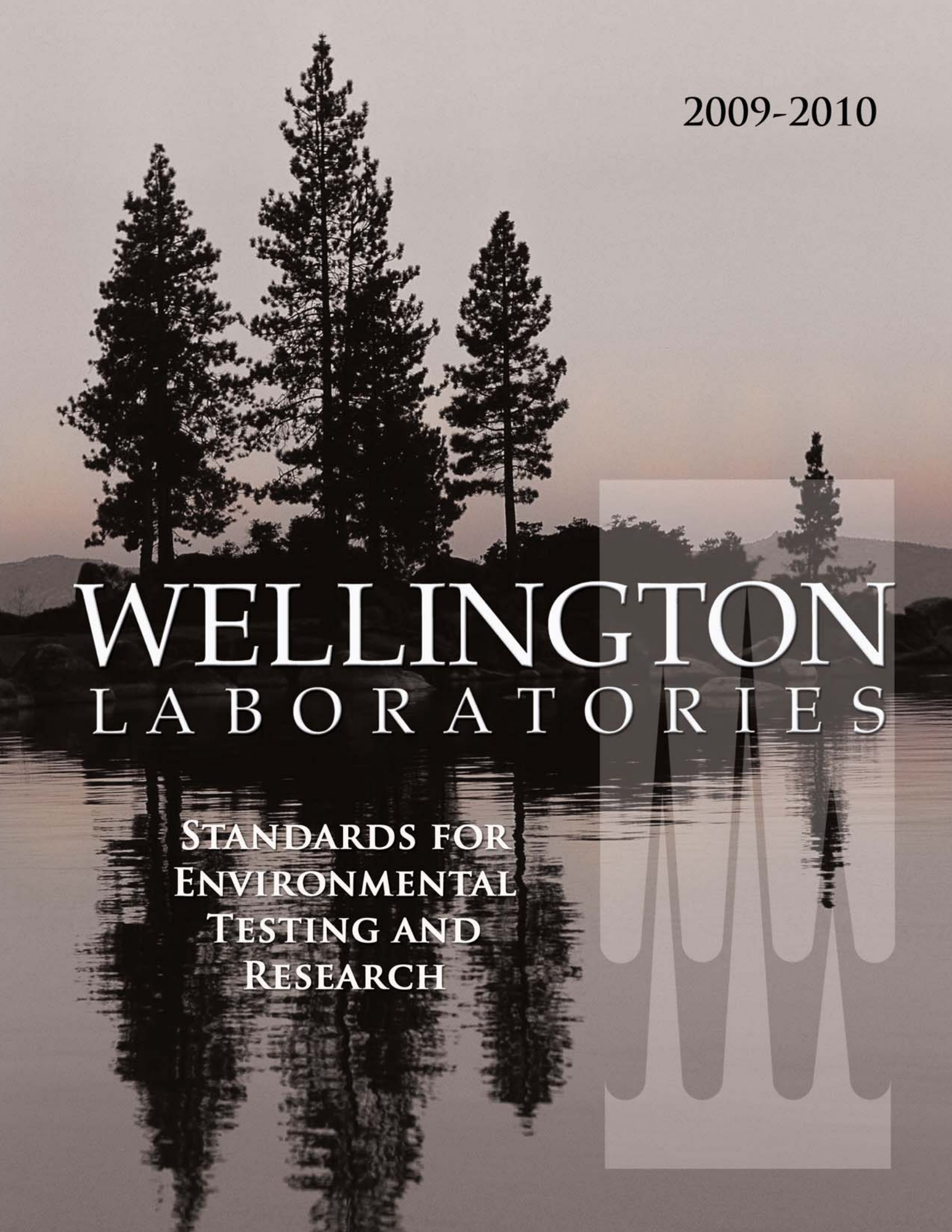


2009-2010

WELLINGTON LABORATORIES

Standards for Environmental Testing and Research

CERTIFICATE OF REGISTRATION

This is to certify that

Wellington Laboratories

345 Southgate Drive, Guelph, Ontario N1G 3M5 Canada

operates a

Quality Management System

which complies with the requirements of

ISO 9001:2000

for the following scope of registration

The registration covers the Quality Management System as it applies to the design and provision of reference standards and chemicals for use in environmental analysis and toxicological research.

Certificate No:	CERT-0025901	Original Certification Date:	December 30, 2004
File No:	1039334	Current Certification Date:	December 29, 2007
Issue Date:	October 8, 2008	Certificate Expiry Date:	December 28, 2010

Wendy Tilford
President,
QMI-SAI Canada Limited

Alex Ezrakhovich
General Manager,
SAI Global Certification Services Pty Ltd

Certified System ISO 9001

ANAB ACCREDITED

Welcome to the 2009/2010 edition of our catalogue.

While exploring the contents of this edition, you will notice that we have added a large number of new products to our inventory. However, we have also retained many of the products that were offered previously that continue to be popular and/or are necessary for the execution of certain prescribed methods.

Some products that were deemed obsolete have been removed from this catalogue, but may still be available to labs that require them. Please contact your distributor with these requests.

Since our last catalogue was published our product line has increased primarily due to the discovery of environmental contaminants that had previously gone undetected. In addition, we have prepared reference standards of compounds that have the potential to enter and persist in the environment due to their production volumes, uses, and properties.

Between publications of our catalogue, all new products are announced via a Wellington Reporter, so we ask that you continue to visit our website for updates (www.well-labs.com).

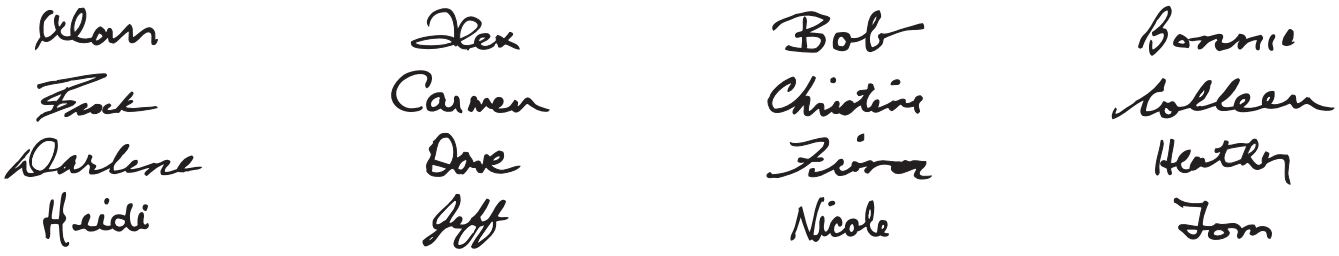
In the latter part of 2007, Wellington Laboratories Inc. was subjected to a full audit and, we are pleased to announce, has retained its ISO 9001:2000 certification. The certificate can be seen on the front inside cover of this catalogue.

All of the people at Wellington are dedicated to Customer Satisfaction and Continual Improvement.

Thank you for your interest in our products and your continued trust and patronage.

We provide… An Added Measure of Confidence

Sincerely,
The Staff at Wellington Laboratories



WELLINGTON
LABORATORIES
Standards for Environmental Testing and Research

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"*SUPPORT SOLUTIONS*"

Throughout this, our **2009/2010** catalogue, among the products listed are several sets of calibration solutions designed for use with a variety of GC/MS applications. These solution sets are denoted by the incorporation of the code **CVS** into their Catalogue Numbers. For example, **EPA-1613CVS** or **BDE-CVS-E.**

In conjunction with the method calibration sets, are listed their "*support solutions*". These are the solution/mixtures of native or mass-labelled compounds required for sample processing and method validation as determined by the appropriate method.

As an example, the "*support solutions*" for **EPA-1613CVS** are:

EPA-1613LCS for sample spiking prior to extraction
EPA-1613CSS for extract spiking prior to cleanup
EPA-1613ISS for spiking of the cleaned-up extract prior to analysis
and **EPA-1613PAR** a native spiking solution for method performance testing

For non-method specific calibration sets, "*support solutions*" will be noted where applicable.

WELLINGTON LABORATORIES INC.

Since 1980, Wellington Laboratories Inc. (Wellington) has proven itself to be a reliable and trusted source of chemical reference standards. Most of these are used in environmental, toxicological and related research.

All of this is due to its people who bring a wealth of synthetic and analytical expertise to the company. Moreover, these people are all committed to Wellington's policies of providing exemplary customer service and support and continual improvement in all aspects of the business.

Wellington's keen attention to quality is reflected in its ISO 9001:2000 certification and ISO/IEC 17025 accreditation.

THIS CATALOGUE / NEW PRODUCTS

Wellington's original inventory consisted solely of individual native chlorinated dibenzo-p-dioxins (PCDDs), dibenzofurans (PCDFs) and biphenyls (PCBs). Today we offer the most comprehensive selection of individual native and 13C-labelled PCDDs and PCDFs, as well as ready-to-use solutions for PCDD/PCDF analysis, such as:

- **EPA Method 1613B,**
- **EPA Method 8280,**
- **EPA Method 8290,**
- **EPA Method 23,**
- **European Method EN 1948, and,**
- **DF-CVS-A10, -A5 and -B10 (multi-point calibration solutions and support solutions).**

We also continue to offer an extensive collection of native and 13C-labelled PCBs as well as GC/MS calibration solutions, including those for **EPA Method 1668B**, **Environment Canada Method 1/RM/31** and the multi-point calibration sets **PCB-CVS-A10** and **PCB-CVS-A5**.

In 2007, calibration solutions and support solutions for European Method **prCEN/TS 1948-4** were prepared, and are now offered.

We also now offer a more extensive PCB calibration set called **PCB-CVS-H**, along with its support solutions. These solutions were prepared to allow the analysis of a majority of the more prevalent congeners in the commercial mixes along with the more potentially toxic congeners.

In our 2006/2007 catalogue, we introduced two new sections; one for perfluorinated compounds (PFCs) and the other for brominated flame retardants and related compounds (BFRs).

As a result of client requests, or from our own reviews of the literature, many new individual native and mass-labelled compounds have been synthesized. In addition, some new solution/mixtures have been prepared. A majority of the individual compounds made were either PFCs or BFRs.

As previously mentioned, these were announced in the Wellington Reporter, which is posted on our website.

Also included in this catalogue are:

- **New 13C-labelled PCDD congeners**
- **New native and 13C-labelled PBDE congeners**
- **New native BFRs**
- **New native and mass labeled PFCs**
- **New solution/mixtures of native and mass-labelled PFCs**

Plus many other new and innovative products

SYNTHESIS

The reference chemical standards offered by Wellington are prepared using structurally unambiguous synthetic routes and then purified using a variety of techniques, often including HPLC.

Synthesis of native and mass-labelled compounds are carried out in separate, isolated laboratories to ensure that the mass-labelled compounds maintain their isotopic purity.

The final products are all rigorously tested for chemical and isotopic purity prior to solution preparation and/or distribution.

ACCURACY/TRACEABILITY

All of the solutions offered in this catalogue are accurately prepared using:

- **NIST-traceable weights, to calibrate microbalances**
- **Class A, NIST-traceable volumetric glassware**
- **Ultrapure solvents**
- **Replicate solutions, to ensure accuracy and homogeneity**

When possible, these solutions are compared, and thus traceable, to certified reference standards or standards from an independent source.

Unless stated otherwise in this catalogue, the maximum combined relative percent uncertainty of the solution concentrations is **± 5%**.

VALIDATION/CERTIFICATION

Wellington was the first, and only, supplier of PCDD, PCDF and "*dioxin-like*" PCB standards to validate their solution/mixtures using truly "blind" interlaboratory studies.

Since 1991, solutions of our PCDD, PCDF, and PCB standards have been submitted as part of **20** international interlaboratory studies resulting in approximately 2000 independent HRGC/HRMS analyses, with more in progress. Over the past few years, Wellington has also provided standards for **6** interlaboratory studies on PBDEs and **9** interlaboratory studies involving PFCs.

The overall averages of the data received for all of the compounds were found to be well within ± 10% of the design values. A summary of all of the interlaboratory studies is available upon request.

ANALYSIS/DOCUMENTATION

Each of our individual standards comes with data which clearly documents their structure and purity, both chemical and isotopic (if appropriate).

All of our products come with HRGC/LRMS data or HRGC/HRMS data, or both, depending upon their intended use. Those products that can not be analyzed by HRGC come with LC/MS data.

In addition, all of our mass-labelled products come with GC/MS data that confirms their isotopic purity. All calibration sets come with documentation that clearly shows their linearity.

MSDSs and handling guidelines are available for all of our products.

OTHER PRODUCTS/CUSTOM REQUESTS

For products not included in this catalogue, please contact us, our distributors, or visit our website at www.well-labs.com which will be regularly updated with new products.

Custom solution preparation and synthetic services are also available. Please contact us with your specific research needs.

We look forward to helping you whenever and wherever we can.

ORDERING INFORMATION

To place an order, please contact the distributor that serves your country. Distributors are listed on pages **10** and **11**, as well as on our website.

For Canada, and for other countries where we do not have a distributor, please contact:

Wellington Laboratories Inc.
345 Southgate Drive
Guelph, Ontario CANADA N1G 3M5

Telephone: (519) 822-2436
Toll-free: (800) 578-6985
FAX: (519) 822-2849
E-mail: orders@well-labs.com
Website: www.well-labs.com

When ordering, please provide as much information as possible, including:

- Detailed shipping address and billing address
- Purchase order number, if known
- Catalogue number and description of product
- Quantity and unit size

TERMS & CONDITIONS OF SALE

Prices: A price list for the products listed in this catalogue *is available from your local distributor*. Prices are subject to change without notice.

Payment: Payment terms are net 30 days from date of invoice. Past due invoices will be subject to a 1.5% monthly finance charge.

Note: We may also accept credit card payments.

Shipping & Handling: All shipments will be F.O.B. Guelph, Ontario and will be made using an appropriate courier.

Returns: Please contact Wellington Laboratories Inc. or your local distributor for a return authorization number. No credit or exchange will be approved after 30 days from shipment and without prior authorization.

LIMITED WARRANTY

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the accompanying technical and purity specifications. Wellington Laboratories Inc. makes no other warranty, expressed or implied, pertaining to the suitability of the product for any specific application. In case of breach of this warranty, the entire liability of Wellington Laboratories Inc. will be limited to the invoice price of the goods. In no case will Wellington Laboratories Inc. be liable for any special, incidental or consequential damages resulting from the use of its products.

INTENDED USE

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are not for use in humans.

These chemicals are intended for use by qualified personnel who are familiar with their potential hazards and are trained in their handling. With all of our products, due care should be exercised to prevent human contact and ingestion.

The absence of a toxicity warning on any of our products must not be interpreted as an indication that there is no possible health hazard.

Material Safety Data Sheets (MSDSs) are supplied upon request.

PACKAGING

For the safety and convenience of our clients, the solutions provided by Wellington Laboratories Inc. are packaged in clear or amber glass flame-sealed ampoules. Crystalline materials are packaged in glass vials with teflon-lined screw caps.

The solution volumes stated in this catalogue are the minimum volumes which will be delivered and should be considered as approximate. To retain the accuracy of the solutions, dilutions should be made using volumetric glassware.

END USE ONLY/NOT FOR RESALE

The reference standards and materials supplied by Wellington Laboratories Inc. are for end use only by the original purchaser and are not to be resold without written authorization from Wellington Laboratories Inc.

DISTRIBUTORS

To determine which distributor serves your country please visit our website at www.well-labs.com and follow the distributor link under ordering

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Fax: +33 (0)4 72 49 70 45
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Fax: 030 62 90 189 89
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Email 2: freeman_limited@yahoo.com.cn

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Fax: +886-2-8919 1477
Website: www.beamassociate.com
Email: mail@beamassociate.com

Bukwang Scientific Corp., Ltd

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Fax: +82-2-765-0639
Email: bkscientific@paran.com

If your country is not served by an official distributor please contact Wellington Laboratories directly via e-mail at info@well-labs.com

PCDD/PCDF ANALYTICAL METHOD SOLUTIONS

PCDD/PCDF RESOLUTION TESTING AND WINDOW DEFINING SOLUTION/MIXTURES

Calibration kits and support solutions are offered for the following methods:

U.S. EPA Method 1613
HRGC/HRMS TCDD and TCDF Analysis Solutions
U.S. EPA Method 8280
U.S. EPA Method 8290
U.S. EPA Method 23
European Standard Method EN-1948

All solutions come **ready-to-use** according to the methods and come with detailed documentation which includes GC/MS data and RRF summaries for the calibration kits.

The products listed below are also included in this section. These are used in conjunction with the methods listed above, and others, to test the resolution of the HRGC column being used or to set retention time windows for PCDD and PCDF congener groups.

CS3WT:	**EPA-1613CS3 combined with PCDD/PCDF window defining congeners and 2378-TCDD resolution testing isomers**
5CWDS:	**PCDD/PCDF window defining congener mix**
5TCDD:	**2378-TCDD resolution test mixture.**
225TCDF:	**2378-TCDF resolution test mixture.**
TDTFWD:	**Combined PCDD/PCDF window defining and resolution testing mixture for 3 HRGC columns of varying polarity.**

**** Visit our website for updates and links for many of these methods ****

EPA METHOD 1613 STANDARD SOLUTIONS

Catalogue Number	Product (nonane solution)	Qty/Conc
EPA-1613CVS	EPA Method 1613 Calibration and Verification Solutions CS1-CS5	1 kit (5 ampoules)
EPA-1613CSL*	CSL Extended Calibration/Low Level	500 µl
EPA-1613CS0.5*	CS0.5	500 µl
EPA-1613CS1	CS1	500 µl
EPA-1613CS2	CS2	500 µl
EPA-1613CS3	CS3 Calibration Verification	1 ml
EPA-1613CS4	CS4	500 µl
EPA-1613CS5	CS5	500 µl

NOTE: 200 µl AMPOULES OF THE CALIBRATION SOLUTIONS ARE ALSO AVAILABLE. PLEASE CONTACT WELLINGTON OR YOUR LOCAL DISTRIBUTOR FOR PRICING INFORMATION.

NATIVE PCDDs & PCDFs	1613CSL (ng/ml)	1613CS0.5 (ng/ml)	1613CS1 (ng/ml)	1613CS2 (ng/ml)	1613CS3 (ng/ml)	1613CS4 (ng/ml)	1613CS5 (ng/ml)
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.1	0.25	0.5	2	10	40	200
2,3,7,8-Tetrachlorodibenzofuran	0.1	0.25	0.5	2	10	40	200
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.5	1.25	2.5	10	50	200	1000
1,2,3,7,8-Pentachlorodibenzofuran	0.5	1.25	2.5	10	50	200	1000
2,3,4,7,8-Pentachlorodibenzofuran	0.5	1.25	2.5	10	50	200	1000
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.5	1.25	2.5	10	50	200	1000
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.5	1.25	2.5	10	50	200	1000
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.5	1.25	2.5	10	50	200	1000
1,2,3,4,7,8-Hexachlorodibenzofuran	0.5	1.25	2.5	10	50	200	1000
1,2,3,6,7,8-Hexachlorodibenzofuran	0.5	1.25	2.5	10	50	200	1000
1,2,3,7,8,9-Hexachlorodibenzofuran	0.5	1.25	2.5	10	50	200	1000
2,3,4,6,7,8-Hexachlorodibenzofuran	0.5	1.25	2.5	10	50	200	1000
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.5	1.25	2.5	10	50	200	1000
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.5	1.25	2.5	10	50	200	1000
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.5	1.25	2.5	10	50	200	1000
Octachlorodibenzo-p-dioxin	1.0	2.5	5.0	20	100	400	2000
Octachlorodibenzofuran	1.0	2.5	5.0	20	100	400	2000
LABELLED PCDDs & PCDFs							
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100	100	100
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100	100	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100	100	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100	100	100
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100	100	100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100	100	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100	100	100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100	100	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100	100	100
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100	100	100
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100	100	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100	100	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100	100	100
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100	100	100
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	200	200	200	200	200	200	200
CLEANUP STANDARD							
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-p-dioxin	0.1	0.25	0.5	2	10	40	200
INTERNAL STANDARDS							
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100	100	100
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100	100	100

* **EPA-1613CS0.5** and **EPA-1613CSL** are not included in the EPA-1613CVS kit and must be ordered separately.

EPA METHOD 1613 STANDARD SOLUTIONS

Catalogue Number	Product (nonane solution)	Qty/Conc
EPA-1613LCS*	Labelled Compound Stock Solution	1.2 ml
EPA-1613CSS*	Cleanup Standard Spiking Solution	1.2 ml
EPA-1613ISS	Internal Standard Spiking Solution	1.2 ml
EPA-1613PAR*	Precision and Recovery Stock Solution	1.2 ml
EPA-1613STOCK	EPA Method 1613 Native Stock Solution	1.2 ml

NATIVE PCDDs & PCDFs	**1613LCS (ng/ml)**	**1613CSS (ng/ml)**	**1613ISS (ng/ml)**	**1613PAR (ng/ml)**	**1613STOCK (ng/ml)**
2,3,7,8-Tetrachlorodibenzo-p-dioxin	—	—	—	40	400
2,3,7,8-Tetrachlorodibenzofuran	—	—	—	40	400
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	—	—	—	200	2000
1,2,3,7,8-Pentachlorodibenzofuran	—	—	—	200	2000
2,3,4,7,8-Pentachlorodibenzofuran	—	—	—	200	2000
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	—	—	—	200	2000
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	—	—	—	200	2000
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	—	—	—	200	2000
1,2,3,4,7,8-Hexachlorodibenzofuran	—	—	—	200	2000
1,2,3,6,7,8-Hexachlorodibenzofuran	—	—	—	200	2000
1,2,3,7,8,9-Hexachlorodibenzofuran	—	—	—	200	2000
2,3,4,6,7,8-Hexachlorodibenzofuran	—	—	—	200	2000
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	—	—	—	200	2000
1,2,3,4,6,7,8-Heptachlorodibenzofuran	—	—	—	200	2000
1,2,3,4,7,8,9-Heptachlorodibenzofuran	—	—	—	200	2000
Octachlorodibenzo-p-dioxin	—	—	—	400	4000
Octachlorodibenzofuran	—	—	—	400	4000
LABELLED PCDDs & PCDFs					
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	—	—	—	—
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	100	—	—	—	—
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	—	—	—	—
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	100	—	—	—	—
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	100	—	—	—	—
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	—	—	—	—
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	—	—	—	—
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	100	—	—	—	—
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	100	—	—	—	—
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	100	—	—	—	—
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	100	—	—	—	—
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	—	—	—	—
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	100	—	—	—	—
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	100	—	—	—	—
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	200	—	—	—	—
CLEANUP STANDARD					
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-p-dioxin	—	40	—	—	—
INTERNAL STANDARDS					
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	—	200	—	—
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	—	200	—	—

* Working solutions are prepared by diluting EPA-1613LCS (in acetone), EPA-1613CSS (in nonane) and EPA-1613PAR (in acetone) 1:50 (v/v)

CS3WT

This solution, originally introduced by Wellington, allows the HRGC/HRMS operator, with one injection, to:

- Set, or confirm, PCDD and PCDF congener group windows
- Test, or confirm, 2,3,7,8-TCDD resolution
- Verify the calibration

Catalogue Number	Product (nonane solution)	Qty/Conc
CS3WT	EPA Method 1613; Calibration and Verification Solution (CS3) combined with Window Defining and 2378-TCDD Resolution Testing Congeners	500 µl

QUANTITATIVE ANALYTES		(ng/ml)
NATIVE PCDDs & PCDFs:		
2,3,7,8-Tetrachlorodibenzo-p-dioxin		10
2,3,7,8-Tetrachlorodibenzofuran		10
1,2,3,7,8-Pentachlorodibenzo-p-dioxin		50
1,2,3,7,8-Pentachlorodibenzofuran		50
2,3,4,7,8-Pentachlorodibenzofuran		50
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin		50
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin		50
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin		50
1,2,3,4,7,8-Hexachlorodibenzofuran		50
1,2,3,6,7,8-Hexachlorodibenzofuran		50
1,2,3,7,8,9-Hexachlorodibenzofuran		50
2,3,4,6,7,8-Hexachlorodibenzofuran		50
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	(WD)	50
1,2,3,4,6,7,8-Heptachlorodibenzofuran	(WD)	50
1,2,3,4,7,8,9-Heptachlorodibenzofuran	(WD)	50
Octachlorodibenzo-p-dioxin		100
Octachlorodibenzofuran		100
LABELLED PCDDs & PCDFs:		
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		100
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran		100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin		100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran		100
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran		100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin		100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin		100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		100
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran		100
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin		100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran		100
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran		100
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin		200
CLEANUP STANDARD:		
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-p-dioxin		10
INTERNAL STANDARDS:		
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		100
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin		100

SEMI-QUANTITATIVE ANALYTES	(ng/ml)
WINDOW DEFINERS:*	
1,3,6,8-Tetrachlorodibenzo-p-dioxin	10
1,2,8,9-Tetrachlorodibenzo-p-dioxin	10
1,3,6,8-Tetrachlorodibenzofuran	10
1,2,8,9-Tetrachlorodibenzofuran	10
1,2,4,7,9-Pentachlorodibenzo-p-dioxin	50
1,2,3,8,9-Pentachlorodibenzo-p-dioxin	50
1,3,4,6,8-Pentachlorodibenzofuran	50
1,2,3,8,9-Pentachlorodibenzofuran	50
1,2,4,6,7,9-Hexachlorodibenzo-p-dioxin	50
1,2,3,4,6,8-Hexachlorodibenzofuran	50
1,2,3,4,6,7,9-Heptachlorodibenzo-p-dioxin	50
2,3,7,8-TCDD RESOLUTION TESTING ISOMERS:	
1,2,3,4-Tetrachlorodibenzo-p-dioxin	5
1,2,3,7/1,2,3,8-Tetrachlorodibenzo-p-dioxin mix	5
1,2,3,9-Tetrachlorodibenzo-p-dioxin	10

(WD) - Window Definer

* 1,2,3,4,6,7-Hexachlorodibenzo-p-dioxin (last eluting Hexachlorodibenzo-p-dioxin) was not included as it co-elutes with 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin. Use the 1,2,3,4,6,7,9-Heptachlorodibenzo-p-dioxin to set the window.

* 1,2,3,4,8,9-Hexachlorodibenzofuran (last eluting Hexachlorodibenzofuran) was not included as it can interfere with 1,2,3,7,8,9-Hexachlorodibenzofuran. Use the 1,2,3,4,6,7,8-Heptachlorodibenzofuran to set the window.

HRGC/HRMS TCDD/TCDF ANALYSIS SOLUTIONS

In response to client requests, these solutions have been modified to include 2,3,7,8-TCDF. Appropriate surrogates and internal standards have also been added.

Catalogue Number	Product (nonane solution)	Qty/Conc
EPA-513CVS	EPA Method 513 Calibration and Verification Solutions CS1-CS6 (6 x 500 µl)	1 kit (6 ampoules)
513-CS0.25*	CS0.25 Custom Calibration Solution	500 µl

NATIVE TCDD & TCDF	513-CS0.25 (ng/ml)	513-CS1 (ng/ml)	513-CS2 (ng/ml)	513-CS3 (ng/ml)	513-CS4 (ng/ml)	513-CS5 (ng/ml)	513-CS6 (ng/ml)
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.25	0.1	0.5	2	10	40	200
2,3,7,8-Tetrachlorodibenzofuran	0.25	0.1	0.5	2	10	40	200
LABELLED TCDD & TCDF							
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100	100	100
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100	100	100
INTERNAL STANDARDS							
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100	100	100
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100	100	100
CLEANUP STANDARD							
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-p-dioxin	0.25	0.1	0.5	2	10	40	200
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100	100	100
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100	100	100

EPA-513LCSS	EPA Method 513 Labelled TCDD/TCDF Spiking Solution	1.2 ml
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		100 ng/ml
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran		100 ng/ml
EPA-513ISS	EPA Method 513 Internal Standard Spiking Solution	1.2 ml
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		200 ng/ml
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzofuran		200 ng/ml
EPA-513CSSA	EPA Method 513 Cleanup Standard Spiking Solution	1.2 ml
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-p-dioxin		40 ng/ml
EPA-513CSSB	EPA Method 513 Alternative Cleanup Standard Spiking Solution	1.2 ml
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		100 ng/ml
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran		100 ng/ml
EPA-513PAR	EPA Method 513 Precision and Recovery Solution	1.2 ml
2,3,7,8-Tetrachlorodibenzo-p-dioxin		40 ng/ml
2,3,7,8-Tetrachlorodibenzofuran		40 ng/ml

* **513-CS0.25** is not included in the EPA-513CVS kit and must be ordered separately.

EPA METHOD 8280 STANDARD SOLUTIONS

Catalogue Number	Product (nonane solution)	Qty/Conc
EPA-8280CVS	EPA Method 8280 Calibration and Verification Solutions CC1-CC5	1 kit (5 ampoules)
EPA-8280CC1	CC1	500 µl
EPA-8280CC2	CC2	500 µl
EPA-8280CC3	CC3 Calibration Verification	1 ml
EPA-8280CC4	CC4	500 µl
EPA-8280CC5	CC5	500 µl

NOTE: 200 µl AMPOULES OF THE CALIBRATION SOLUTIONS ARE ALSO AVAILABLE. PLEASE CONTACT WELLINGTON OR YOUR LOCAL DISTRIBUTOR FOR PRICING INFORMATION.

	8280CC1	8280CC2	8280CC3	8280CC4	8280CC5
NATIVE PCDDs & PCDFs	**(ng/µl)**	**(ng/µl)**	**(ng/µl)**	**(ng/µl)**	**(ng/µl)**
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.1	0.25	0.5	1.0	2.0
2,3,7,8-Tetrachlorodibenzofuran	0.1	0.25	0.5	1.0	2.0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.1	0.25	0.5	1.0	2.0
1,2,3,7,8-Pentachlorodibenzofuran	0.1	0.25	0.5	1.0	2.0
2,3,4,7,8-Pentachlorodibenzofuran	—	—	0.5	—	—
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	—	—	1.25	—	—
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.25	0.625	1.25	2.5	5.0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	—	—	1.25	—	—
1,2,3,4,7,8-Hexachlorodibenzofuran	—	—	1.25	—	—
1,2,3,6,7,8-Hexachlorodibenzofuran	0.25	0.625	1.25	2.5	5.0
1,2,3,7,8,9-Hexachlorodibenzofuran	—	—	1.25	—	—
2,3,4,6,7,8-Hexachlorodibenzofuran	—	—	1.25	—	—
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.25	0.625	1.25	2.5	5.0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.25	0.625	1.25	2.5	5.0
1,2,3,4,7,8,9-Heptachlorodibenzofuran	—	—	1.25	—	—
Octachlorodibenzo-p-dioxin	0.5	1.25	2.5	5.0	10.0
Octachlorodibenzofuran	0.5	1.25	2.5	5.0	10.0
INTERNAL STANDARDS					
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	0.5	0.5	0.5	0.5	0.5
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	0.5	0.5	0.5	0.5	0.5
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	0.5	0.5	0.5	0.5	0.5
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	1.0	1.0	1.0	1.0	1.0
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1.0	1.0	1.0	1.0	1.0
CLEANUP STANDARD					
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-p-dioxin	—	—	0.25	—	—
RECOVERY STANDARDS					
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	0.5	0.5	0.5	0.5	0.5
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	0.5	0.5	0.5	0.5	0.5

EPA METHOD 8280 STANDARD SOLUTIONS

Catalogue Number	Product (nonane solution)	Qty/Conc
EPA-8280IS	Internal Standard Solution	1.2 ml
EPA-8280ISB*	Additional Internal Standard Solution	1.2 ml
EPA-8280CS	Cleanup Standard Solution	1.2 ml
EPA-8280RS	Recovery Standard Solution	1.2 ml
EPA-8280MSS	Matrix Spiking Solution	1.2 ml

NATIVE PCDDs & PCDFs	8280IS (ng/µl)	8280ISB (ng/µl)	8280CS (ng/µl)	8280RS (ng/µl)	8280MSS (ng/µl)
2,3,7,8-Tetrachlorodibenzo-p-dioxin	—	—	—	—	2.5
2,3,7,8-Tetrachlorodibenzofuran	—	—	—	—	2.5
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	—	—	—	—	6.25
1,2,3,7,8-Pentachlorodibenzofuran	—	—	—	—	6.25
2,3,4,7,8-Pentachlorodibenzofuran	—	—	—	—	—
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	—	—	—	—	—
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	—	—	—	—	6.25
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	—	—	—	—	—
1,2,3,4,7,8-Hexachlorodibenzofuran	—	—	—	—	—
1,2,3,6,7,8-Hexachlorodibenzofuran	—	—	—	—	6.25
1,2,3,7,8,9-Hexachlorodibenzofuran	—	—	—	—	—
2,3,4,6,7,8-Hexachlorodibenzofuran	—	—	—	—	—
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	—	—	—	—	6.25
1,2,3,4,6,7,8-Heptachlorodibenzofuran	—	—	—	—	6.25
1,2,3,4,7,8,9-Heptachlorodibenzofuran	—	—	—	—	—
Octachlorodibenzo-p-dioxin	—	—	—	—	12.5
Octachlorodibenzofuran	—	—	—	—	12.5
INTERNAL STANDARDS					
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	5.0	—	—	—	—
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	5.0	—	—	—	—
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	5.0	—	—	—	—
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	10.0	—	—	—	—
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10.0	—	—	—	—
CLEANUP STANDARD					
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-p-dioxin	—	—	5.0	—	—
RECOVERY STANDARDS					
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	—	—	5.0	—
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	—	—	5.0	—
ADDITIONAL INTERNAL STANDARDS					
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	5.0	—	—	—
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	—	5.0	—	—	—
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	—	5.0	—	—	—
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	10.0	—	—	—
Octachloro[$^{13}C_{12}$]dibenzofuran	—	10.0	—	—	—

* Not required by US EPA Method 8280

EPA METHOD 8290 STANDARD SOLUTIONS

Catalogue Number	Product (nonane solution)	Qty/Conc
EPA-8290HRCC1-5	EPA Method 8290 High Resolution Calibration Solutions (HRCC1-HRCC5)	1 kit (5 ampoules)
EPA-8290HRCC0.25*	HRCC0.25 Supplemental Calibration Solution	500 µl
EPA-8290HRCC0.5*	HRCC0.5 Supplemental Calibration Solution	500 µl
EPA-8290HRCC1	HRCC1	500 µl
EPA-8290HRCC2	HRCC2	500 µl
EPA-8290HRCC3	HRCC3 Calibration Verification	1 ml
EPA-8290HRCC4	HRCC4	500 µl
EPA-8290HRCC5	HRCC5	500 µl

NOTE: 200 µl AMPOULES OF THE CALIBRATION SOLUTIONS ARE ALSO AVAILABLE. PLEASE CONTACT WELLINGTON OR YOUR LOCAL DISTRIBUTOR FOR PRICING INFORMATION.

NATIVE PCDDs & PCDFs	8290-HRCC0.25 (ng/ml)	8290-HRCC0.5 (ng/ml)	8290-HRCC1 (ng/ml)	8290-HRCC2 (ng/ml)	8290-HRCC3 (ng/ml)	8290-HRCC4 (ng/ml)	8290-HRCC5 (ng/ml)
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.25	0.5	1.0	2.5	10	50	200
2,3,7,8-Tetrachlorodibenzofuran	0.25	0.5	1.0	2.5	10	50	200
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.625	1.25	2.5	6.25	25	125	500
1,2,3,7,8-Pentachlorodibenzofuran	0.625	1.25	2.5	6.25	25	125	500
2,3,4,7,8-Pentachlorodibenzofuran	0.625	1.25	2.5	6.25	25	125	500
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.625	1.25	2.5	6.25	25	125	500
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.625	1.25	2.5	6.25	25	125	500
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.625	1.25	2.5	6.25	25	125	500
1,2,3,4,7,8-Hexachlorodibenzofuran	0.625	1.25	2.5	6.25	25	125	500
1,2,3,6,7,8-Hexachlorodibenzofuran	0.625	1.25	2.5	6.25	25	125	500
1,2,3,7,8,9-Hexachlorodibenzofuran	0.625	1.25	2.5	6.25	25	125	500
2,3,4,6,7,8-Hexachlorodibenzofuran	0.625	1.25	2.5	6.25	25	125	500
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.625	1.25	2.5	6.25	25	125	500
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.625	1.25	2.5	6.25	25	125	500
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.625	1.25	2.5	6.25	25	125	500
Octachlorodibenzo-p-dioxin	1.25	2.5	5.0	12.5	50	250	1000
Octachlorodibenzofuran	1.25	2.5	5.0	12.5	50	250	1000
INTERNAL STANDARDS							
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	50	50	50	50	50	50	50
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	50	50	50	50	50	50	50
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	50	50	50	50	50	50	50
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	50	50	50	50	50	50	50
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	125	125	125	125	125	125	125
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	125	125	125	125	125	125	125
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	125	125	125	125	125	125	125
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	125	125	125	125	125	125	125
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	250	250	250	250	250	250	250
RECOVERY STANDARDS							
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	50	50	50	50	50	50	50
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	125	125	125	125	125	125	125

* **EPA-8290HRCC0.25** and **EPA-8290HRCC0.5** are not included in the EPA-8290HRCC1-5 kit and must be ordered separately.

EPA METHOD 8290 STANDARD SOLUTIONS

Catalogue Number	Product (nonane solution)	Qty/Conc
EPA-8290SFS	Sample Fortification Solution	1.2 ml
EPA-8290RSS	Recovery Standard Solution	1.2 ml
EPA-8290MSS	Matrix Spiking Solution	1.2 ml
EPA-8290STN	Native Stock PCDDs and PCDFs	1.2 ml

NATIVE PCDDs & PCDFs	8290SFS (ng/ml)	8290RSS (ng/ml)	8290MSS (ng/ml)	8290STN (µg/ml)
2,3,7,8-Tetrachlorodibenzo-p-dioxin	—	—	100	1.0
2,3,7,8-Tetrachlorodibenzofuran	—	—	100	1.0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	—	—	250	2.5
1,2,3,7,8-Pentachlorodibenzofuran	—	—	250	2.5
2,3,4,7,8-Pentachlorodibenzofuran	—	—	250	2.5
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	—	—	250	2.5
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	—	—	250	2.5
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	—	—	250	2.5
1,2,3,4,7,8-Hexachlorodibenzofuran	—	—	250	2.5
1,2,3,6,7,8-Hexachlorodibenzofuran	—	—	250	2.5
1,2,3,7,8,9-Hexachlorodibenzofuran	—	—	250	2.5
2,3,4,6,7,8-Hexachlorodibenzofuran	—	—	250	2.5
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	—	—	250	2.5
1,2,3,4,6,7,8-Heptachlorodibenzofuran	—	—	250	2.5
1,2,3,4,7,8,9-Heptachlorodibenzofuran	—	—	250	2.5
Octachlorodibenzo-p-dioxin	—	—	500	5.0
Octachlorodibenzofuran	—	—	500	5.0
INTERNAL STANDARDS				
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	—	—	—
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	100	—	—	—
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	—	—	—
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	100	—	—	—
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	250	—	—	—
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	250	—	—	—
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	250	—	—	—
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	250	—	—	—
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	500	—	—	—
RECOVERY STANDARDS				
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	500	—	—
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	500	—	—

EPA METHOD 23 STANDARD SOLUTIONS

Catalogue Number	Product (nonane solution)	Qty/Conc
EPA-23CS1-5	EPA Method 23 HRGC/HRMS Calibration Solutions CS1-CS5	1 kit (5 ampoules)
EPA-23CS1	CS1	500 µl
EPA-23CS2	CS2	500 µl
EPA-23CS3	CS3 Calibration Verification	1 ml
EPA-23CS4	CS4	500 µl
EPA-23CS5	CS5	500 µl

NOTE: 200 µl AMPOULES OF THE CALIBRATION SOLUTIONS ARE ALSO AVAILABLE. PLEASE CONTACT WELLINGTON OR YOUR LOCAL DISTRIBUTOR FOR PRICING INFORMATION.

NATIVE PCDDs & PCDFs	23CS1 (ng/ml)	23CS2 (ng/ml)	23CS3 (ng/ml)	23CS4 (ng/ml)	23CS5 (ng/ml)
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.5	1	5	50	100
2,3,7,8-Tetrachlorodibenzofuran	0.5	1	5	50	100
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	2.5	5	25	250	500
1,2,3,7,8-Pentachlorodibenzofuran	2.5	5	25	250	500
2,3,4,7,8-Pentachlorodibenzofuran	2.5	5	25	250	500
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	2.5	5	25	250	500
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	2.5	5	25	250	500
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	2.5	5	25	250	500
1,2,3,4,7,8-Hexachlorodibenzofuran	2.5	5	25	250	500
1,2,3,6,7,8-Hexachlorodibenzofuran	2.5	5	25	250	500
1,2,3,7,8,9-Hexachlorodibenzofuran	2.5	5	25	250	500
2,3,4,6,7,8-Hexachlorodibenzofuran	2.5	5	25	250	500
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	2.5	5	25	250	500
1,2,3,4,6,7,8-Heptachlorodibenzofuran	2.5	5	25	250	500
1,2,3,4,7,8,9-Heptachlorodibenzofuran	2.5	5	25	250	500
Octachlorodibenzo-p-dioxin	5.0	10	50	500	1000
Octachlorodibenzofuran	5.0	10	50	500	1000
INTERNAL STANDARDS					
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	200	200	200	200	200
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	100	100	100	100	100
SURROGATE STANDARDS					
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-p-dioxin	0.5	1	5	50	100
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	2.5	5	25	250	500
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	2.5	5	25	250	500
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	2.5	5	25	250	500
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	2.5	5	25	250	500
ALTERNATIVE STANDARD					
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	2.5	5	25	250	500
RECOVERY STANDARDS					
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	100	100	100

EPA METHOD 23 STANDARD SOLUTIONS

Catalogue Number	Product (nonane solution)	Qty/Conc
EPA-23IS	Internal Standard Solution	1.2 ml
EPA-23ISS	Internal Standard Stock Solution	1.2 ml
EPA-23SS	Surrogate Standard Solution	1.2 ml
EPA-23SSS	Surrogate Standard Stock Solution	1.2 ml
EPA-23RS	Recovery Standard Solution	1.2 ml
EPA-23AS	Alternative Standard	1.2 ml

INTERNAL STANDARDS	**23IS (ng/ml)**	**23ISS (µg/ml)**	**23SS (ng/ml)**	**23SSS (µg/ml)**	**23RS (ng/ml)**	**23AS (ng/ml)**
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	1.0	—	—	—	—
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	1.0	—	—	—	—
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	1.0	—	—	—	—
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	1.0	—	—	—	—
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	200	2.0	—	—	—	—
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	100	1.0	—	—	—	—
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	100	1.0	—	—	—	—
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	100	1.0	—	—	—	—
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	100	1.0	—	—	—	—
SURROGATE STANDARDS						
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-p-dioxin	—	—	100	1.0	—	—
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	—	—	100	1.0	—	—
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	—	100	1.0	—	—
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	—	—	100	1.0	—	—
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	—	—	100	1.0	—	—
ALTERNATIVE STANDARD						
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	—	—	—	—	—	250
RECOVERY STANDARDS						
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	—	—	—	500	—
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	—	—	—	500	—

EUROPEAN METHOD EN-1948 STANDARD SOLUTIONS

Catalogue Number	Product (nonane solution)	Qty/Conc
EN-1948CVS	European Method EN-1948 Calibration and Verification Solutions CS1-CS6	1 kit (6 ampoules)
EN-1948CSL*	CSL Extended Calibration/Low Level	500 µl
EN-1948CS1	CS1	500 µl
EN-1948CS2	CS2	500 µl
EN-1948CS3	CS3	500 µl
EN-1948CS4	CS4	500 µl
EN-1948CS5	CS5	500 µl
EN-1948CS6	CS6	500 µl

NOTE: 200 µl AMPOULES OF THE CALIBRATION SOLUTIONS ARE ALSO AVAILABLE. PLEASE CONTACT WELLINGTON OR YOUR LOCAL DISTRIBUTOR FOR PRICING INFORMATION.

NATIVE PCDDs & PCDFs	1948CSL (pg/µl)	1948CS1 (pg/µl)	1948CS2 (pg/µl)	1948CS3 (pg/µl)	1948CS4 (pg/µl)	1948CS5 (pg/µl)	1948CS6 (pg/µl)
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.04	0.2	0.8	4	16	80	320
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.08	0.4	1.6	8	32	160	640
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.08	0.4	1.6	8	32	160	640
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.08	0.4	1.6	8	32	160	640
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.08	0.4	1.6	8	32	160	640
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.16	0.8	3.2	16	64	320	1280
Octachlorodibenzo-p-dioxin	0.16	0.8	3.2	16	64	320	1280
2,3,7,8-Tetrachlorodibenzofuran	0.04	0.2	0.8	4	16	80	320
1,2,3,7,8-Pentachlorodibenzofuran	0.08	0.4	1.6	8	32	160	640
2,3,4,7,8-Pentachlorodibenzofuran	0.08	0.4	1.6	8	32	160	640
1,2,3,4,7,8-Hexachlorodibenzofuran	0.08	0.4	1.6	8	32	160	640
1,2,3,6,7,8-Hexachlorodibenzofuran	0.08	0.4	1.6	8	32	160	640
1,2,3,7,8,9-Hexachlorodibenzofuran	0.08	0.4	1.6	8	32	160	640
2,3,4,6,7,8-Hexachlorodibenzofuran	0.08	0.4	1.6	8	32	160	640
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.16	0.8	3.2	16	64	320	1280
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.16	0.8	3.2	16	64	320	1280
Octachlorodibenzofuran	0.16	0.8	3.2	16	64	320	1280
SAMPLING STANDARDS							
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	16	16	16	16	16	16	16
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	16	16	16	16	16	16	16
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	32	32	32	32	32	32	32
EXTRACTION STANDARDS							
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	16	16	16	16	16	16	16
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	16	16	16	16	16	16	16
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	16	16	16	16	16	16	16
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	16	16	16	16	16	16	16
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	16	16	16	16	16	16	16
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	16	16	16	16	16	16	16
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	16	16	16	16	16	16	16
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	16	16	16	16	16	16	16
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	16	16	16	16	16	16	16
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	32	32	32	32	32	32	32
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	32	32	32	32	32	32	32
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	32	32	32	32	32	32	32
Octachloro[$^{13}C_{12}$]dibenzofuran	32	32	32	32	32	32	32
SYRINGE STANDARDS							
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	16	16	16	16	16	16	16
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	16	16	16	16	16	16	16

* **EN-1948CSL** is not included in the EN-1948CVS kit and must be ordered separately.

EUROPEAN METHOD EN-1948 STANDARD SOLUTIONS

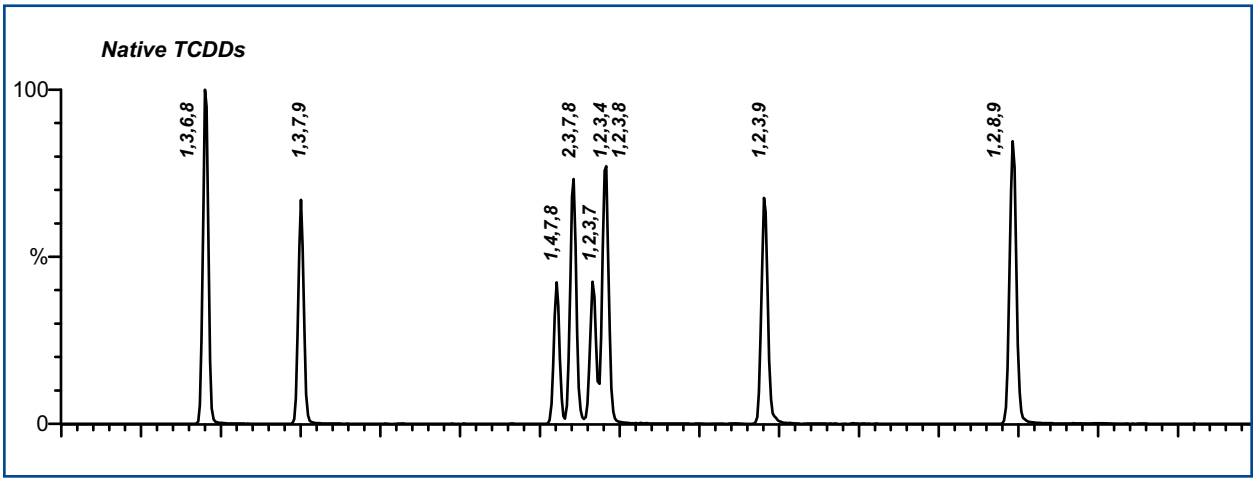
Catalogue Number	Product (nonane solution)	Qty/Conc
EN-1948ES	Extraction Standard Solution	1.2 ml
EN-1948IS	Syringe Standard Solution	1.2 ml
EN-1948SS	Sampling Standard Solution	1.2 ml
EN-1948STK	PCDD/PCDF Solution/Mixture	1.2 ml

NATIVE PCDDs & PCDFs	**1948ES (pg/µl)**	**1948IS (pg/µl)**	**1948SS (pg/µl)**	**1948STK (µg/ml)**
2,3,7,8-Tetrachlorodibenzo-p-dioxin	—	—	—	0.50
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	—	—	—	1.0
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	—	—	—	1.0
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	—	—	—	1.0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	—	—	—	1.0
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	—	—	—	2.0
Octachlorodibenzo-p-dioxin	—	—	—	2.0
2,3,7,8-Tetrachlorodibenzofuran	—	—	—	0.50
1,2,3,7,8-Pentachlorodibenzofuran	—	—	—	1.0
2,3,4,7,8-Pentachlorodibenzofuran	—	—	—	1.0
1,2,3,4,7,8-Hexachlorodibenzofuran	—	—	—	1.0
1,2,3,6,7,8-Hexachlorodibenzofuran	—	—	—	1.0
1,2,3,7,8,9-Hexachlorodibenzofuran	—	—	—	1.0
2,3,4,6,7,8-Hexachlorodibenzofuran	—	—	—	1.0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	—	—	—	2.0
1,2,3,4,7,8,9-Heptachlorodibenzofuran	—	—	—	2.0
Octachlorodibenzofuran	—	—	—	2.0
SAMPLING STANDARDS				
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	—	—	200	—
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	—	—	200	—
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	—	—	400	—
EXTRACTION STANDARDS				
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	200	—	—	—
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	200	—	—	—
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	200	—	—	—
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	200	—	—	—
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	200	—	—	—
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	200	—	—	—
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	200	—	—	—
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	200	—	—	—
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	200	—	—	—
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	400	—	—	—
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	400	—	—	—
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	400	—	—	—
Octachloro[$^{13}C_{12}$]dibenzofuran	400	—	—	—
SYRINGE STANDARDS				
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	800	—	—
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	800	—	—

CAPILLARY COLUMN PERFORMANCE TEST MIXTURES

Catalogue Number	Product (nonane solution)	Qty/Conc
5CWDS	Window Defining Mixture for DB-5, BP5, HP-2, Rtx-5, SPB-5, or Equivalent Capillary Columns	1.2 ml
1,3,6,8-Tetrachlorodibenzo-p-dioxin		1.3 µg/ml
1,2,8,9-Tetrachlorodibenzo-p-dioxin		1.2 µg/ml
1,3,6,8-Tetrachlorodibenzofuran		1.0 µg/ml
1,2,8,9-Tetrachlorodibenzofuran		1.0 µg/ml
1,2,4,7,9-Pentachlorodibenzo-p-dioxin		1.0 µg/ml
1,2,3,8,9-Pentachlorodibenzo-p-dioxin		1.2 µg/ml
1,3,4,6,8-Pentachlorodibenzofuran		1.0 µg/ml
1,2,3,8,9-Pentachlorodibenzofuran		1.0 µg/ml
1,2,4,6,7,9-Hexachlorodibenzo-p-dioxin		1.0 µg/ml
1,2,3,4,6,7-Hexachlorodibenzo-p-dioxin		1.0 µg/ml
1,2,3,4,6,8-Hexachlorodibenzofuran		1.0 µg/ml
1,2,3,4,8,9-Hexachlorodibenzofuran		1.0 µg/ml
1,2,3,4,6,7,9-Heptachlorodibenzo-p-dioxin		1.0 µg/ml
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin		1.0 µg/ml
1,2,3,4,6,7,8-Heptachlorodibenzofuran		1.0 µg/ml
1,2,3,4,7,8,9-Heptachlorodibenzofuran		1.0 µg/ml
Octachlorodibenzo-p-dioxin		1.0 µg/ml
Octachlorodibenzofuran		1.0 µg/ml
5TCDD	2378-TCDD Isomer Specificity Test Mixture for DB-5, BP5, HP-2, Rtx-5, SPB-5, or Equivalent Columns	1.2 ml
1,2,3,4-Tetrachlorodibenzo-p-dioxin		0.5 µg/ml
1,2,3,7 and 1,2,3,8-Tetrachlorodibenzo-p-dioxin mix		0.5 µg/ml
2,3,7,8-Tetrachlorodibenzo-p-dioxin		1.0 µg/ml
1,2,3,9-Tetrachlorodibenzo-p-dioxin		1.0 µg/ml
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		0.5 µg/ml
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		0.5 µg/ml
225TCDF	2378-TCDF Isomer Specificity Test Mixture for DB-225, BP225, HP-225, Rtx-225, SPB-225, or Equivalent Columns	1.2 ml
1,3,6,8-Tetrachlorodibenzofuran		1.0 µg/ml
2,3,4,7-Tetrachlorodibenzofuran		1.0 µg/ml
2,3,7,8-Tetrachlorodibenzofuran		2.0 µg/ml
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran		0.5 µg/ml
1,2,3,9-Tetrachlorodibenzofuran		1.3 µg/ml
1,2,8,9-Tetrachlorodibenzofuran		1.2 µg/ml

Catalogue Number	Product (nonane solution)	Qty/Conc
5TDWD	Combined Window Defining/TCDD Resolution Testing Mixture for DB-5, BP5, HP-2, Rtx-5, SPB-5, or Equivalent Columns	1.2 ml
WINDOW DEFINERS		
1,3,6,8-Tetrachlorodibenzo-p-dioxin		130 ng/ml
1,2,8,9-Tetrachlorodibenzo-p-dioxin		120 ng/ml
1,3,6,8-Tetrachlorodibenzofuran		100 ng/ml
1,2,8,9-Tetrachlorodibenzofuran		100 ng/ml
1,2,4,7,9-Pentachlorodibenzo-p-dioxin		100 ng/ml
1,2,3,8,9-Pentachlorodibenzo-p-dioxin		120 ng/ml
1,3,4,6,8-Pentachlorodibenzofuran		100 ng/ml
1,2,3,8,9-Pentachlorodibenzofuran		100 ng/ml
1,2,4,6,7,9-Hexachlorodibenzo-p-dioxin		100 ng/ml
1,2,3,4,6,7-Hexachlorodibenzo-p-dioxin		100 ng/ml
1,2,3,4,8,9-Hexachlorodibenzofuran		100 ng/ml
1,2,3,4,6,8-Hexachlorodibenzofuran		100 ng/ml
1,2,3,4,6,7,9-Heptachlorodibenzo-p-dioxin		100 ng/ml
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin		100 ng/ml
1,2,3,4,6,7,8-Heptachlorodibenzofuran		100 ng/ml
1,2,3,4,7,8,9-Heptachlorodibenzofuran		100 ng/ml
Octachlorodibenzo-p-dioxin		100 ng/ml
Octachlorodibenzofuran		100 ng/ml
2378-TCDD RESOLUTION TESTING ISOMERS		
1,2,3,4-Tetrachlorodibenzo-p-dioxin		50 ng/ml
1,2,3,7 and 1,2,3,8-Tetrachlorodibenzo-p-dioxin mix		50 ng/ml
2,3,7,8-Tetrachlorodibenzo-p-dioxin		100 ng/ml
1,2,3,9-Tetrachlorodibenzo-p-dioxin		100 ng/ml
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		50 ng/ml
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		50 ng/ml
OTHERS		
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin		50 ng/ml



GC/MS DATA: Native TCDDs on a 60m SP-2331 Column.

CAPILLARY COLUMN PERFORMANCE TEST MIXTURES

Catalogue Number	Product (nonane solution)	Qty/Conc
TDTFWD	Combined Window Defining and Resolution Testing Mixture for 3 Capillary Columns.	1.2 ml

Concentrations for each compound are listed in brackets (ng/ml ± 10%)[a]

WINDOW DEFINING STANDARDS

5/2[b]		2331[c]/225[d]	
FIRST	**LAST**	**FIRST**	**LAST**
1368-TCDD (65)	1289-TCDD (60)	1368-TCDD (65)	1289-TCDD (60)
1368-TCDF (100)	1289-TCDF (100)	1368-TCDF (100)	1289-TCDF (100)
12479-PeCDD (50)	12389-PeCDD (60)	12479-PeCDD (50)	12389-PeCDD (60)
13468-PeCDF (50)	12389-PeCDF (50)	13468-PeCDF (50)	23467-PeCDF (50)
124679-HxCDD (50)	123467-HxCDD (50)	124679-HxCDD (50)	123467-HxCDD (50)
123468-HxCDF (50)	123489-HxCDF (50)	123468-HxCDF (50)	234678-HxCDF (50)
1234679-HpCDD (50)	1234678-HpCDD (50)	1234679-HpCDD (50)	1234678-HpCDD (50)
1234678-HpCDF (50)	1234789-HpCDF (50)	1234678-HpCDF (50)	1234789-HpCDF (50)
OCDD (50)		OCDD (50)	
OCDF (50)		OCDF (50)	

RESOLUTION TESTING MIXTURES

	5/2[b]	2331[c]	225[d]
2378-TCDD	1234-TCDD (25) 1237 and 1238-TCDD (25)[e] 2378-TCDD (50) 1239-TCDD (50)	1478-TCDD (25) 2378-TCDD (50) 1237 and1238-TCDD (25)[e] 1234-TCDD (25)	1478-TCDD (25) 2378-TCDD (50) 1237 and 1238-TCDD (25)[e] 1234-TCDD (25)
2378-TCDF	2347-TCDF/ 2348-TCDF/ 2378-TCDF (not resolved)	1269-TCDF (50) 2378-TCDF (100) 2348-TCDF (50)	2347-TCDF (50) 2378-TCDF (100) 1239-TCDF (50)

OTHER PCDDs AND PCDFs INCLUDED

12378-PeCDD (50)	123478-HxCDD (50)	123478-HxCDF (50)	$^{13}C_{12}$-1234-TCDD (25)
12378-PeCDF (50)	123678-HxCDD (50)	123678-HxCDF (50)	$^{13}C_{12}$-2378-TCDD (25)
23478-PeCDF (50)	123789-HxCDD (50)	123789-HxCDF (50)	$^{13}C_{12}$-2378-TCDF (25)
			$^{13}C_{12}$-123789-HxCDD (50)

a Maximum percent relative combined uncertainty of weights and volumes
b 5/2 - DB-5, BP5, HP-2, Rtx-5, SPB-5 or equivalent capillary column
c 2331 - SP-2331, Rtx-2330 or equivalent capillary column
d 225 - DB-225, BP225, HP-225, Rtx-225, SPB-225 or equivalent capillary column
e Total concentration of both isomers

INDIVIDUAL PCDDs & PCDFs: NATIVE and MASS-LABELLED

Wellington now offers the native and mass-labelled chlorinated dioxin and furan congeners listed on the following pages. Note that 5 additional ^{13}C-labelled PCDDs have been added since our last catalogue.

These are presented in the following order:

Native Chlorinated Dibenzo-p-dioxins (PCDDs)

Native Chlorinated Dibenzofurans (PCDFs)

Mass-Labelled PCDDs

Mass-Labelled PCDFs

All of the above compounds have been synthesized using one-product synthetic routes wherever possible and purified to greater than 98% using a variety of methods.

Their structures, chemical purities and, as appropriate, isotopic purities have been confirmed using various analytical techniques. This data is included in the Certificates of Analysis (CofAs).

Solutions of these compounds were accurately prepared using the protocols outlined in the introduction, with a percent combined relative uncertainty of ± 5%.

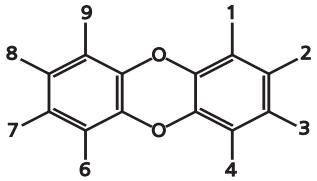
In addition, the 2,3,7,8-substituted PCDDs and PCDFs are certified and traceable to a number of interlaboratory studies carried out since 1991.

For PCDD and PCDF congeners that are not included in these lists, or for solutions in other solvents, please contact **Wellington** or your local distributor.

NATIVE CHLORINATED DIBENZO-p-DIOXINS (PCDDs)

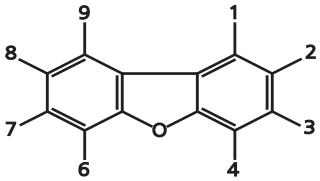
Catalogue Number	Product (toluene or nonane solution)	Qty/Conc	
DD-0-S	Dibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-1-S	1-Chlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-2-S	2-Chlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-23-S	2,3-Dichlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-27-S	2,7-Dichlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-28-S	2,8-Dichlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-123-S	1,2,3-Trichlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-124-S	1,2,4-Trichlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-237-S	2,3,7-Trichlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-1234-S	1,2,3,4-Tetrachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-1247/8-S	1,2,4,7/1,2,4,8-Tetrachlorodibenzo-p-dioxin mix	1.2 ml	50 µg/ml
DD-1278-S	1,2,7,8-Tetrachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-1289-S	1,2,8,9-Tetrachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-1368-S	1,3,6,8-Tetrachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-1378-S	1,3,7,8-Tetrachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-1379-S	1,3,7,9-Tetrachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-1478-S	1,4,7,8-Tetrachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-2378-S	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-12378-S	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-12478-S	1,2,4,7,8-Pentachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-123467-S	1,2,3,4,6,7-Hexachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-123478-S	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-123678-S	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-123789-S	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-124679-S	1,2,4,6,7,9-Hexachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-1234678-S	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml
DD-12346789-S	Octachlorodibenzo-p-dioxin	1.2 ml	50 µg/ml

NOTE: Custom solutions of some of these compounds in other solvents, such as DMSO, methanol or acetone, may also be available.
For PCDD congeners that are not included in this list, or for the availability of crystalline material, please contact **Wellington** or your local distributor.



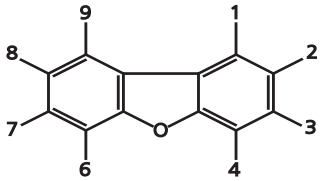
NATIVE CHLORINATED DIBENZOFURANS (PCDFs)

Catalogue Number	Product (toluene or nonane solution)	Qty/Conc	
DF-0-S	Dibenzofuran	1.2 ml	50 µg/ml
DF-2-S	2-Chlorodibenzofuran	1.2 ml	50 µg/ml
DF-4-S	4-Chlorodibenzofuran	1.2 ml	50 µg/ml
DF-23-S	2,3-Dichlorodibenzofuran	1.2 ml	50 µg/ml
DF-24-S	2,4-Dichlorodibenzofuran	1.2 ml	50 µg/ml
DF-26-S	2,6-Dichlorodibenzofuran	1.2 ml	50 µg/ml
DF-27-S	2,7-Dichlorodibenzofuran	1.2 ml	50 µg/ml
DF-28-S	2,8-Dichlorodibenzofuran	1.2 ml	50 µg/ml
DF-136-S	1,3,6-Trichlorodibenzofuran	1.2 ml	50 µg/ml
DF-138-S	1,3,8-Trichlorodibenzofuran	1.2 ml	50 µg/ml
DF-146-S	1,4,6-Trichlorodibenzofuran	1.2 ml	50 µg/ml
DF-147-S	1,4,7-Trichlorodibenzofuran	1.2 ml	50 µg/ml
DF-149-S	1,4,9-Trichlorodibenzofuran	1.2 ml	50 µg/ml
DF-234-S	2,3,4-Trichlorodibenzofuran	1.2 ml	50 µg/ml
DF-236-S	2,3,6-Trichlorodibenzofuran	1.2 ml	50 µg/ml
DF-238-S	2,3,8-Trichlorodibenzofuran	1.2 ml	50 µg/ml
DF-246-S	2,4,6-Trichlorodibenzofuran	1.2 ml	50 µg/ml
DF-247-S	2,4,7-Trichlorodibenzofuran	1.2 ml	50 µg/ml
DF-248-S	2,4,8-Trichlorodibenzofuran	1.2 ml	50 µg/ml
DF-267-S	2,6,7-Trichlorodibenzofuran	1.2 ml	50 µg/ml
DF-1236-S	1,2,3,6-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1238-S	1,2,3,8-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1246-S	1,2,4,6-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1247-S	1,2,4,7-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1248-S	1,2,4,8-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1267-S	1,2,6,7-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1278-S	1,2,7,8-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1279-S	1,2,7,9-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1347-S	1,3,4,7-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1348-S	1,3,4,8-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml



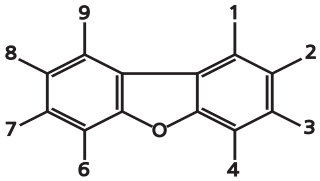
NATIVE CHLORINATED DIBENZOFURANS (PCDFs)

Catalogue Number	Product (toluene or nonane solution)	Qty/Conc	
DF-1349-S	1,3,4,9-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1367-S	1,3,6,7-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1368-S	1,3,6,8-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1369-S	1,3,6,9-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1378-S	1,3,7,8-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1467-S	1,4,6,7-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1478-S	1,4,7,8-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-2346-S	2,3,4,6-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-2347-S	2,3,4,7-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-2348-S	2,3,4,8-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-2368-S	2,3,6,8-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-2378-S	2,3,7,8-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-2467-S	2,4,6,7-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-2468-S	2,4,6,8-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-3467-S	3,4,6,7-Tetrachlorodibenzofuran	1.2 ml	50 µg/ml
DF-12347-S	1,2,3,4,7-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-12348-S	1,2,3,4,8-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-12367-S	1,2,3,6,7-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-12378-S	1,2,3,7,8-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-12379-S	1,2,3,7,9-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-12389-S	1,2,3,8,9-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-12467-S	1,2,4,6,7-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-12468-S	1,2,4,6,8-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-12478-S	1,2,4,7,8-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-13467-S	1,3,4,6,7-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-13478-S	1,3,4,7,8-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-13479-S	1,3,4,7,9-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-13678-S	1,3,6,7,8-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-23467-S	2,3,4,6,7-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-23469-S	2,3,4,6,9-Pentachlorodibenzofuran (or 1,4,6,7,8)	1.2 ml	50 µg/ml
DF-23478-S	2,3,4,7,8-Pentachlorodibenzofuran	1.2 ml	50 µg/ml
DF-123467-S	1,2,3,4,6,7-Hexachlorodibenzofuran	1.2 ml	50 µg/ml

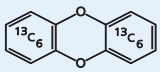
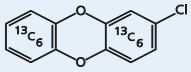
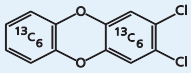
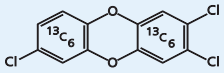
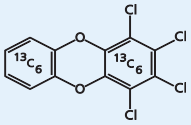
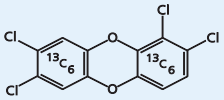
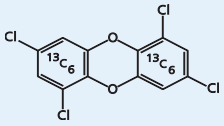
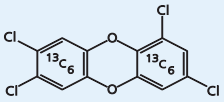
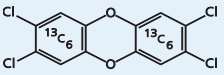
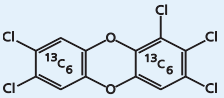


Catalogue Number	Product (toluene or nonane solution)	Qty/Conc	
DF-123468-S	1,2,3,4,6,8-Hexachlorodibenzofuran	1.2 ml	50 µg/ml
DF-123478-S	1,2,3,4,7,8-Hexachlorodibenzofuran	1.2 ml	50 µg/ml
DF-123489-S	1,2,3,4,8,9-Hexachlorodibenzofuran	1.2 ml	50 µg/ml
DF-123678-S	1,2,3,6,7,8-Hexachlorodibenzofuran	1.2 ml	50 µg/ml
DF-123689-S	1,2,3,6,8,9-Hexachlorodibenzofuran	1.2 ml	50 µg/ml
DF-123789-S	1,2,3,7,8,9-Hexachlorodibenzofuran	1.2 ml	50 µg/ml
DF-124678-S	1,2,4,6,7,8-Hexachlorodibenzofuran	1.2 ml	50 µg/ml
DF-234678-S	2,3,4,6,7,8-Hexachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1234678-S	1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1234689-S	1,2,3,4,6,8,9-Heptachlorodibenzofuran	1.2 ml	50 µg/ml
DF-1234789-S	1,2,3,4,7,8,9-Heptachlorodibenzofuran	1.2 ml	50 µg/ml
DF-12346789-S	Octachlorodibenzofuran	1.2 ml	50 µg/ml

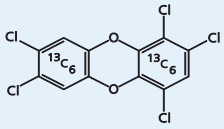
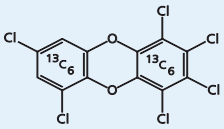
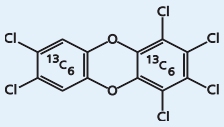
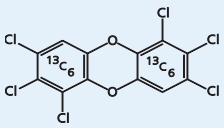
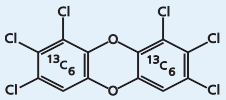
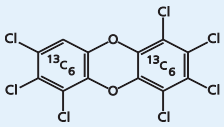
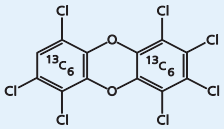
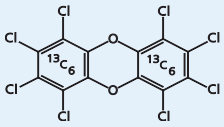
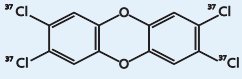
NOTE: Custom solutions of some of these compounds in other solvents, such as DMSO, methanol or acetone, may also be available.
For PCDF congeners that are not included in this list, or for the availability of crystalline material, please contact **Wellington** or your local distributor.



MASS-LABELLED CHLORINATED DIBENZO-p-DIOXINS

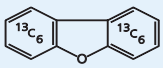
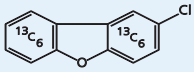
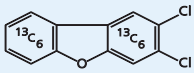
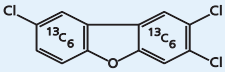
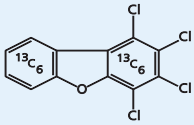
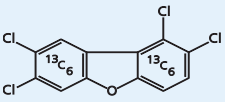
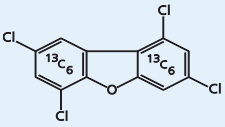
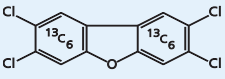
Catalogue Number		Product
MDD-0		[$^{13}C_{12}$]Dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-2		2-Chloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-23		2,3-Dichloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-237		2,3,7-Trichloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-1234		1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-1278		1,2,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-1368		1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-1378		1,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-2378		2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-12378		1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene

***** Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

Catalogue Number		Product
MDD-12478		1,2,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-123468		1,2,3,4,6,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-123478		1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-123678		1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-123789		1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-1234678		1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-1234679		1,2,3,4,6,7,9-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDD-12346789		Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MCDD-2378		2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene (isotopic purity; 94 to 95%)

* Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

MASS-LABELLED CHLORINATED DIBENZOFURANS

Catalogue Number		Product
MDF-0		[$^{13}C_{12}$]Dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-2		2-Chloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-23		2,3-Dichloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-238		2,3,8-Trichloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-1234		1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-1278		1,2,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-1368		1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-2378		2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene

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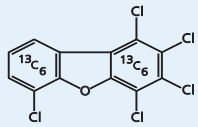
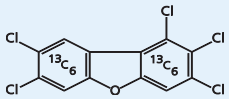
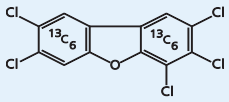
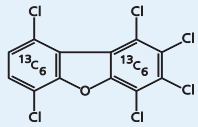
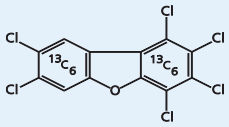
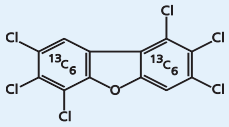
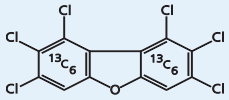
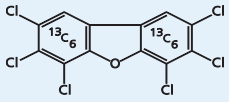
Catalogue Number		Product
MDF-12346		1,2,3,4,6-Pentachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-12378		1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-23478		2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-123469		1,2,3,4,6,9-Hexachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-123478		1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-123678		1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-123789		1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-234678		2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene

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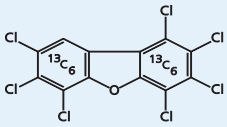
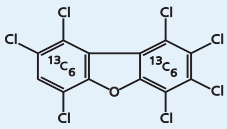
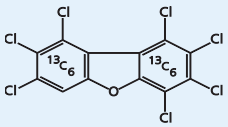
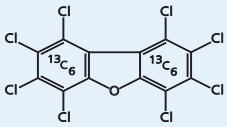
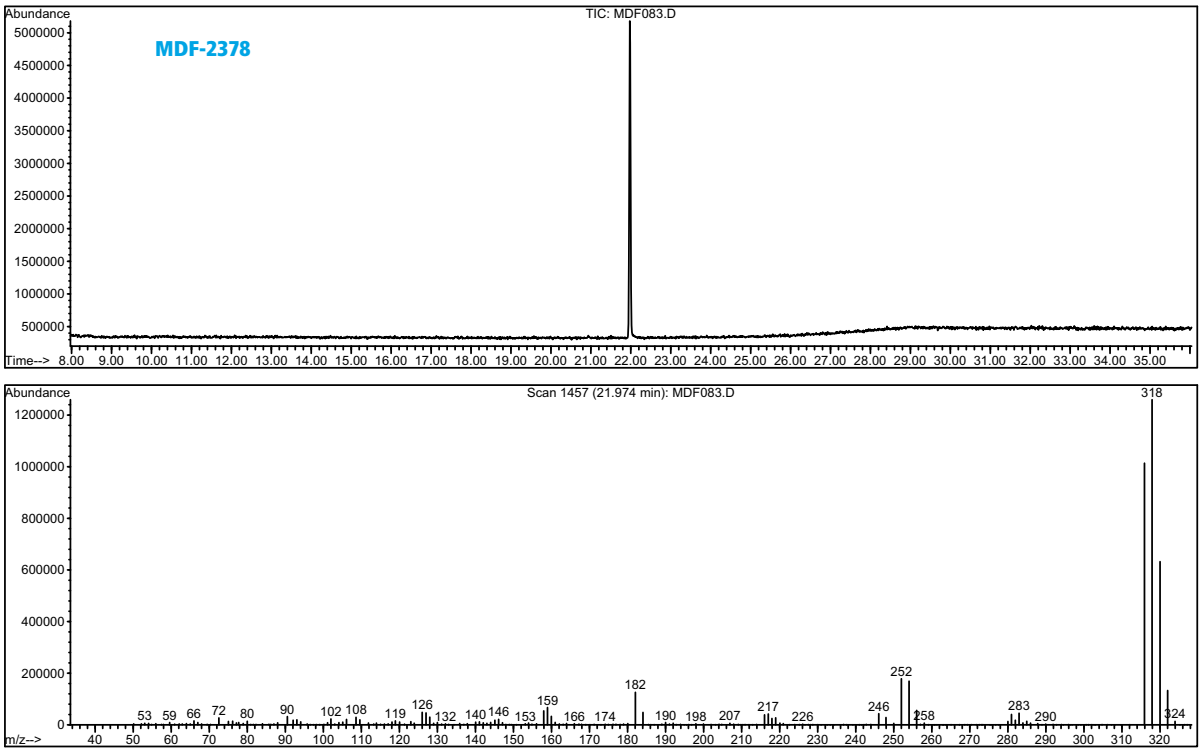
MASS-LABELLED CHLORINATED DIBENZOFURANS

Catalogue Number		Product
MDF-1234678		1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-1234689		1,2,3,4,6,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-1234789		1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MDF-12346789		Octachloro[$^{13}C_{12}$]dibenzofuran 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene

* Unless stated otherwise, isotopic purities of these compounds are 99% or greater.



HRGC/LRMS data of 2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran (30m DB-5 column).

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New Products are announced in the Wellington Reporter.

PCDDs and PCDFs:
Specialty Solution/Mixtures

In response to client requests, and to satisfy new regulatory methods, **Wellington** has prepared, and offers, a number of additional solution/mixtures of native and mass-labelled PCDDs and PCDFs.

Included in this selection are the multi-point calibration sets DF-CVS-A10, DF-CVS-B10, and DF-CVS-A5. These are 13-point,12-point, and 11-point calibration sets respectively, however it is not necessary to use every calibration standard provided. These products were designed to allow analysts to customize their calibrations depending upon the anticipated levels of contaminants.

These were originally introduced by **Wellington** in 2003 and remain very popular due to the development and incorporation of 3 non-2378 substituted 13C-PCDFs as additional surrogates.

Support solutions for these calibration solutions are noted on later pages.

Note that the internal standard solutions can also be used as sampling or cleanup standards.

DF-CVS-A10

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-CVS-A10-Set 1	CS1/CS3/CS5/CS7/CS9	1 kit (5 x 200 µl ampoules)
DF-CVS-A10-Set 2	CS2/CS4/CS6/CS8/CS10	1 kit (5 x 200 µl ampoules)
DF-CVS-A10-Set 3	CS3/CS5/CS7/CS9/CS11	1 kit (5 x 200 µl ampoules)
DF-A10-CSL	CSL Extended Calibration/Low Level	200 µl
DF-A10-CS1	CS1	200 µl
DF-A10-CS2	CS2	200 µl
DF-A10-CS3	CS3	200 µl
DF-A10-CS4	CS4	200 µl

NATIVE PCDDs & PCDFs	DF-A10-CSL (ng/ml)	DF-A10-CS1 (ng/ml)	DF-A10-CS2 (ng/ml)	DF-A10-CS3 (ng/ml)	DF-A10-CS4 (ng/ml)
1,3,6,8-Tetrachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5	1
1,3,7,9-Tetrachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5	1
1,2,8,9-Tetrachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5	1
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5	1
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5	1
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5	1
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5	1
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5	1
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5	1
Octachlorodibenzo-p-dioxin	0.1	0.2	0.4	1	2
1,3,6,8-Tetrachlorodibenzofuran	0.05	0.1	0.2	0.5	1
1,2,7,8-Tetrachlorodibenzofuran	0.05	0.1	0.2	0.5	1
1,2,8,9-Tetrachlorodibenzofuran	0.05	0.1	0.2	0.5	1
2,3,7,8-Tetrachlorodibenzofuran	0.05	0.1	0.2	0.5	1
1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.1	0.2	0.5	1
2,3,4,7,8-Pentachlorodibenzofuran	0.05	0.1	0.2	0.5	1
1,2,3,4,7,8-Hexachlorodibenzofuran	0.05	0.1	0.2	0.5	1
1,2,3,6,7,8-Hexachlorodibenzofuran	0.05	0.1	0.2	0.5	1
1,2,3,7,8,9-Hexachlorodibenzofuran	0.05	0.1	0.2	0.5	1
2,3,4,6,7,8-Hexachlorodibenzofuran	0.05	0.1	0.2	0.5	1
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.05	0.1	0.2	0.5	1
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.05	0.1	0.2	0.5	1
Octachlorodibenzofuran	0.1	0.2	0.4	1	2
MASS-LABELLED PCDDs & PCDFs					
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10	10
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10	10
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10	10
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10	10
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10	10
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10	10
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10	10
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10	10
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	20	20	20	20	20
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
1,2,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
1,2,3,4,6-Pentachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
1,2,3,4,6,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
1,2,3,4,6,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10	10
Octachloro[$^{13}C_{12}$]dibenzofuran	20	20	20	20	20

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-A10-CS5	CS5	200 µl
DF-A10-CS6	CS6	200 µl
DF-A10-CS7	CS7	200 µl
DF-A10-CS8	CS8	200 µl
DF-A10-CS9	CS9	200 µl
DF-A10-CS10	CS10	200 µl
DF-A10-CS11	CS11	200 µl
DF-A10-CSH	CSH Extended Calibration/High Level	200 µl

DF-A10-CS5 (ng/ml)	DF-A10-CS6 (ng/ml)	DF-A10-CS7 (ng/ml)	DF-A10-CS8 (ng/ml)	DF-A10-CS9 (ng/ml)	DF-A10-CS10 (ng/ml)	DF-A10-CS11 (ng/ml)	DF-A10-CSH (ng/ml)
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
4	10	20	40	100	200	400	2000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
2	5	10	20	50	100	200	1000
4	10	20	40	100	200	400	2000
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
20	20	20	20	20	20	20	20
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
20	20	20	20	20	20	20	20

DF-CVS-A5

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-CVS-A5-Set 1	CS1/CS3/CS5/CS7/CS9	1 kit (5 x 200 µl ampoules)
DF-CVS-A5-Set 2	CS2/CS4/CS6/CS8/CS10	1 kit (5 x 200 µl ampoules)
DF-A5-CSL	CSL Extended Calibration/Low Level	200 µl
DF-A5-CS1	CS1	200 µl
DF-A5-CS2	CS2	200 µl
DF-A5-CS3	CS3	200 µl

NATIVE PCDDs & PCDFs	DF-A5-CSL (ng/ml)	DF-A5-CS1 (ng/ml)	DF-A5-CS2 (ng/ml)	DF-A5-CS3 (ng/ml)
1,3,6,8-Tetrachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5
1,3,7,9-Tetrachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5
1,2,8,9-Tetrachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.05	0.1	0.2	0.5
Octachlorodibenzo-p-dioxin	0.1	0.2	0.4	1
1,3,6,8-Tetrachlorodibenzofuran	0.05	0.1	0.2	0.5
1,2,7,8-Tetrachlorodibenzofuran	0.05	0.1	0.2	0.5
1,2,8,9-Tetrachlorodibenzofuran	0.05	0.1	0.2	0.5
2,3,7,8-Tetrachlorodibenzofuran	0.05	0.1	0.2	0.5
1,2,3,7,8-Pentachlorodibenzofuran	0.05	0.1	0.2	0.5
2,3,4,7,8-Pentachlorodibenzofuran	0.05	0.1	0.2	0.5
1,2,3,4,7,8-Hexachlorodibenzofuran	0.05	0.1	0.2	0.5
1,2,3,6,7,8-Hexachlorodibenzofuran	0.05	0.1	0.2	0.5
1,2,3,7,8,9-Hexachlorodibenzofuran	0.05	0.1	0.2	0.5
2,3,4,6,7,8-Hexachlorodibenzofuran	0.05	0.1	0.2	0.5
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.05	0.1	0.2	0.5
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.05	0.1	0.2	0.5
Octachlorodibenzofuran	0.1	0.2	0.4	1
MASS-LABELLED PCDDs & PCDFs				
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	5	5	5	5
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	5	5	5	5
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	5	5	5	5
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	5	5	5	5
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	5	5	5	5
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	5	5	5	5
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	5	5	5	5
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	5	5	5	5
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
1,2,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
1,2,3,4,6-Pentachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
1,2,3,4,6,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
1,2,3,4,6,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	5	5	5	5
Octachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-A5-CS4	CS4	200 µl
DF-A5-CS5	CS5	200 µl
DF-A5-CS6	CS6	200 µl
DF-A5-CS7	CS7	200 µl
DF-A5-CS8	CS8	200 µl
DF-A5-CS9	CS9	200 µl
DF-A5-CS10	CS10	200 µl
DF-A5-CSH	CSH Extended Calibration/High Level	200 µl

DF-A5-CS4 (ng/ml)	DF-A5-CS5 (ng/ml)	DF-A5-CS6 (ng/ml)	DF-A5-CS7 (ng/ml)	DF-A5-CS8 (ng/ml)	DF-A5-CS9 (ng/ml)	DF-A5-CS10 (ng/ml)	DF-A5-CSH (ng/ml)
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
2	4	10	20	40	100	200	2000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
1	2	5	10	20	50	100	1000
2	4	10	20	40	100	200	2000
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
10	10	10	10	10	10	10	10
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5
10	10	10	10	10	10	10	10

DF-CVS-B10

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-CVS-B10-Set 1	CS1/CS3/CS5/CS7/CS9	1 kit (5 x 200 µl ampoules)
DF-CVS-B10-Set 2	CS2/CS4/CS6/CS8/CS10	1 kit (5 x 200 µl ampoules)
DF-CVS-B10-Set 3	CS3/CS5/CS7/CS9/CS11	1 kit (5 x 200 µl ampoules)
DF-B10-CS1	CS1	200 µl
DF-B10-CS2	CS2	200 µl
DF-B10-CS3	CS3	200 µl
DF-B10-CS4	CS4	200 µl

NATIVE PCDDs & PCDFs	**DF-B10-CS1 (ng/ml)**	**DF-B10-CS2 (ng/ml)**	**DF-B10-CS3 (ng/ml)**	**DF-B10-CS4 (ng/ml)**
1,3,6,8-Tetrachlorodibenzo-p-dioxin	0.1	0.2	0.5	1
1,3,7,9-Tetrachlorodibenzo-p-dioxin	0.1	0.2	0.5	1
1,2,8,9-Tetrachlorodibenzo-p-dioxin	0.1	0.2	0.5	1
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.1	0.2	0.5	1
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.1	0.2	0.5	1
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.2	0.4	1	2
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.2	0.4	1	2
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.2	0.4	1	2
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.2	0.4	1	2
Octachlorodibenzo-p-dioxin	0.5	1	2.5	5
1,3,6,8-Tetrachlorodibenzofuran	0.1	0.2	0.5	1
1,2,7,8-Tetrachlorodibenzofuran	0.1	0.2	0.5	1
1,2,8,9-Tetrachlorodibenzofuran	0.1	0.2	0.5	1
2,3,7,8-Tetrachlorodibenzofuran	0.1	0.2	0.5	1
1,2,3,7,8-Pentachlorodibenzofuran	0.1	0.2	0.5	1
2,3,4,7,8-Pentachlorodibenzofuran	0.1	0.2	0.5	1
1,2,3,4,7,8-Hexachlorodibenzofuran	0.2	0.4	1	2
1,2,3,6,7,8-Hexachlorodibenzofuran	0.2	0.4	1	2
1,2,3,7,8,9-Hexachlorodibenzofuran	0.2	0.4	1	2
2,3,4,6,7,8-Hexachlorodibenzofuran	0.2	0.4	1	2
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.2	0.4	1	2
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.2	0.4	1	2
Octachlorodibenzofuran	0.5	1	2.5	5
MASS-LABELLED PCDDs & PCDFs				
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	10	10	10	10
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	20	20	20	20
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
1,2,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
1,2,3,4,6-Pentachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
1,2,3,4,6,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
1,2,3,4,6,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	10	10	10	10
Octachloro[$^{13}C_{12}$]dibenzofuran	20	20	20	20

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-B10-CS5	CS5	200 µl
DF-B10-CS6	CS6	200 µl
DF-B10-CS7	CS7	200 µl
DF-B10-CS8	CS8	200 µl
DF-B10-CS9	CS9	200 µl
DF-B10-CS10	CS10	200 µl
DF-B10-CS11	CS11	200 µl

DF-B10-CS5 (ng/ml)	DF-B10-CS6 (ng/ml)	DF-B10-CS7 (ng/ml)	DF-B10-CS8 (ng/ml)	DF-B10-CS9 (ng/ml)	DF-B10-CS10 (ng/ml)	DF-B10-CS11 (ng/ml)
2	5	10	20	50	100	200
2	5	10	20	50	100	200
2	5	10	20	50	100	200
2	5	10	20	50	100	200
2	5	10	20	50	100	200
4	10	20	40	100	200	400
4	10	20	40	100	200	400
4	10	20	40	100	200	400
4	10	20	40	100	200	400
10	25	50	100	250	500	1000
2	5	10	20	50	100	200
2	5	10	20	50	100	200
2	5	10	20	50	100	200
2	5	10	20	50	100	200
2	5	10	20	50	100	200
2	5	10	20	50	100	200
4	10	20	40	100	200	400
4	10	20	40	100	200	400
4	10	20	40	100	200	400
4	10	20	40	100	200	400
4	10	20	40	100	200	400
4	10	20	40	100	200	400
10	25	50	100	250	500	1000
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
20	20	20	20	20	20	20
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10
20	20	20	20	20	20	20

NK-CVS-J

Catalogue Number	Product (nonane solution)	Qty/Conc
NK-CVS-J	PCDD & PCDF Calibration Solutions CS1-J, CS2-J, CS3-J, CS4-J, CS5-J and CS6-J	1 kit (6 ampoules)
NK-CS1-J	CS1-J	200 µl
NK-CS2-J	CS2-J	200 µl
NK-CS3-J	CS3-J	200 µl
NK-CS4-J	CS4-J	200 µl
NK-CS5-J	CS5-J	200 µl
NK-CS6-J	CS6-J	200 µl

	NK-CS1-J (ng/ml)	NK-CS2-J (ng/ml)	NK-CS3-J (ng/ml)	NK-CS4-J (ng/ml)	NK-CS5-J (ng/ml)	NK-CS6-J (ng/ml)
NATIVE PCDDs & PCDFs						
1,3,6,8-Tetrachlorodibenzo-p-dioxin	0.1	0.4	2	10	50	100
1,3,7,9-Tetrachlorodibenzo-p-dioxin	0.1	0.4	2	10	50	100
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.1	0.4	2	10	50	100
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.1	0.4	2	10	50	100
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.2	0.8	4	20	100	200
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.2	0.8	4	20	100	200
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.2	0.8	4	20	100	200
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.2	0.8	4	20	100	200
Octachlorodibenzo-p-dioxin	0.5	2.0	10	50	250	500
1,2,7,8-Tetrachlorodibenzofuran	0.1	0.4	2	10	50	100
2,3,7,8-Tetrachlorodibenzofuran	0.1	0.4	2	10	50	100
1,2,3,7,8-Pentachlorodibenzofuran	0.1	0.4	2	10	50	100
2,3,4,7,8-Pentachlorodibenzofuran	0.1	0.4	2	10	50	100
1,2,3,4,7,8-Hexachlorodibenzofuran	0.2	0.8	4	20	100	200
1,2,3,6,7,8-Hexachlorodibenzofuran	0.2	0.8	4	20	100	200
1,2,3,7,8,9-Hexachlorodibenzofuran	0.2	0.8	4	20	100	200
2,3,4,6,7,8-Hexachlorodibenzofuran	0.2	0.8	4	20	100	200
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.2	0.8	4	20	100	200
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.2	0.8	4	20	100	200
Octachlorodibenzofuran	0.5	2.0	10	50	250	500
MASS-LABELLED PCDDs & PCDFs*						
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	20	20	20	20	20	20
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	20	20	20	20	20	20
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	20	20	20	20	20	20
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	20	20	20	20	20	20
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	20	20	20	20	20	20
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	40	40	40	40	40	40
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	20	20	20	20	20	20
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	20	20	20	20	20	20
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	20	20	20	20	20	20
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	20	20	20	20	20	20
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	20	20	20	20	20	20
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	20	20	20	20	20	20
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	20	20	20	20	20	20
Octachloro[$^{13}C_{12}$]dibenzofuran	40	40	40	40	40	40
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	20	20	20	20	20	20
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	20	20	20	20	20	20
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	20	20	20	20	20	20
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	20	20	20	20	20	20

***** Support Solutions for **NK-CVS-J** see: **NK-LCS-T, NK-IS-J4** and **NK-IS-J5**.

Support solutions for **DF-CVS-A10, DF-CVS-A5** and **DF-CVS-B10**

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-LCS-A	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml
DF-LCS-A200	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml
DF-LCS-A40	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml
DF-LCS-A20	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml

MASS-LABELLED PCDDs	**DF-LCS-A (ng/ml)**	**DF-LCS-A200 (ng/ml)**	**DF-LCS-A40 (ng/ml)**	**DF-LCS-A20 (ng/ml)**
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	40	20
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	40	20
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	40	20
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	40	20
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	40	20
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	40	20
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	40	20
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	2000	400	80	40
MASS-LABELLED PCDFs				
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	1000	200	40	20
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	1000	200	40	20
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	1000	200	40	20
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	1000	200	40	20
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	1000	200	40	20
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	1000	200	40	20
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	1000	200	40	20
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	1000	200	40	20
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	1000	200	40	20
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	1000	200	40	20
Octachloro[$^{13}C_{12}$]dibenzofuran	2000	400	80	40

DF-LCS-B

Support solutions for **DF-CVS-A10, DF-CVS-A5** and **DF-CVS-B10**

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-LCS-B	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml
DF-LCS-B200	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml
DF-LCS-B100	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml
DF-LCS-B40	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml

MASS-LABELLED PCDDs	**DF-LCS-B (ng/ml)**	**DF-LCS-B200 (ng/ml)**	**DF-LCS-B100 (ng/ml)**	**DF-LCS-B40 (ng/ml)**
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	100	40
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	100	40
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	100	40
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	100	40
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	100	40
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	100	40
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	100	40
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	2000	400	200	80
MASS-LABELLED PCDFs				
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
Octachloro[$^{13}C_{12}$]dibenzofuran	2000	400	200	80

Support solutions for **DF-CVS-A10, DF-CVS-A5** and **DF-CVS-B10**

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-LCS-C	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml
DF-LCS-C200	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml
DF-LCS-C100	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml
DF-LCS-C40	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml

MASS-LABELLED PCDDs	DF-LCS-C (ng/ml)	DF-LCS-C200 (ng/ml)	DF-LCS-C100 (ng/ml)	DF-LCS-C40 (ng/ml)
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	100	40
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	100	40
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	100	40
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	100	40
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	100	40
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1000	200	100	40
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	2000	400	200	80
MASS-LABELLED PCDFs				
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	1000	200	100	40
Octachloro[$^{13}C_{12}$]dibenzofuran	2000	400	200	80

MASS-LABELLED PCDDs & PCDFs: SOLUTION/MIXTURES

Catalogue Number	Product (nonane solution)	Qty/Conc
DS-1000	Mass-Labelled PCDD Solution/Mixture	1.2 ml
FS-1000	Mass-Labelled PCDF Solution/Mixture	1.2 ml
NK-LCS-A	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml
NK-LCS-A1	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml

MASS-LABELLED PCDDs	DS-1000 (µg/ml)	FS-1000 (µg/ml)	NK-LCS-A (µg/ml)	NK-LCS-A1 (µg/ml)
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	—	1.0	1.0
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1.0	—	1.0	1.0
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1.0	—	1.0	1.0
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1.0	—	1.0	1.0
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1.0	—	1.0	1.0
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	—	1.0	1.0
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1.0	—	1.0	1.0
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	2.0	—	2.0	1.0
MASS-LABELLED PCDFs				
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	—	—	—	—
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	—	1.0	1.0	1.0
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	—	1.0	1.0	1.0
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	—	1.0	1.0	1.0
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	—	1.0	1.0	1.0
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	—	1.0	1.0	1.0
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	—	1.0	1.0	1.0
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	—	1.0	1.0	1.0
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	—	1.0	1.0	1.0
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	—	1.0	1.0	1.0
Octachloro[$^{13}C_{12}$]dibenzofuran	—	—	2.0	1.0

MASS-LABELLED PCDDs & PCDFs: SOLUTION/MIXTURES

Catalogue Number	Product (nonane solution)	Qty/Conc
NK-LCS-I	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml
NK-LCS-O	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml
NK-LCS-T	Mass-Labelled PCDD/PCDF Solution/Mixture	1.2 ml

MASS-LABELLED PCDDs	NK-LCS-I (ng/ml)	NK-LCS-O (ng/ml)	NK-LCS-T (ng/ml)
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	40
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	40
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	100	40
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	40
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin	—	—	—
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin	100	100	40
Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin	500	200	80
MASS-LABELLED PCDFs			
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	100	100	40
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	100	100	—
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	100	100	40
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	100	100	40
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	—	100	40
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	—	100	—
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	—	100	40
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	100	100	40
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	—	100	40
Octachloro[$^{13}C_{12}$]dibenzofuran	500	200	80

MASS-LABELLED PCDDs & PCDFs: SOLUTION/MIXTURES

Support solutions for **DF-CVS-A10, DF-CVS-A5** and **DF-CVS-B10**

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-IS-A	Mass-Labelled PCDD Internal Standard Solution	1.2 ml
DF-IS-A200	Mass-Labelled PCDD Internal Standard Solution	1.2 ml
DF-IS-A40	Mass-Labelled PCDD Internal Standard Solution	1.2 ml

MASS-LABELLED PCDD	DF-IS-A (µg/ml)	DF-IS-A200 (ng/ml)	DF-IS-A40 (ng/ml)
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1.0	200	40

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-IS-B	Mass-Labelled PCDD/PCDF Internal Standard Solution	1.2 ml
DF-IS-B200	Mass-Labelled PCDD/PCDF Internal Standard Solution	1.2 ml
DF-IS-B40	Mass-Labelled PCDD/PCDF Internal Standard Solution	1.2 ml

MASS-LABELLED PCDD/PCDF	DF-IS-B (µg/ml)	DF-IS-B200 (ng/ml)	DF-IS-B40 (ng/ml)
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1.0	200	40
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-IS-C	Mass-Labelled PCDD/PCDF Internal Standard Solution	1.2 ml
DF-IS-C200	Mass-Labelled PCDD/PCDF Internal Standard Solution	1.2 ml
DF-IS-C40	Mass-Labelled PCDD/PCDF Internal Standard Solution	1.2 ml

MASS-LABELLED PCDD/PCDF	DF-IS-C (µg/ml)	DF-IS-C200 (ng/ml)	DF-IS-C40 (ng/ml)
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1.0	200	40
1,2,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40

Support solutions for **DF-CVS-A10, DF-CVS-A5** and **DF-CVS-B10**

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-IS-D	Mass-Labelled PCDD/PCDF Internal Standard Solution	1.2 ml
DF-IS-D200	Mass-Labelled PCDD/PCDF Internal Standard Solution	1.2 ml
DF-IS-D40	Mass-Labelled PCDD/PCDF Internal Standard Solution	1.2 ml

MASS-LABELLED PCDD/PCDF	DF-IS-D (µg/ml)	DF-IS-D200 (ng/ml)	DF-IS-D40 (ng/ml)
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin	1.0	200	40
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40

DF-IS-E	Mass-Labelled PCDF Internal Standard Solution	1.2 ml
DF-IS-E200	Mass-Labelled PCDF Internal Standard Solution	1.2 ml
DF-IS-E40	Mass-Labelled PCDF Internal Standard Solution	1.2 ml

MASS-LABELLED PCDFs	DF-IS-E (µg/ml)	DF-IS-E200 (ng/ml)	DF-IS-E40 (ng/ml)
1,3,6,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40
1,2,3,4,6,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40

DF-IS-F	Mass-Labelled PCDF Internal Standard Solution	1.2 ml
DF-IS-F200	Mass-Labelled PCDF Internal Standard Solution	1.2 ml
DF-IS-F40	Mass-Labelled PCDF Internal Standard Solution	1.2 ml

MASS-LABELLED PCDFs	DF-IS-F (µg/ml)	DF-IS-F200 (ng/ml)	DF-IS-F40 (ng/ml)
1,2,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40
1,2,3,4,6,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40

MASS-LABELLED PCDDs & PCDFs: SOLUTION/MIXTURES

Support solutions for **DF-CVS-A10, DF-CVS-A5** and **DF-CVS-B10**

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-IS-G	Mass-Labelled PCDF Internal Standard Solution	1.2 ml
DF-IS-G200	Mass-Labelled PCDF Internal Standard Solution	1.2 ml
DF-IS-G40	Mass-Labelled PCDF Internal Standard Solution	1.2 ml

MASS-LABELLED PCDFs	DF-IS-G (µg/ml)	DF-IS-G200 (ng/ml)	DF-IS-G40 (ng/ml)
1,2,3,4,6-Pentachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40
1,2,3,4,6,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-IS-H	Mass-Labelled PCDF Internal Standard Solution	1.2 ml
DF-IS-H200	Mass-Labelled PCDF Internal Standard Solution	1.2 ml
DF-IS-H40	Mass-Labelled PCDF Internal Standard Solution	1.2 ml

MASS-LABELLED PCDFs	DF-IS-H (µg/ml)	DF-IS-H200 (ng/ml)	DF-IS-H40 (ng/ml)
1,2,3,4,6,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40
1,2,3,4,6,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-IS-I	Mass-Labelled PCDF Internal Standard Solution	1.2 ml
DF-IS-I200	Mass-Labelled PCDF Internal Standard Solution	1.2 ml
DF-IS-I40	Mass-Labelled PCDF Internal Standard Solution	1.2 ml

MASS-LABELLED PCDFs	DF-IS-I (µg/ml)	DF-IS-I200 (ng/ml)	DF-IS-I40 (ng/ml)
1,2,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40
1,2,3,4,6-Pentachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40
1,2,3,4,6,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40
1,2,3,4,6,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	1.0	200	40

Catalogue Number	Product (nonane solution)	Qty/Conc
MDF-1278-1		1.2 ml
1,2,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran		1 µg/ml
MDF-12346-1		1.2 ml
1,2,3,4,6-Pentachloro[$^{13}C_{12}$]dibenzofuran		1 µg/ml
MDF-123469-1		1.2 ml
1,2,3,4,6,9-Hexachloro[$^{13}C_{12}$]dibenzofuran		1 µg/ml
MDF-1234689-1		1.2 ml
1,2,3,4,6,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran		1 µg/ml
NK-IS-J4	Internal Standard Solution	1.2 ml
1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		40 ng/ml
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin		40 ng/ml
NK-IS-J5	Internal Standard Solution	1.2 ml
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran		40 ng/ml
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran		40 ng/ml

NATIVE PCDDs & PCDFs: SOLUTION/MIXTURES

(*) Support solutions for **DF-CVS-A10, DF-CVS-A5** and **DF-CVS-B10**

Catalogue Number	Product (nonane solution)	Qty/Conc
DF-ST-A*	Native PCDD/PCDF Solution/Mixture	1.2 ml
DF-ST-B*	Native PCDD/PCDF Solution/Mixture	1.2 ml

	DF-ST-A* (µg/ml)	DF-ST-B* (µg/ml)
NATIVE PCDDs		
1,2,8,9-Tetrachlorodibenzo-p-dioxin	1.0	1.0
1,3,6,8-Tetrachlorodibenzo-p-dioxin	1.0	1.0
1,3,7,9-Tetrachlorodibenzo-p-dioxin	1.0	1.0
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1.0	1.0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1.0	1.0
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	1.0	2.0
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	1.0	2.0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	1.0	2.0
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1.0	2.0
Octachlorodibenzo-p-dioxin	2.0	5.0
NATIVE PCDFs		
1,2,7,8-Tetrachlorodibenzofuran	1.0	1.0
1,2,8,9-Tetrachlorodibenzofuran	1.0	1.0
1,3,6,8-Tetrachlorodibenzofuran	1.0	1.0
2,3,7,8-Tetrachlorodibenzofuran	1.0	1.0
1,2,3,7,8-Pentachlorodibenzofuran	1.0	1.0
2,3,4,7,8-Pentachlorodibenzofuran	1.0	1.0
1,2,3,4,7,8-Hexachlorodibenzofuran	1.0	2.0
1,2,3,6,7,8-Hexachlorodibenzofuran	1.0	2.0
1,2,3,7,8,9-Hexachlorodibenzofuran	1.0	2.0
2,3,4,6,7,8-Hexachlorodibenzofuran	1.0	2.0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.0	2.0
1,2,3,4,7,8,9-Heptachlorodibenzofuran	1.0	2.0
Octachlorodibenzofuran	2.0	5.0

Catalogue Number	Product (nonane solution)	Qty/Conc
NK-ST-A	Native PCDD/PCDF Solution/Mixture	1.2 ml
NK-ST-A4	Native PCDD/PCDF Solution/Mixture	1.2 ml
NK-ST-B2	Native PCDD/PCDF Solution/Mixture	1.2 ml
NK-ST-B4	Native PCDD/PCDF Solution/Mixture	1.2 ml

NATIVE PCDDs	NK-ST-A (µg/ml)	NK-ST-A4 (ng/ml)	NK-ST-B2 (ng/ml)	NK-ST-B4 (µg/ml)
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2.0	2.0	100	1.0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	2.0	2.0	100	1.0
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	2.0	2.0	200	2.0
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	2.0	2.0	200	2.0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	2.0	2.0	200	2.0
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	2.0	2.0	200	2.0
Octachlorodibenzo-p-dioxin	4.0	4.0	400	5.0
NATIVE PCDFs				
2,3,7,8-Tetrachlorodibenzofuran	2.0	2.0	100	1.0
1,2,3,7,8-Pentachlorodibenzofuran	2.0	2.0	100	1.0
2,3,4,7,8-Pentachlorodibenzofuran	2.0	2.0	100	1.0
1,2,3,4,7,8-Hexachlorodibenzofuran	2.0	2.0	200	2.0
1,2,3,6,7,8-Hexachlorodibenzofuran	2.0	2.0	200	2.0
1,2,3,7,8,9-Hexachlorodibenzofuran	2.0	2.0	200	2.0
2,3,4,6,7,8-Hexachlorodibenzofuran	2.0	2.0	200	2.0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	2.0	2.0	200	2.0
1,2,3,4,7,8,9-Heptachlorodibenzofuran	2.0	2.0	200	2.0
Octachlorodibenzofuran	4.0	4.0	400	5.0

MASS-LABELLED PCDDs/PCDFs/PCBs: SOLUTION/MIXTURES

These three solutions were designed and prepared as support solutions to be used with the following calibration sets:

DF-CVS-A10
DF-CVS-A5
DF-CVS-B10

as well as:

PCB-CVS-A10 (see Page 84)
PCB-CVS-A5 (see Page 86)

Catalogue Number	Product (nonane solution)		Qty/Conc
DFP-LCS-A	Mass-Labelled PCDD/PCDF/PCB Solution/Mixture		1.2 ml
	MASS-LABELLED PCDDs		
	2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		10 ng/ml
	1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin		10 ng/ml
	1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin		10 ng/ml
	1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin		10 ng/ml
	1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin		10 ng/ml
	1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin		10 ng/ml
	Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin		20 ng/ml
	MASS-LABELLED PCDFs		
	2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	Octachloro[$^{13}C_{12}$]dibenzofuran		20 ng/ml
	MASS-LABELLED PCBs	***IUPAC***	
	3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	10 ng/ml
	3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	10 ng/ml
	2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	10 ng/ml
	2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*114L*	10 ng/ml
	2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	10 ng/ml
	2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*123L*	10 ng/ml
	3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	10 ng/ml
	2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	10 ng/ml
	2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	10 ng/ml
	2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	10 ng/ml
	3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	10 ng/ml
	2,2',3,3',4,4',5-Heptachloro[$^{13}C_{12}$]biphenyl	*170L*	10 ng/ml
	2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*180L*	10 ng/ml
	2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	10 ng/ml
DFP-IS-A	Mass-Labelled PCDF/PCB Syringe Spike		1.2 ml
		IUPAC	
	2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*70L*	10 ng/ml
	1,2,3,4,6,9-Hexachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,4,6,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
DFP-SS-A	Mass-Labelled PCDD/PCB Sampling Spike		1.2 ml
		IUPAC	
	3,3',4,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*79L*	50 ng/ml
	1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		50 ng/ml

PCB ANALYTICAL METHOD SOLUTIONS

For many years it has been known that commercial PCBs are complex mixtures of individual PCB congeners and that some of these congeners are more prevalent than others. In some countries a set of 6 PCB congeners, which are the major components of the commercial PCBs, are used for estimating the total PCB concentration. These are called the "marker PCBs".

In addition, 12 of the PCB congeners exhibit "dioxin-like" toxicological activity and have been assigned TEFs relating this activity to that of 2,3,7,8-TCDD.

Because commercial PCBs can vary in their composition, even from lot to lot, and because this composition can change once they enter the environment, it has become increasingly important to perform congener specific PCB analyses. Moreover, analysis for "dioxin-like" PCBs is now a routine procedure in most laboratories due to the potential human health implications.

Wellington now offers five method sets for the analysis of PCBs by GC/MS. These all include calibration kits and support solutions.

WP-CVS
Originally introduced in 1998, this calibration kit and its support solutions were designed and prepared for the analysis of "dioxin-like" PCBs.

EPA Method 1668B
This set of solutions was prepared to be used with U.S. EPA Method 1668B.

EPA Method 1668
These calibration and support solutions were prepared to be used in accordance with the original 1995 draft version of U.S. EPA Method 1668.

EC-9605-CVS
This calibration set, and its support solutions, were prepared for use with Environment Canada Method 1/RM/31, a HRGC/LRMS method for PCB analysis.

P48-W-CVS and P48-M-CVS
These two sets of calibration solutions and their related support solutions were designed and prepared for the current draft version of method prCEN/TS 1948-4

P48-W-CVS is for the "dioxin-like" (WHO) PCBs and P48-M-CVS is for the "marker PCBs".

WP-CVS STANDARD SOLUTIONS

Catalogue Number	Product (nonane solution)	Qty/Conc
WP-CVS	"*Dioxin-Like*" PCBs Calibration and Verification Solutions CS1-CS7	1 kit (7 ampoules)
WP-CS1	CS1	500 µl
WP-CS2	CS2	500 µl
WP-CS3	CS3	500 µl
WP-CS4	CS4	500 µl
WP-CS5	CS5	500 µl
WP-CS6	CS6	500 µl
WP-CS7	CS7	500 µl

NATIVE PCBs	***IUPAC***	**WP-CS1 (ng/ml)**	**WP-CS2 (ng/ml)**	**WP-CS3 (ng/ml)**	**WP-CS4 (ng/ml)**	**WP-CS5 (ng/ml)**	**WP-CS6 (ng/ml)**	**WP-CS7 (ng/ml)**
3,3',4,4'-Tetrachlorobiphenyl	*77*	0.1	0.5	2.0	10	40	200	800
3,4,4',5-Tetrachlorobiphenyl	*81*	0.1	0.5	2.0	10	40	200	800
2,3,3',4,4'-Pentachlorobiphenyl	*105*	0.1	0.5	2.0	10	40	200	800
2,3,4,4',5-Pentachlorobiphenyl	*114*	0.1	0.5	2.0	10	40	200	800
2,3',4,4',5-Pentachlorobiphenyl	*118*	0.1	0.5	2.0	10	40	200	800
2',3,4,4',5-Pentachlorobiphenyl	*123*	0.1	0.5	2.0	10	40	200	800
3,3',4,4',5-Pentachlorobiphenyl	*126*	0.1	0.5	2.0	10	40	200	800
2,3,3',4,4',5-Hexachlorobiphenyl	*156*	0.1	0.5	2.0	10	40	200	800
2,3,3',4,4',5'-Hexachlorobiphenyl	*157*	0.1	0.5	2.0	10	40	200	800
2,3',4,4',5,5'-Hexachlorobiphenyl	*167*	0.1	0.5	2.0	10	40	200	800
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	0.1	0.5	2.0	10	40	200	800
2,3,3',4,4',5,5'-Heptachlorobiphenyl	*189*	0.1	0.5	2.0	10	40	200	800
MASS-LABELLED PCBs								
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	50	50	50	50	50	50	50
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	50	50	50	50	50	50	50
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	50	50	50	50	50	50	50
2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*114L*	50	50	50	50	50	50	50
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	50	50	50	50	50	50	50
2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*123L*	50	50	50	50	50	50	50
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	50	50	50	50	50	50	50
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	50	50	50	50	50	50	50
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	50	50	50	50	50	50	50
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	50	50	50	50	50	50	50
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	50	50	50	50	50	50	50
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	50	50	50	50	50	50	50
INTERNAL STANDARDS: MASS-LABELLED PCBs								
2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*70L*	50	50	50	50	50	50	50
2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*111L*	50	50	50	50	50	50	50
2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*138L*	50	50	50	50	50	50	50
2,2',3,3',4,4',5-Heptachloro[$^{13}C_{12}$]biphenyl	*170L*	50	50	50	50	50	50	50

Catalogue Number	Product (nonane solution)	Qty/Conc
WP-LCS	Surrogate Spiking Solution	1.2 ml
WP-ISS	Internal Standard Solution	1.2 ml
WP-STK	Native PCB Solution	1.2 ml

NATIVE PCBs	*IUPAC*	WP-LCS (ng/ml)	WP-ISS (ng/ml)	WP-STK (ng/ml)
3,3',4,4'-Tetrachlorobiphenyl	*77*	—	—	2000
3,4,4',5-Tetrachlorobiphenyl	*81*	—	—	2000
2,3,3',4,4'-Pentachlorobiphenyl	*105*	—	—	2000
2,3,4,4',5-Pentachlorobiphenyl	*114*	—	—	2000
2,3',4,4',5-Pentachlorobiphenyl	*118*	—	—	2000
2',3,4,4',5-Pentachlorobiphenyl	*123*	—	—	2000
3,3',4,4',5-Pentachlorobiphenyl	*126*	—	—	2000
2,3,3',4,4',5-Hexachlorobiphenyl	*156*	—	—	2000
2,3,3',4,4',5'-Hexachlorobiphenyl	*157*	—	—	2000
2,3',4,4',5,5'-Hexachlorobiphenyl	*167*	—	—	2000
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	—	—	2000
2,3,3',4,4',5,5'-Heptachlorobiphenyl	*189*	—	—	2000
MASS-LABELLED PCBs				
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	1000	—	—
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	1000	—	—
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	1000	—	—
2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*114L*	1000	—	—
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	1000	—	—
2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*123L*	1000	—	—
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	1000	—	—
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	1000	—	—
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	1000	—	—
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	1000	—	—
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	1000	—	—
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	1000	—	—
INTERNAL STANDARDS: MASS-LABELLED PCBs				
2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*70L*	—	1000	—
2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*111L*	—	1000	—
2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*138L*	—	1000	—
2,2',3,3',4,4',5-Heptachloro[$^{13}C_{12}$]biphenyl	*170L*	—	1000	—

EPA METHOD 1668B STANDARD SOLUTIONS

Catalogue Number	Product (nonane solution)	Qty/Conc
68B-CVS	EPA Method 1668B Calibration and Verification Solutions CS0.2-CS5	1 kit (6 ampoules)
68B-CS0.2	CS0.2 High Sensitivity	200 µl
68B-CS1	CS1	200 µl
68B-CS2	CS2	200 µl
68B-CS3	CS3 Calibration Verification	500 µl
68B-CS4	CS4	200 µl
68B-CS5	CS5	200 µl

NOTE: The above product codes were updated to reflect the finalization of EPA Method 1668A to 1668B in November of 2008.

Native Toxics/LOC	*IUPAC*	68B-CS0.2 (ng/ml)	68B-CS1 (ng/ml)	68B-CS2 (ng/ml)	68B-CS3 (ng/ml)	68B-CS4 (ng/ml)	68B-CS5 (ng/ml)
2-Chlorobiphenyl	*1*	0.2	1.0	5.0	50	400	2000
4-Chlorobiphenyl	*3*	0.2	1.0	5.0	50	400	2000
2,2'-Dichlorobiphenyl	*4*	0.2	1.0	5.0	50	400	2000
4,4'-Dichlorobiphenyl	*15*	0.2	1.0	5.0	50	400	2000
2,2',6-Trichlorobiphenyl	*19*	0.2	1.0	5.0	50	400	2000
3,4,4'-Trichlorobiphenyl	*37*	0.2	1.0	5.0	50	400	2000
2,2',6,6'-Tetrachlorobiphenyl	*54*	0.2	1.0	5.0	50	400	2000
3,3',4,4'-Tetrachlorobiphenyl	*77*	0.2	1.0	5.0	50	400	2000
3,4,4',5-Tetrachlorobiphenyl	*81*	0.2	1.0	5.0	50	400	2000
2,2',4,6,6'-Pentachlorobiphenyl	*104*	0.2	1.0	5.0	50	400	2000
2,3,3',4,4'-Pentachlorobiphenyl	*105*	0.2	1.0	5.0	50	400	2000
2,3,4,4',5-Pentachlorobiphenyl	*114*	0.2	1.0	5.0	50	400	2000
2,3',4,4',5-Pentachlorobiphenyl	*118*	0.2	1.0	5.0	50	400	2000
2',3,4,4',5-Pentachlorobiphenyl	*123*	0.2	1.0	5.0	50	400	2000
3,3',4,4',5-Pentachlorobiphenyl	*126*	0.2	1.0	5.0	50	400	2000
2,2',4,4',6,6'-Hexachlorobiphenyl	*155*	0.2	1.0	5.0	50	400	2000
2,3,3',4,4',5-Hexachlorobiphenyl	*156*	0.2	1.0	5.0	50	400	2000
2,3,3',4,4',5'-Hexachlorobiphenyl	*157*	0.2	1.0	5.0	50	400	2000
2,3',4,4',5,5'-Hexachlorobiphenyl	*167*	0.2	1.0	5.0	50	400	2000
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	0.2	1.0	5.0	50	400	2000
2,2',3,4',5,6,6'-Heptachlorobiphenyl	*188*	0.2	1.0	5.0	50	400	2000
2,3,3',4,4',5,5'-Heptachlorobiphenyl	*189*	0.2	1.0	5.0	50	400	2000
2,2',3,3',5,5',6,6'-Octachlorobiphenyl	*202*	0.2	1.0	5.0	50	400	2000
2,3,3',4,4',5,5',6-Octachlorobiphenyl	*205*	0.2	1.0	5.0	50	400	2000
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	*206*	0.2	1.0	5.0	50	400	2000
2,2',3,3',4,5,5',6,6'-Nonachlorobiphenyl	*208*	0.2	1.0	5.0	50	400	2000
Decachlorobiphenyl	*209*	0.2	1.0	5.0	50	400	2000
Labelled Toxics/LOC/Window-Defining (68B-LCS)							
2-Chloro[$^{13}C_{12}$]biphenyl	*1L*	100	100	100	100	100	100
4-Chloro[$^{13}C_{12}$]biphenyl	*3L*	100	100	100	100	100	100
2,2'-Dichloro[$^{13}C_{12}$]biphenyl	*4L*	100	100	100	100	100	100
4,4'-Dichloro[$^{13}C_{12}$]biphenyl	*15L*	100	100	100	100	100	100
2,2',6-Trichloro[$^{13}C_{12}$]biphenyl	*19L*	100	100	100	100	100	100
3,4,4'-Trichloro[$^{13}C_{12}$]biphenyl	*37L*	100	100	100	100	100	100
2,2',6,6'-Tetrachloro[$^{13}C_{12}$]biphenyl	*54L*	100	100	100	100	100	100
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	100	100	100	100	100	100
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	100	100	100	100	100	100
2,2',4,6,6'-Pentachloro[$^{13}C_{12}$]biphenyl	*104L*	100	100	100	100	100	100
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	100	100	100	100	100	100
2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*114L*	100	100	100	100	100	100
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	100	100	100	100	100	100
2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*123L*	100	100	100	100	100	100
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	100	100	100	100	100	100
2,2',4,4',6,6'-Hexachloro[$^{13}C_{12}$]biphenyl	*155L*	100	100	100	100	100	100
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	100	100	100	100	100	100
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	100	100	100	100	100	100
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	100	100	100	100	100	100
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	100	100	100	100	100	100
2,2',3,4',5,6,6'-Heptachloro[$^{13}C_{12}$]biphenyl	*188L*	100	100	100	100	100	100
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	100	100	100	100	100	100
2,2',3,3',5,5',6,6'-Octachloro[$^{13}C_{12}$]biphenyl	*202L*	100	100	100	100	100	100
2,3,3',4,4',5,5',6-Octachloro[$^{13}C_{12}$]biphenyl	*205L*	100	100	100	100	100	100
2,2',3,3',4,4',5,5',6-Nonachloro[$^{13}C_{12}$]biphenyl	*206L*	100	100	100	100	100	100
2,2',3,3',4,5,5',6,6'-Nonachloro[$^{13}C_{12}$]biphenyl	*208L*	100	100	100	100	100	100
Decachloro[$^{13}C_{12}$]biphenyl	*209L*	100	100	100	100	100	100
Labelled Clean-Up (68B-CS)							
2,4,4'-Trichloro[$^{13}C_{12}$]biphenyl	*28L*	100	100	100	100	100	100
2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*111L*	100	100	100	100	100	100
2,2',3,3',5,5',6-Heptachloro[$^{13}C_{12}$]biphenyl	*178L*	100	100	100	100	100	100
Labelled Injection/Internal (68B-IS)							
2,5-Dichloro[$^{13}C_{12}$]biphenyl	*9L*	100	100	100	100	100	100
2,2',5,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*52L*	100	100	100	100	100	100
2,2',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*101L*	100	100	100	100	100	100
2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*138L*	100	100	100	100	100	100
2,2',3,3',4,4',5,5'-Octachloro[$^{13}C_{12}$]biphenyl	*194L*	100	100	100	100	100	100

Catalogue Number	Product (nonane solution)	Qty/Conc
68B-LCS	Labelled Toxics/LOC/Window Defining Stock Solution	1.2 ml
68B-CS	Labelled Cleanup Stock Solution	1.2 ml
68B-IS	Labelled Injection/Internal Standard Stock Solution	1.2 ml
68B-PAR	Native Toxics/LOC Stock Solution	1.2 ml

NOTE: The above product codes were updated to reflect the finalization of EPA Method 1668A to 1668B in November of 2008.

Native Toxics/LOC	*IUPAC*	68B-LCS (ng/ml)	68B-CS (ng/ml)	68B-IS (ng/ml)	68B-PAR (ng/ml)
2-Chlorobiphenyl	*1*	—	—	—	2000
4-Chlorobiphenyl	*3*	—	—	—	2000
2,2'-Dichlorobiphenyl	*4*	—	—	—	2000
4,4'-Dichlorobiphenyl	*15*	—	—	—	2000
2,2',6-Trichlorobiphenyl	*19*	—	—	—	2000
3,4,4'-Trichlorobiphenyl	*37*	—	—	—	2000
2,2',6,6'-Tetrachlorobiphenyl	*54*	—	—	—	2000
3,3',4,4'-Tetrachlorobiphenyl	*77*	—	—	—	2000
3,4,4',5-Tetrachlorobiphenyl	*81*	—	—	—	2000
2,2',4,6,6'-Pentachlorobiphenyl	*104*	—	—	—	2000
2,3,3',4,4'-Pentachlorobiphenyl	*105*	—	—	—	2000
2,3,4,4',5-Pentachlorobiphenyl	*114*	—	—	—	2000
2,3',4,4',5-Pentachlorobiphenyl	*118*	—	—	—	2000
2',3,4,4',5-Pentachlorobiphenyl	*123*	—	—	—	2000
3,3',4,4',5-Pentachlorobiphenyl	*126*	—	—	—	2000
2,2',4,4',6,6'-Hexachlorobiphenyl	*155*	—	—	—	2000
2,3,3',4,4',5-Hexachlorobiphenyl	*156*	—	—	—	2000
2,3,3',4,4',5'-Hexachlorobiphenyl	*157*	—	—	—	2000
2,3',4,4',5,5'-Hexachlorobiphenyl	*167*	—	—	—	2000
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	—	—	—	2000
2,2',3,4',5,6,6'-Heptachlorobiphenyl	*188*	—	—	—	2000
2,3,3',4,4',5,5'-Heptachlorobiphenyl	*189*	—	—	—	2000
2,2',3,3',5,5',6,6'-Octachlorobiphenyl	*202*	—	—	—	2000
2,3,3',4,4',5,5',6-Octachlorobiphenyl	*205*	—	—	—	2000
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	*206*	—	—	—	2000
2,2',3,3',4,5,5',6,6'-Nonachlorobiphenyl	*208*	—	—	—	2000
Decachlorobiphenyl	*209*	—	—	—	2000
Labelled Toxics/LOC/Window-Defining (68B-LCS)					
2-Chloro[$^{13}C_{12}$]biphenyl	*1L*	1000	—	—	—
4-Chloro[$^{13}C_{12}$]biphenyl	*3L*	1000	—	—	—
2,2'-Dichloro[$^{13}C_{12}$]biphenyl	*4L*	1000	—	—	—
4,4'-Dichloro[$^{13}C_{12}$]biphenyl	*15L*	1000	—	—	—
2,2',6-Trichloro[$^{13}C_{12}$]biphenyl	*19L*	1000	—	—	—
3,4,4'-Trichloro[$^{13}C_{12}$]biphenyl	*37L*	1000	—	—	—
2,2',6,6'-Tetrachloro[$^{13}C_{12}$]biphenyl	*54L*	1000	—	—	—
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	1000	—	—	—
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	1000	—	—	—
2,2',4,6,6'-Pentachloro[$^{13}C_{12}$]biphenyl	*104L*	1000	—	—	—
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	1000	—	—	—
2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*114L*	1000	—	—	—
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	1000	—	—	—
2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*123L*	1000	—	—	—
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	1000	—	—	—
2,2',4,4',6,6'-Hexachloro[$^{13}C_{12}$]biphenyl	*155L*	1000	—	—	—
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	1000	—	—	—
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	1000	—	—	—
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	1000	—	—	—
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	1000	—	—	—
2,2',3,4',5,6,6'-Heptachloro[$^{13}C_{12}$]biphenyl	*188L*	1000	—	—	—
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	1000	—	—	—
2,2',3,3',5,5',6,6'-Octachloro[$^{13}C_{12}$]biphenyl	*202L*	1000	—	—	—
2,3,3',4,4',5,5',6-Octachloro[$^{13}C_{12}$]biphenyl	*205L*	1000	—	—	—
2,2',3,3',4,4',5,5',6-Nonachloro[$^{13}C_{12}$]biphenyl	*206L*	1000	—	—	—
2,2',3,3',4,5,5',6,6'-Nonachloro[$^{13}C_{12}$]biphenyl	*208L*	1000	—	—	—
Decachloro[$^{13}C_{12}$]biphenyl	*209L*	1000	—	—	—
Labelled Clean-Up (68B-CS)					
2,4,4'-Trichloro[$^{13}C_{12}$]biphenyl	*28L*	—	1000	—	—
2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*111L*	—	1000	—	—
2,2',3,3',5,5',6-Heptachloro[$^{13}C_{12}$]biphenyl	*178L*	—	1000	—	—
Labelled Injection/Internal (68B-IS)					
2,5-Dichloro[$^{13}C_{12}$]biphenyl	*9L*	—	—	5000	—
2,2',5,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*52L*	—	—	5000	—
2,2',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*101L*	—	—	5000	—
2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*138L*	—	—	5000	—
2,2',3,3',4,4',5,5'-Octachloro[$^{13}C_{12}$]biphenyl	*194L*	—	—	5000	—

EPA METHOD 1668 STANDARD SOLUTIONS

Catalogue Number	Product (nonane solution)	Qty/Conc
EPA-1668CVS	EPA Method 1668 Calibration and Verification Solutions CS1-CS5	1 kit (5 ampoules)
EPA-1668CS1	CS1	200 µl
EPA-1668CS2	CS2	200 µl
EPA-1668CS3	CS3 Calibration Verification	500 µl
EPA-1668CS4	CS4	200 µl
EPA-1668CS5	CS5	200 µl

NATIVE PCBs	*IUPAC*	1668CS1 (ng/ml)	1668CS2 (ng/ml)	1668CS3 (ng/ml)	1668CS4 (ng/ml)	1668CS5 (ng/ml)
3,3',4,4'-Tetrachlorobiphenyl	*77*	0.5	2.0	10	40	200
2,3,3',4,4'-Pentachlorobiphenyl	*105*	2.5	10	50	200	1000
2,3,4,4',5-Pentachlorobiphenyl	*114*	2.5	10	50	200	1000
2,3',4,4',5-Pentachlorobiphenyl	*118*	2.5	10	50	200	1000
2',3,4,4',5-Pentachlorobiphenyl	*123*	2.5	10	50	200	1000
3,3',4,4',5-Pentachlorobiphenyl	*126*	2.5	10	50	200	1000
2,3,3',4,4',5-Hexachlorobiphenyl	*156*	5.0	20	100	400	2000
2,3,3',4,4',5'-Hexachlorobiphenyl	*157*	5.0	20	100	400	2000
2,3',4,4',5,5'-Hexachlorobiphenyl	*167*	5.0	20	100	400	2000
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	5.0	20	100	400	2000
2,2',3,3',4,4',5-Heptachlorobiphenyl	*170*	5.0	20	100	400	2000
2,2',3,4,4',5,5'-Heptachlorobiphenyl	*180*	5.0	20	100	400	2000
2,3,3',4,4',5,5'-Heptachlorobiphenyl	*189*	5.0	20	100	400	2000
MASS-LABELLED PCBs						
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	100	100	100	100	100
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	100	100	100	100	100
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	100	100	100	100	100
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	100	100	100	100	100
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	100	100	100	100	100
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	100	100	100	100	100
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	100	100	100	100	100
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	100	100	100	100	100
2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*180L*	100	100	100	100	100
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	100	100	100	100	100
Decachloro[$^{13}C_{12}$]biphenyl	*209L*	200	200	200	200	200
CLEANUP STANDARDS						
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	0.5	2.0	10	40	200
2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*111L*	2.5	10	50	200	1000
INTERNAL STANDARDS						
2,2',5,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*52L*	100	100	100	100	100
2,2',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*101L*	100	100	100	100	100
2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*138L*	100	100	100	100	100
2,2',3,3',5,5',6-Heptachloro[$^{13}C_{12}$]biphenyl	*178L*	100	100	100	100	100

EPA METHOD 1668 STANDARD SOLUTIONS

Catalogue Number	Product (nonane solution)	Qty/Conc
EPA-1668LCS	Labelled Compound Stock Solution	1.2 ml
EPA-1668CS	Cleanup Standard Solution	1.2 ml
EPA-1668IS	Internal Standard Stock Solution	1.2 ml
EPA-1668PAR	Precision and Recovery Solution	1.2 ml

NATIVE PCBs	***IUPAC***	**1668LCS (ng/ml)**	**1668CS (ng/ml)**	**1668IS (ng/ml)**	**1668PAR (ng/ml)**
3,3',4,4'-Tetrachlorobiphenyl	*77*	—	—	—	20
2,3,3',4,4'-Pentachlorobiphenyl	*105*	—	—	—	1000
2,3,4,4',5-Pentachlorobiphenyl	*114*	—	—	—	1000
2,3',4,4',5-Pentachlorobiphenyl	*118*	—	—	—	1000
2',3,4,4',5-Pentachlorobiphenyl	*123*	—	—	—	1000
3,3',4,4',5-Pentachlorobiphenyl	*126*	—	—	—	100
2,3,3',4,4',5-Hexachlorobiphenyl	*156*	—	—	—	1000
2,3,3',4,4',5'-Hexachlorobiphenyl	*157*	—	—	—	1000
2,3',4,4',5,5'-Hexachlorobiphenyl	*167*	—	—	—	1000
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	—	—	—	200
2,2',3,3',4,4',5-Heptachlorobiphenyl	*170*	—	—	—	200
2,2',3,4,4',5,5'-Heptachlorobiphenyl	*180*	—	—	—	1000
2,3,3',4,4',5,5'-Heptachlorobiphenyl	*189*	—	—	—	200
MASS-LABELLED PCBs					
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	1000	—	—	—
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	1000	—	—	—
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	1000	—	—	—
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	1000	—	—	—
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	1000	—	—	—
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	1000	—	—	—
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	1000	—	—	—
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	1000	—	—	—
2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*180L*	1000	—	—	—
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	1000	—	—	—
Decachloro[$^{13}C_{12}$]biphenyl	*209L*	2000	—	—	—
CLEANUP STANDARDS					
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	—	200	—	—
2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*111L*	—	1000	—	—
INTERNAL STANDARDS					
2,2',5,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*52L*	—	—	1000	—
2,2',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*101L*	—	—	1000	—
2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*138L*	—	—	1000	—
2,2',3,3',5,5',6-Heptachloro[$^{13}C_{12}$]biphenyl	*178L*	—	—	1000	—

ENVIRONMENT CANADA METHOD 1/RM/31 STANDARD SOLUTIONS

Catalogue Number	Product (isooctane solution)	Qty/Conc
EC9605-CVS	PCB Calibration Solutions for GC/MS Calibration and Verification Solutions CS1-CS5	1 kit (5 ampoules)
ECPCS1	CS1	500 µl
ECPCS2	CS2	500 µl
ECPCS3	CS3	500 µl
ECPCS4	CS4	500 µl
ECPCS5	CS5	500 µl

NATIVE PCBs *	*IUPAC*	ECPCS1 (ng/ml)	ECPCS2 (ng/ml)	ECPCS3 (ng/ml)	ECPCS4 (ng/ml)	ECPCS5 (ng/ml)
2,2',5-Trichlorobiphenyl	*18*	20	50	200	800	2000
2,4,4'-Trichlorobiphenyl	*28*	20	50	200	800	2000
2',3,4-Trichlorobiphenyl	*33*	20	50	200	800	2000
2,2',5,5'-Tetrachlorobiphenyl	*52*	20	50	200	800	2000
2,2',3,5'-Tetrachlorobiphenyl	*44*	20	50	200	800	2000
2,3',4',5-Tetrachlorobiphenyl	*70*	20	50	200	800	2000
2,2',4,5,5'-Pentachlorobiphenyl	*101*	20	50	200	800	2000
2,3',4,4',5-Pentachlorobiphenyl	*118*	20	50	200	800	2000
2,3,3',4,4'-Pentachlorobiphenyl	*105*	20	50	200	800	2000
2,2',4,4',5,5'-Hexachlorobiphenyl	*153*	20	50	200	800	2000
2,2',3,4,4',5'-Hexachlorobiphenyl	*138*	20	50	200	800	2000
2,2',3,3',4,4'-Hexachlorobiphenyl	*128*	20	50	200	800	2000
2,2',3,4',5,5',6-Heptachlorobiphenyl	*187*	20	50	200	800	2000
2,2',3,4,4',5,5'-Heptachlorobiphenyl	*180*	20	50	200	800	2000
2,2',3,3',4,4',5-Heptachlorobiphenyl	*170*	20	50	200	800	2000
2,2',3,3',4,5,5',6'-Octachlorobiphenyl	*199*	20	50	200	800	2000
2,2',3,3',4,4',5,6-Octachlorobiphenyl	*195*	20	50	200	800	2000
2,2',3,3',4,4',5,5'-Octachlorobiphenyl	*194*	20	50	200	800	2000
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	*206*	20	50	200	800	2000
Decachlorobiphenyl	*209*	20	50	200	800	2000
MASS-LABELLED SURROGATES *						
2,4,4'-Trichloro[$^{13}C_{12}$]biphenyl	*28L*	400	400	400	400	400
2,2',5,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*52L*	400	400	400	400	400
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	400	400	400	400	400
2,2',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*153L*	400	400	400	400	400
2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*180L*	400	400	400	400	400
2,2',3,3',5,5',6,6'-Octachloro[$^{13}C_{12}$]biphenyl	*202L*	400	400	400	400	400
2,2',3,3',4,4',5,5',6-Nonachloro[$^{13}C_{12}$]biphenyl	*206L*	400	400	400	400	400
Decachloro[$^{13}C_{12}$]biphenyl	*209L*	400	400	400	400	400
MASS-LABELLED RECOVERY STANDARDS *						
2,2',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*101L*	400	400	400	400	400
2,2',3,3',4,4',5,5'-Octachloro[$^{13}C_{12}$]biphenyl	*194L*	400	400	400	400	400

***** In order of elution on a 60m DB-5 column.

ENVIRONMENT CANADA METHOD 1/RM/31 STANDARD SOLUTIONS

Catalogue Number	Product (isooctane solution)	Qty/Conc
EC9605-RS	Recovery Standard Solution	1.2 ml
EC9605-SS	Surrogate Solution	1.2 ml
EC9605-PAR	Precision and Recovery Solution	1.2 ml

NATIVE PCBs	***IUPAC***	**EC9605-RS (µg/ml)**	**EC9605-SS (µg/ml)**	**EC9605-PAR (ng/ml)**
2,2',5-Trichlorobiphenyl	*18*	—	—	100
2,4,4'-Trichlorobiphenyl	*28*	—	—	100
2',3,4-Trichlorobiphenyl	*33*	—	—	100
2,2',5,5'-Tetrachlorobiphenyl	*52*	—	—	100
2,2',3,5'-Tetrachlorobiphenyl	*44*	—	—	100
2,3',4',5-Tetrachlorobiphenyl	*70*	—	—	100
2,2',4,5,5'-Pentachlorobiphenyl	*101*	—	—	100
2,3',4,4',5-Pentachlorobiphenyl	*118*	—	—	100
2,3,3',4,4'-Pentachlorobiphenyl	*105*	—	—	100
2,2',4,4',5,5'-Hexachlorobiphenyl	*153*	—	—	100
2,2',3,4,4',5'-Hexachlorobiphenyl	*138*	—	—	100
2,2',3,3',4,4'-Hexachlorobiphenyl	*128*	—	—	100
2,2',3,4',5,5',6-Heptachlorobiphenyl	*187*	—	—	100
2,2',3,4,4',5,5'-Heptachlorobiphenyl	*180*	—	—	100
2,2',3,3',4,4',5-Heptachlorobiphenyl	*170*	—	—	100
2,2',3,3',4,5,5',6'-Octachlorobiphenyl	*199*	—	—	100
2,2',3,3',4,4',5,6-Octachlorobiphenyl	*195*	—	—	100
2,2',3,3',4,4',5,5'-Octachlorobiphenyl	*194*	—	—	100
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	*206*	—	—	100
Decachlorobiphenyl	*209*	—	—	100
MASS-LABELLED SURROGATES				
2,4,4'-Trichloro[$^{13}C_{12}$]biphenyl	*28L*	—	2.0	—
2,2',5,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*52L*	—	2.0	—
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	—	2.0	—
2,2',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*153L*	—	2.0	—
2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*180L*	—	2.0	—
2,2',3,3',5,5',6,6'-Octachloro[$^{13}C_{12}$]biphenyl	*202L*	—	2.0	—
2,2',3,3',4,4',5,5',6-Nonachloro[$^{13}C_{12}$]biphenyl	*206L*	—	2.0	—
Decachloro[$^{13}C_{12}$]biphenyl	*209L*	—	2.0	—
MASS-LABELLED RECOVERY STANDARDS				
2,2',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*101L*	2.0	—	—
2,2',3,3',4,4',5,5'-Octachloro[$^{13}C_{12}$]biphenyl	*194L*	2.0	—	—

P48-W-CVS

Catalogue Number	Product (nonane solution)	Qty/Conc
P48-W-CVS	P48-W-CVS; prCEN/TS 1948-4:2006 HRGC/HRMS Calibration Solutions for the WHO PCBs	1 kit (6 ampoules)
P48-W-CS1	CS1	500 µl
P48-W-CS2	CS2	500 µl
P48-W-CS3	CS3	500 µl
P48-W-CS4	CS4	500 µl
P48-W-CS5	CS5	500 µl
P48-W-CS6	CS6	500 µl

NATIVE WHO PCB CONGENERS	*IUPAC*	P48-W-CS1 (pg/µl)	P48-W-CS2 (pg/µl)	P48-W-CS3 (pg/µl)	P48-W-CS4 (pg/µl)	P48-W-CS5 (pg/µl)	P48-W-CS6 (pg/µl)
3,3',4,4'-Tetrachlorobiphenyl	*77*	0.1	1.0	10	50	200	800
3,4,4',5-Tetrachlorobiphenyl	*81*	0.1	1.0	10	50	200	800
2,3,3',4,4'-Pentachlorobiphenyl	*105*	0.1	1.0	10	50	200	800
2,3,4,4',5-Pentachlorobiphenyl	*114*	0.1	1.0	10	50	200	800
2,3',4,4',5-Pentachlorobiphenyl	*118*	0.6	6.0	60	300	1200	4800
2',3,4,4',5-Pentachlorobiphenyl	*123*	0.1	1.0	10	50	200	800
3,3',4,4',5-Pentachlorobiphenyl	*126*	0.1	1.0	10	50	200	800
2,3,3',4,4',5-Hexachlorobiphenyl	*156*	0.1	1.0	10	50	200	800
2,3,3',4,4',5'-Hexachlorobiphenyl	*157*	0.1	1.0	10	50	200	800
2,3',4,4',5,5'-Hexachlorobiphenyl	*167*	0.1	1.0	10	50	200	800
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	0.1	1.0	10	50	200	800
2,3,3',4,4',5,5'-Heptachlorobiphenyl	*189*	0.1	1.0	10	50	200	800
WHO PCB EXTRACTION SPIKE (P48-W-ES)							
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	10	10	10	10	10	10
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	10	10	10	10	10	10
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	10	10	10	10	10	10
2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*114L*	10	10	10	10	10	10
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	10	10	10	10	10	10
2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*123L*	10	10	10	10	10	10
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	10	10	10	10	10	10
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	10	10	10	10	10	10
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	10	10	10	10	10	10
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	10	10	10	10	10	10
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	10	10	10	10	10	10
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	10	10	10	10	10	10
SAMPLING SPIKE (P48-SS)							
2,3,4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*60L*	10	10	10	10	10	10
3,3',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*127L*	10	10	10	10	10	10
2,3,3',4,5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*159L*	10	10	10	10	10	10
RECOVERY SPIKE (P48-RS)							
2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*70L*	10	10	10	10	10	10
2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*111L*	10	10	10	10	10	10
2,2',3,3',4,4',5-Heptachloro[$^{13}C_{12}$]biphenyl	*170L*	10	10	10	10	10	10

Catalogue Number	Product (nonane solution)	Qty/Conc
P48-M-CVS	P48-M-CVS; prCEN/TS 1948-4:2006 HRGC/HRMS Calibration Solutions for the Marker PCBs	1 kit (6 ampoules)
P48-M-CS0.1	CS0.1	500 µl
P48-M-CS1	CS1	500 µl
P48-M-CS2	CS2	500 µl
P48-M-CS3	CS3	500 µl
P48-M-CS4	CS4	500 µl
P48-M-CS5	CS5	500 µl

NATIVE MARKER PCB CONGENERS	*IUPAC*	P48-M-CS0.1 (pg/µl)	P48-M-CS1 (pg/µl)	P48-M-CS2 (pg/µl)	P48-M-CS3 (pg/µl)	P48-M-CS4 (pg/µl)	P48-M-CS5 (pg/µl)
2,4,4'-Trichlorobiphenyl	*28*	0.1	1.0	10	100	500	5000
2,2',5,5'-Tetrachlorobiphenyl	*52*	0.1	1.0	10	100	500	5000
2,2',4,5,5'-Pentachlorobiphenyl	*101*	0.1	1.0	10	100	500	5000
2,2',3,4,4',5'-Hexachlorobiphenyl	*138*	0.1	1.0	10	100	500	5000
2,2',4,4',5,5'-Hexachlorobiphenyl	*153*	0.1	1.0	10	100	500	5000
2,2',3,4,4',5,5'-Heptachlorobiphenyl	*180*	0.1	1.0	10	100	500	5000
MARKER PCB EXTRACTION SPIKE (P48-M-ES)							
2,4,4'-Trichloro[$^{13}C_{12}$]biphenyl	*28L*	100	100	100	100	100	100
2,2',5,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*52L*	100	100	100	100	100	100
2,2',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*101L*	100	100	100	100	100	100
2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*138L*	100	100	100	100	100	100
2,2',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*153L*	100	100	100	100	100	100
2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*180L*	100	100	100	100	100	100
SAMPLING SPIKE (P48-SS)							
2,3,4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*60L*	10	10	10	10	10	10
3,3',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*127L*	10	10	10	10	10	10
2,3,3',4,5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*159L*	10	10	10	10	10	10
RECOVERY SPIKE (P48-RS)							
2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*70L*	10	10	10	10	10	10
2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*111L*	10	10	10	10	10	10
2,2',3,3',4,4',5-Heptachloro[$^{13}C_{12}$]biphenyl	*170L*	10	10	10	10	10	10

P48-W-PAR: Native WHO PCB Solution

Catalogue Number	Product (nonane solution)	Qty/Conc
P48-W-PAR	P48-W-PAR; prCEN/TS 1948-4:2006	1.2 ml

NATIVE WHO PCB CONGENERS	*IUPAC*	P48-W-PAR (pg/µl)
3,3',4,4'-Tetrachlorobiphenyl	*77*	250
3,4,4',5-Tetrachlorobiphenyl	*81*	250
2,3,3',4,4'-Pentachlorobiphenyl	*105*	250
2,3,4,4',5-Pentachlorobiphenyl	*114*	250
2,3',4,4',5-Pentachlorobiphenyl	*118*	1500
2',3,4,4',5-Pentachlorobiphenyl	*123*	250
3,3',4,4',5-Pentachlorobiphenyl	*126*	250
2,3,3',4,4',5-Hexachlorobiphenyl	*156*	250
2,3,3',4,4',5'-Hexachlorobiphenyl	*157*	250
2,3',4,4',5,5'-Hexachlorobiphenyl	*167*	250
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	250
2,3,3',4,4',5,5'-Heptachlorobiphenyl	*189*	250

P48-M-PAR: Native Marker PCB Solution

Catalogue Number	Product (nonane solution)	Qty/Conc
P48-M-PAR	P48-M-PAR; prCEN/TS 1948-4:2006	1.2 ml

NATIVE MARKER PCB CONGENERS	*IUPAC*	P48-M-PAR (pg/µl)
2,4,4'-Trichlorobiphenyl	*28*	250
2,2',5,5'-Tetrachlorobiphenyl	*52*	250
2,2',4,5,5'-Pentachlorobiphenyl	*101*	250
2,2',3,4,4',5'-Hexachlorobiphenyl	*138*	250
2,2',4,4',5,5'-Hexachlorobiphenyl	*153*	250
2,2',3,4,4',5,5'-Heptachlorobiphenyl	*180*	250

Catalogue Number	Product (nonane solution)	Qty/Conc
P48-W-ES	WHO PCB Extraction Standards	1.2 ml
P48-M-ES	Marker PCB Extraction Standards	1.2 ml
P48-SS	Mass-Labelled PCB Sampling Standards	1.2 ml
P48-RS	Mass-Labelled PCB Recovery Standards	1.2 ml

WHO PCB EXTRACTION STANDARDS	***IUPAC***	**P48-W-ES (pg/µl)**	**P48-M-ES (pg/µl)**	**P48-SS (pg/µl)**	**P48-RS (pg/ul)**
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	100	—	—	—
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	100	—	—	—
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	100	—	—	—
2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*114L*	100	—	—	—
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	100	—	—	—
2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*123L*	100	—	—	—
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	100	—	—	—
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	100	—	—	—
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	100	—	—	—
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	100	—	—	—
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	100	—	—	—
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	100	—	—	—
MARKER PCB EXTRACTION STANDARDS					
2,4,4'-Trichloro[$^{13}C_{12}$]biphenyl	*28L*	—	1000	—	—
2,2',5,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*52L*	—	1000	—	—
2,2',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*101L*	—	1000	—	—
2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*138L*	—	1000	—	—
2,2',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*153L*	—	1000	—	—
2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*180L*	—	1000	—	—
MASS-LABELLED PCB SAMPLING STANDARDS					
2,3,4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*60L*	—	—	100	—
3,3',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*127L*	—	—	100	—
2,3,3',4,5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*159L*	—	—	100	—
MASS-LABELLED PCB RECOVERY STANDARDS					
2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*70L*	—	—	—	100
2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*111L*	—	—	—	100
2,2',3,3',4,4',5-Heptachloro[$^{13}C_{12}$]biphenyl	*170L*	—	—	—	100

INDIVIDUAL PCBs:
Mass-Labelled

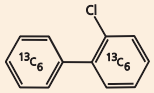
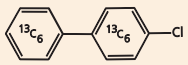
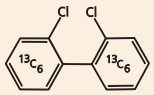
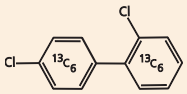
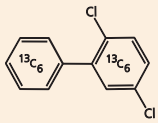
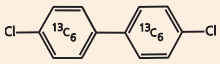
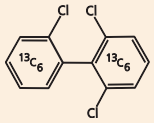
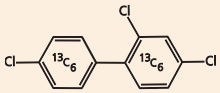
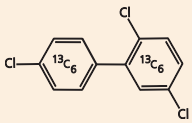
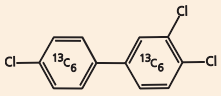
Listed on the following pages are the mass-labelled chlorinated biphenyl congeners that are currently available from **Wellington**. You will note that a few more have been added since our previous catalogue.

All compounds were synthesized using one-product unambiguous routes and their chemical and isotopic purities were confirmed by various techniques. Structural characterization was accomplished by HRGC/LRMS co-injection of the mass-labelled PCB with its native analogue.

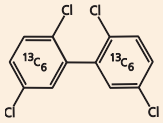
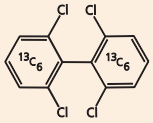
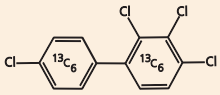
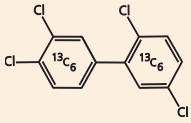
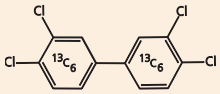
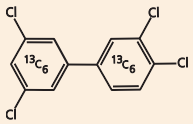
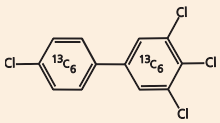
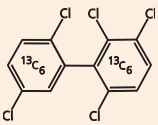
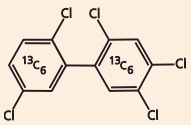
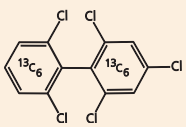
All products come with HRGC/LRMS and HRGC/HRMS data which clearly shows their chemical and isotopic purities.

For the availability of congeners that are not listed in this section, please contact **Wellington** or your local distributor.

MASS-LABELLED CHLORINATED BIPHENYLS

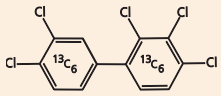
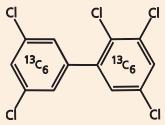
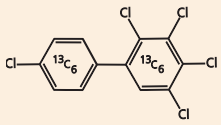
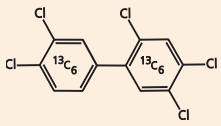
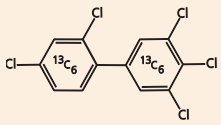
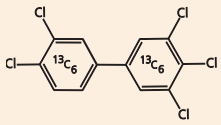
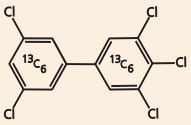
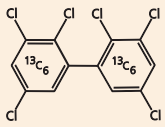
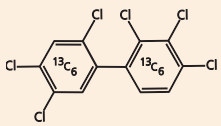
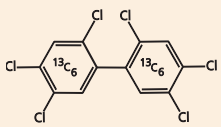
Catalogue Number		Product
MBP-1		2-Chloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-3		4-Chloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-4		2,2'-Dichloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-8		2,4'-Dichloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-9		2,5-Dichloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-15		4,4'-Dichloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-19		2,2',6-Trichloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-28		2,4,4'-Trichloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-31		2,4',5-Trichloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-37		3,4,4'-Trichloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane

* Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

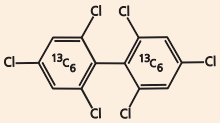
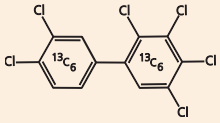
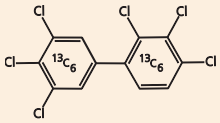
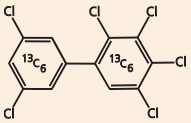
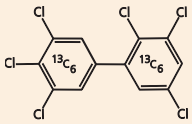
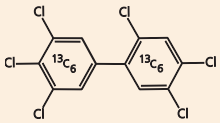
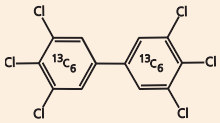
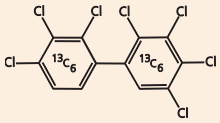
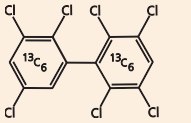
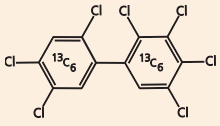
Catalogue Number		Product
MBP-52		2,2',5,5'-Tetrachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-54		2,2',6,6'-Tetrachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-60		2,3,4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-70		2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-77		3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-79		3,3',4,5'-Tetrachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-81		3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-95		2,2',3,5',6-Pentachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-101		2,2',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-104		2,2',4,6,6'-Pentachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane

* Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

MASS-LABELLED CHLORINATED BIPHENYLS

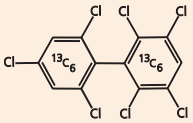
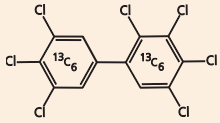
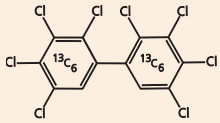
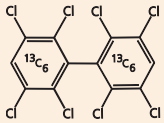
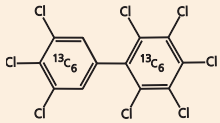
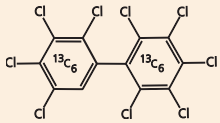
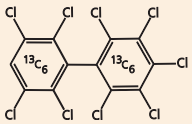
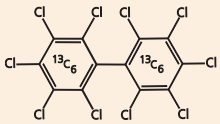
Catalogue Number		Product
MBP-105		2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-111		2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-114		2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-118		2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-123		2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-126		3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-127		3,3',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-133		2,2',3,3',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-138		2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-153		2,2',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane

***** Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

Catalogue Number		Product
MBP-155		2,2',4,4',6,6'-Hexachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-156		2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-157		2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-159		2,3,3',4,5,5'-Hexachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-162		2,3,3',4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-167		2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-169		3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-170		2,2',3,3',4,4',5-Heptachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-178		2,2',3,3',5,5',6-Heptachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-180		2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane

* Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

MASS-LABELLED CHLORINATED BIPHENYLS

Catalogue Number		Product
MBP-188		2,2',3,4',5,6,6'-Heptachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-189		2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-194		2,2',3,3',4,4',5,5'-Octachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-202		2,2',3,3',5,5',6,6'-Octachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-205		2,3,3',4,4',5,5',6-Octachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-206		2,2',3,3',4,4',5,5',6-Nonachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-208		2,2',3,3',4,5,5',6,6'-Nonachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBP-209		Decachloro[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane

* Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

SPECIALTY SOLUTION/MIXTURES of PCBs

A number of other solution/mixtures of native and mass-labelled PCBs, including HRMS calibration kits, have been prepared by **Wellington** and are described in the following section.

These include the two multi-point calibration sets, PCB-CVS-A10 and PCB-CVS-A5, which are used for the analysis of the 12 "dioxin-like" PCBs as well as PCBs 170 and 180, which have been assigned provisional TEFs.

Also included in this section is a new HRGC/HRMS calibration set called PCB-CVS-H, and its support solutions.

This is a much more involved set of solutions containing 82 native PCB congeners, including all of the "dioxin-like" PCBs. The PCB congeners were selected based on their presence in, and contribution to, the Aroclor™ commercial mixtures.

All of the solutions in this section come with detailed CofAs including GC/MS data, as appropriate, and RRF summaries for the calibration sets.

PCB-CVS-H

Catalogue Number	Product (nonane solution)	Qty/Conc
PCB-CVS-H	Calibration Solutions for HRGC/HRMS Analysis of Polychlorinated Biphenyls (PCBs)	1 kit (6 x 200 µl ampoules)
PCB-CS1-H	CS1	200 µl
PCB-CS2-H	CS2	200 µl
PCB-CS3-H	CS3	200 µl
PCB-CS4-H	CS4	200 µl
PCB-CS5-H	CS5	200 µl
PCB-CS6-H	CS6	200 µl

NATIVE CHLORINATED BIPHENYLS		PCB-CS1-H (ng/ml)	PCB-CS2-H (ng/ml)	PCB-CS3-H (ng/ml)	PCB-CS4-H (ng/ml)	PCB-CS5-H (ng/ml)	PCB-CS6-H (ng/ml)
CHLOROBIPHENYLS 1, 3		0.1	0.5	2.0	10	40	200
DICHLOROBIPHENYLS 4, 6, 8, 10, 15		0.1	0.5	2.0	10	40	200
TRICHLOROBIPHENYLS 16, 18, 19, 22, 28, 31, 33, 37		0.1	0.5	2.0	10	40	200
TETRACHLOROBIPHENYLS 40, 41, 44, 49, 52, 54, 60, 66, 70, 74, 77, 81		0.1	0.5	2.0	10	40	200
PENTACHLOROBIPHENYLS 84, 85, 87, 90, 95, 97, 99, 101, 104 105, 110, 114, 118, 119, 123, 126		0.1	0.5	2.0	10	40	200
HEXACHLOROBIPHENYLS 128, 129, 135, 137, 138, 141, 149, 151, 153, 155, 156, 157, 158, 167, 168, 169		0.1	0.5	2.0	10	40	200
HEPTACHLOROBIPHENYLS 170,171, 174, 177, 178, 180, 183, 187, 188, 189, 191, 193		0.1	0.5	2.0	10	40	200
OCTACHLOROBIPHENYLS 194, 199, 200, 201, 202, 203, 205		0.1	0.5	2.0	10	40	200
NONACHLOROBIPHENYLS 206, 207, 208		0.1	0.5	2.0	10	40	200
DECACHLOROBIPHENYL 209		0.1	0.5	2.0	10	40	200
MASS-LABELLED CHLORINATED BIPHENYLS EXTRACTION STANDARDS							
2-Chloro[$^{13}C_{12}$]biphenyl	***1L***	50	50	50	50	50	50
4-Chloro[$^{13}C_{12}$]biphenyl	***3L***	50	50	50	50	50	50
2,2'-Dichloro[$^{13}C_{12}$]biphenyl	***4L***	50	50	50	50	50	50
2,4'-Dichloro[$^{13}C_{12}$]biphenyl	***8L***	50	50	50	50	50	50
4,4'-Dichloro[$^{13}C_{12}$]biphenyl	***15L***	50	50	50	50	50	50
2,2',6-Trichloro[$^{13}C_{12}$]biphenyl	***19L***	50	50	50	50	50	50
2,4,4'-Trichloro[$^{13}C_{12}$]biphenyl	***28L***	50	50	50	50	50	50
2,2',5,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	***52L***	50	50	50	50	50	50
2,2',6,6'-Tetrachloro[$^{13}C_{12}$]biphenyl	***54L***	50	50	50	50	50	50
2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	***70L***	50	50	50	50	50	50
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	***77L***	50	50	50	50	50	50
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	***81L***	50	50	50	50	50	50
2,2',3,5',6-Pentachloro[$^{13}C_{12}$]biphenyl	***95L***	50	50	50	50	50	50
2,2',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	***101L***	50	50	50	50	50	50
2,2',4,6,6'-Pentachloro[$^{13}C_{12}$]biphenyl	***104L***	50	50	50	50	50	50
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	***105L***	50	50	50	50	50	50
2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	***114L***	50	50	50	50	50	50
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	***118L***	50	50	50	50	50	50
2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	***123L***	50	50	50	50	50	50
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	***126L***	50	50	50	50	50	50
2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	***138L***	50	50	50	50	50	50
2,2',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	***153L***	50	50	50	50	50	50
2,2',4,4',6,6'-Hexachloro[$^{13}C_{12}$]biphenyl	***155L***	50	50	50	50	50	50
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	***156L***	50	50	50	50	50	50
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	***157L***	50	50	50	50	50	50
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	***167L***	50	50	50	50	50	50
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	***169L***	50	50	50	50	50	50
2,2',3,3',4,4',5-Heptachloro[$^{13}C_{12}$]biphenyl	***170L***	50	50	50	50	50	50
2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	***180L***	50	50	50	50	50	50
2,2',3,4',5,6,6'-Heptachloro[$^{13}C_{12}$]biphenyl	***188L***	50	50	50	50	50	50
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	***189L***	50	50	50	50	50	50
2,2',3,3',5,5',6,6'-Octachloro[$^{13}C_{12}$]biphenyl	***202L***	50	50	50	50	50	50
2,3,3',4,4',5,5',6-Octachloro[$^{13}C_{12}$]biphenyl	***205L***	50	50	50	50	50	50
2,2',3,3',4,5,5',6,6'-Nonachloro[$^{13}C_{12}$]biphenyl	***208L***	50	50	50	50	50	50
Decachloro[$^{13}C_{12}$]biphenyl	***209L***	50	50	50	50	50	50
RECOVERY/INTERNAL STANDARDS							
2,5-Dichloro[$^{13}C_{12}$]biphenyl	***9L***	50	50	50	50	50	50
3,4,4'-Trichloro[$^{13}C_{12}$]biphenyl	***37L***	50	50	50	50	50	50
3,3',4,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	***79L***	50	50	50	50	50	50
2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	***111L***	50	50	50	50	50	50
2,3,3',4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	***162L***	50	50	50	50	50	50
2,2',3,3',4,4',5,5'-Octachloro[$^{13}C_{12}$]biphenyl	***194L***	50	50	50	50	50	50
2,2',3,3',4,4',5,5',6-Nonachloro[$^{13}C_{12}$]biphenyl	***206L***	50	50	50	50	50	50
SAMPLING/CLEANUP STANDARDS							
2,3,4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	***60L***	50	50	50	50	50	50
2,3,3',4,5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	***159L***	50	50	50	50	50	50

Catalogue Number	Product (nonane solution)	Qty/Conc
PCB-LCS-H	Mass-Labelled PCB Extraction Standards	1.2 ml
PCB-ISS-H	Mass-Labelled PCB Internal/Recovery Standards	1.2 ml
PCB-SCS-H	Mass-Labelled PCB Cleanup/Sampling Standards	1.2 ml
PCB-PAR-H	Native PCB Solution	1.2 ml

NATIVE CHLORINATED BIPHENYLS		PCB-LCS-H (ng/ml)	PCB-ISS-H (ng/ml)	PCB-SCS-H (ng/ml)	PCB-PAR-H (ng/ml)
CHLOROBIPHENYLS 1, 3		—	—	—	500
DICHLOROBIPHENYLS 4, 6, 8, 10, 15		—	—	—	500
TRICHLOROBIPHENYLS 16, 18, 19, 22, 28, 31, 33, 37		—	—	—	500
TETRACHLOROBIPHENYLS 40, 41, 44, 49, 52, 54, 60, 66, 70, 74, 77, 81		—	—	—	500
PENTACHLOROBIPHENYLS 84, 85, 87, 90, 95, 97, 99, 101, 104 105, 110, 114, 118, 119, 123, 126		—	—	—	500
HEXACHLOROBIPHENYLS 128, 129, 135, 137, 138, 141, 149, 151, 153, 155, 156, 157, 158, 167, 168, 169		—	—	—	500
HEPTACHLOROBIPHENYLS 170,171, 174, 177, 178, 180, 183, 187, 188, 189, 191, 193		—	—	—	500
OCTACHLOROBIPHENYLS 194, 199, 200, 201, 202, 203, 205		—	—	—	500
NONACHLOROBIPHENYLS 206, 207, 208		—	—	—	500
DECACHLOROBIPHENYL 209		—	—	—	500
MASS-LABELLED CHLORINATED BIPHENYLS EXTRACTION STANDARDS					
2-Chloro[$^{13}C_{12}$]biphenyl	***1L***	1000	—	—	—
4-Chloro[$^{13}C_{12}$]biphenyl	***3L***	1000	—	—	—
2,2'-Dichloro[$^{13}C_{12}$]biphenyl	***4L***	1000	—	—	—
2,4'-Dichloro[$^{13}C_{12}$]biphenyl	***8L***	1000	—	—	—
4,4'-Dichloro[$^{13}C_{12}$]biphenyl	***15L***	1000	—	—	—
2,2',6-Trichloro[$^{13}C_{12}$]biphenyl	***19L***	1000	—	—	—
2,4,4'-Trichloro[$^{13}C_{12}$]biphenyl	***28L***	1000	—	—	—
2,2',5,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	***52L***	1000	—	—	—
2,2',6,6'-Tetrachloro[$^{13}C_{12}$]biphenyl	***54L***	1000	—	—	—
2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	***70L***	1000	—	—	—
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	***77L***	1000	—	—	—
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	***81L***	1000	—	—	—
2,2',3,5',6-Pentachloro[$^{13}C_{12}$]biphenyl	***95L***	1000	—	—	—
2,2',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	***101L***	1000	—	—	—
2,2',4,6,6'-Pentachloro[$^{13}C_{12}$]biphenyl	***104L***	1000	—	—	—
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	***105L***	1000	—	—	—
2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	***114L***	1000	—	—	—
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	***118L***	1000	—	—	—
2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	***123L***	1000	—	—	—
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	***126L***	1000	—	—	—
2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	***138L***	1000	—	—	—
2,2',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	***153L***	1000	—	—	—
2,2',4,4',6,6'-Hexachloro[$^{13}C_{12}$]biphenyl	***155L***	1000	—	—	—
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	***156L***	1000	—	—	—
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	***157L***	1000	—	—	—
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	***167L***	1000	—	—	—
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	***169L***	1000	—	—	—
2,2',3,3',4,4',5-Heptachloro[$^{13}C_{12}$]biphenyl	***170L***	1000	—	—	—
2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	***180L***	1000	—	—	—
2,2',3,4',5,6,6'-Heptachloro[$^{13}C_{12}$]biphenyl	***188L***	1000	—	—	—
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	***189L***	1000	—	—	—
2,2',3,3',5,5',6,6'-Octachloro[$^{13}C_{12}$]biphenyl	***202L***	1000	—	—	—
2,3,3',4,4',5,5',6-Octachloro[$^{13}C_{12}$]biphenyl	***205L***	1000	—	—	—
2,2',3,3',4,5,5',6,6'-Nonachloro[$^{13}C_{12}$]biphenyl	***208L***	1000	—	—	—
Decachloro[$^{13}C_{12}$]biphenyl	***209L***	1000	—	—	—
RECOVERY/INTERNAL STANDARDS					
2,5-Dichloro[$^{13}C_{12}$]biphenyl	***9L***	—	1000	—	—
3,4,4'-Trichloro[$^{13}C_{12}$]biphenyl	***37L***	—	1000	—	—
3,3',4,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	***79L***	—	1000	—	—
2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	***111L***	—	1000	—	—
2,3,3',4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	***162L***	—	1000	—	—
2,2',3,3',4,4',5,5'-Octachloro[$^{13}C_{12}$]biphenyl	***194L***	—	1000	—	—
2,2',3,3',4,4',5,5',6-Nonachloro[$^{13}C_{12}$]biphenyl	***206L***	—	1000	—	—
SAMPLING/CLEANUP STANDARDS					
2,3,4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	***60L***	—	—	1000	—
2,3,3',4,5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	***159L***	—	—	1000	—

PCB-CVS-A10

Catalogue Number	Product (nonane solution)	Qty/Conc
PCB-CVS-A10-Set1	CS1/CS3/CS5/CS7/CS9	1 kit (5 x 200 µl ampoules)
PCB-CVS-A10-Set2	CS2/CS4/CS6/CS8/CS10	1 kit (5 x 200 µl ampoules)
PCB-CVS-A10-Set3	CS3/CS5/CS7/CS9/CS11	1 kit (5 x 200 µl ampoules)
PCB-A10-CSL	CSL Extended Calibration/Low Level	200 µl
PCB-A10-CS1	CS1	200 µl
PCB-A10-CS2	CS2	200 µl
PCB-A10-CS3	CS3	200 µl
PCB-A10-CS4	CS4	200 µl

NATIVE PCB CONGENERS	*IUPAC*	PCB-A10-CSL (ng/ml)	PCB-A10-CS1 (ng/ml)	PCB-A10-CS2 (ng/ml)	PCB-A10-CS3 (ng/ml)	PCB-A10-CS4 (ng/ml)
3,3',4,4'-Tetrachlorobiphenyl	*77*	0.05	0.1	0.2	0.5	1
3,4,4',5-Tetrachlorobiphenyl	*81*	0.05	0.1	0.2	0.5	1
2,3,3',4,4'-Pentachlorobiphenyl	*105*	0.05	0.1	0.2	0.5	1
2,3,4,4',5-Pentachlorobiphenyl	*114*	0.05	0.1	0.2	0.5	1
2,3',4,4',5-Pentachlorobiphenyl	*118*	0.05	0.1	0.2	0.5	1
2',3,4,4',5-Pentachlorobiphenyl	*123*	0.05	0.1	0.2	0.5	1
3,3',4,4',5-Pentachlorobiphenyl	*126*	0.05	0.1	0.2	0.5	1
2,3,3',4,4',5-Hexachlorobiphenyl	*156*	0.05	0.1	0.2	0.5	1
2,3,3',4,4',5'-Hexachlorobiphenyl	*157*	0.05	0.1	0.2	0.5	1
2,3',4,4',5,5'-Hexachlorobiphenyl	*167*	0.05	0.1	0.2	0.5	1
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	0.05	0.1	0.2	0.5	1
2,2',3,3',4,4',5-Heptachlorobiphenyl	*170*	0.05	0.1	0.2	0.5	1
2,2',3,4,4',5,5'-Heptachlorobiphenyl	*180*	0.05	0.1	0.2	0.5	1
2,3,3',4,4',5,5'-Heptachlorobiphenyl	*189*	0.05	0.1	0.2	0.5	1
MASS-LABELLED PCB CONGENERS						
Sampling and Syringe Spikes						
* 3,3',4,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*79L*	10	10	10	10	10
** 2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*70L*	10	10	10	10	10
** 2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*111L*	10	10	10	10	10
** 2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*138L*	10	10	10	10	10
Surrogates/Extraction Spikes						
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	10	10	10	10	10
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	10	10	10	10	10
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	10	10	10	10	10
2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*114L*	10	10	10	10	10
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	10	10	10	10	10
2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*123L*	10	10	10	10	10
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	10	10	10	10	10
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	10	10	10	10	10
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	10	10	10	10	10
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	10	10	10	10	10
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	10	10	10	10	10
2,2',3,3',4,4',5-Heptachloro[$^{13}C_{12}$]biphenyl	*170L*	10	10	10	10	10
2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*180L*	10	10	10	10	10
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	10	10	10	10	10

* for pre-sampling spike

** for syringe spike / recovery standard

Catalogue Number	Product (nonane solution)	Qty/Conc
PCB-A10-CS5	CS5	200 µl
PCB-A10-CS6	CS6	200 µl
PCB-A10-CS7	CS7	200 µl
PCB-A10-CS8	CS8	200 µl
PCB-A10-CS9	CS9	200 µl
PCB-A10-CS10	CS10	200 µl
PCB-A10-CS11	CS11	200 µl
PCB-A10-CSH	CSH Extended Calibration/High Level	200 µl

PCB-A10-CS5 (ng/ml)	PCB-A10-CS6 (ng/ml)	PCB-A10-CS7 (ng/ml)	PCB-A10-CS8 (ng/ml)	PCB-A10-CS9 (ng/ml)	PCB-A10-CS10 (ng/ml)	PCB-A10-CS11 (ng/ml)	PCB-A10-CSH (ng/ml)
2	5	10	20	50	100	250	1000
2	5	10	20	50	100	250	1000
2	5	10	20	50	100	250	1000
2	5	10	20	50	100	250	1000
2	5	10	20	50	100	250	1000
2	5	10	20	50	100	250	1000
2	5	10	20	50	100	250	1000
2	5	10	20	50	100	250	1000
2	5	10	20	50	100	250	1000
2	5	10	20	50	100	250	1000
2	5	10	20	50	100	250	1000
2	5	10	20	50	100	250	1000
2	5	10	20	50	100	250	1000
2	5	10	20	50	100	250	1000
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10

PCB-CVS-A5

Catalogue Number	Product (nonane solution)	Qty/Conc
PCB-CVS-A5-Set1	CS1/CS3/CS5/CS7/CS9	1 kit (5 x 200 µl ampoules)
PCB-CVS-A5-Set2	CS2/CS4/CS6/CS8/CS10	1 kit (5 x 200 µl ampoules)
PCB-CVS-A5-Set3	CS3/CS5/CS7/CS9/CS11	1 kit (5 x 200 µl ampoules)
PCB-A5-CSL	CSL Extended Calibration/Low Level	200 µl
PCB-A5-CS1	CS1	200 µl
PCB-A5-CS2	CS2	200 µl
PCB-A5-CS3	CS3	200 µl
PCB-A5-CS4	CS4	200 µl

NATIVE PCB CONGENERS	***IUPAC***	**PCB-A5-CSL (ng/ml)**	**PCB-A5-CS1 (ng/ml)**	**PCB-A5-CS2 (ng/ml)**	**PCB-A5-CS3 (ng/ml)**	**PCB-A5-CS4 (ng/ml)**
3,3',4,4'-Tetrachlorobiphenyl	*77*	0.05	0.1	0.2	0.5	1
3,4,4',5-Tetrachlorobiphenyl	*81*	0.05	0.1	0.2	0.5	1
2,3,3',4,4'-Pentachlorobiphenyl	*105*	0.05	0.1	0.2	0.5	1
2,3,4,4',5-Pentachlorobiphenyl	*114*	0.05	0.1	0.2	0.5	1
2,3',4,4',5-Pentachlorobiphenyl	*118*	0.05	0.1	0.2	0.5	1
2',3,4,4',5-Pentachlorobiphenyl	*123*	0.05	0.1	0.2	0.5	1
3,3',4,4',5-Pentachlorobiphenyl	*126*	0.05	0.1	0.2	0.5	1
2,3,3',4,4',5-Hexachlorobiphenyl	*156*	0.05	0.1	0.2	0.5	1
2,3,3',4,4',5'-Hexachlorobiphenyl	*157*	0.05	0.1	0.2	0.5	1
2,3',4,4',5,5'-Hexachlorobiphenyl	*167*	0.05	0.1	0.2	0.5	1
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	0.05	0.1	0.2	0.5	1
2,2',3,3',4,4',5-Heptachlorobiphenyl	*170*	0.05	0.1	0.2	0.5	1
2,2',3,4,4',5,5'-Heptachlorobiphenyl	*180*	0.05	0.1	0.2	0.5	1
2,3,3',4,4',5,5'-Heptachlorobiphenyl	*189*	0.05	0.1	0.2	0.5	1
MASS-LABELLED PCB CONGENERS						
Sampling and Syringe Spikes						
* 3,3',4,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*79L*	5	5	5	5	5
**2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*70L*	5	5	5	5	5
**2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*111L*	5	5	5	5	5
**2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*138L*	5	5	5	5	5
Surrogates/Extraction Spikes						
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	5	5	5	5	5
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	5	5	5	5	5
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	5	5	5	5	5
2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*114L*	5	5	5	5	5
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	5	5	5	5	5
2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*123L*	5	5	5	5	5
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	5	5	5	5	5
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	5	5	5	5	5
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	5	5	5	5	5
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	5	5	5	5	5
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	5	5	5	5	5
2,2',3,3',4,4',5-Heptachloro[$^{13}C_{12}$]biphenyl	*170L*	5	5	5	5	5
2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*180L*	5	5	5	5	5
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	5	5	5	5	5

* for pre-sampling spike

** for syringe spike / recovery standard

Catalogue Number	Product (nonane solution)	Qty/Conc
PCB-A5-CS5	CS5	200 µl
PCB-A5-CS6	CS6	200 µl
PCB-A5-CS7	CS7	200 µl
PCB-A5-CS8	CS8	200 µl
PCB-A5-CS9	CS9	200 µl
PCB-A5-CS10	CS10	200 µl
PCB-A5-CS11	CS11	200 µl

PCB-A5-CS5 (ng/ml)	PCB-A5-CS6 (ng/ml)	PCB-A5-CS7 (ng/ml)	PCB-A5-CS8 (ng/ml)	PCB-A5-CS9 (ng/ml)	PCB-A5-CS10 (ng/ml)	PCB-A5-CS11 (ng/ml)
2	5	10	20	50	100	250
2	5	10	20	50	100	250
2	5	10	20	50	100	250
2	5	10	20	50	100	250
2	5	10	20	50	100	250
2	5	10	20	50	100	250
2	5	10	20	50	100	250
2	5	10	20	50	100	250
2	5	10	20	50	100	250
2	5	10	20	50	100	250
2	5	10	20	50	100	250
2	5	10	20	50	100	250
2	5	10	20	50	100	250
2	5	10	20	50	100	250
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5
5	5	5	5	5	5	5

MASS-LABELLED PCBs: SOLUTION/MIXTURES

Support solutions for **PCB-CVS-A10** and **PCB-CVS-A5**

Catalogue Number	Product (nonane solution)	Qty/Conc
PCB-LCS-A	Mass-Labelled PCB Solution/Mixture	1.2 ml
PCB-LCS-A1	Mass-Labelled PCB Solution/Mixture	1.2 ml
PCB-LCS-A200	Mass-Labelled PCB Solution/Mixture	1.2 ml
PCB-LCS-A20	Mass-Labelled PCB Solution/Mixture	1.2 ml

MASS-LABELLED PCB CONGENERS	*IUPAC*	PCB-LCS-A (ng/ml)	PCB-LCS-A1 (ng/ml)	PCB-LCS-A200 (ng/ml)	PCB-LCS-A20 (ng/ml)
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	2000	1000	200	20
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	2000	1000	200	20
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	2000	1000	200	20
2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*114L*	2000	1000	200	20
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	2000	1000	200	20
2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*123L*	2000	1000	200	20
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	2000	1000	200	20
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	2000	1000	200	20
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	2000	1000	200	20
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	2000	1000	200	20
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	2000	1000	200	20
2,2',3,3',4,4',5-Heptachloro[$^{13}C_{12}$]biphenyl	*170L*	2000	1000	200	20
2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*180L*	2000	1000	200	20
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	2000	1000	200	20

PCB-IS-A	Mass-Labelled PCB Solution	1.2 ml
PCB-IS-A100	Mass-Labelled PCB Solution	1.2 ml
PCB-IS-A20	Mass-Labelled PCB Solution	1.2 ml

MASS-LABELLED PCB CONGENER	*IUPAC*	PCB-IS-A (ng/ml)	PCB-IS-A100 (ng/ml)	PCB-IS-A20 (ng/ml)
2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*70L*	1000	100	20

PCB-IS-B	Mass-Labelled PCB Solution/Mixture	1.2 ml
PCB-IS-B100	Mass-Labelled PCB Solution/Mixture	1.2 ml
PCB-IS-B20	Mass-Labelled PCB Solution/Mixture	1.2 ml

MASS-LABELLED PCB CONGENERS	*IUPAC*	PCB-IS-B (ng/ml)	PCB-IS-B100 (ng/ml)	PCB-IS-B20 (ng/ml)
2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*70L*	1000	100	20
2,3,3',5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*111L*	1000	100	20
2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*138L*	1000	100	20

PCB-SS-A	Mass-Labelled PCB Solution	1.2 ml
PCB-SS-A100	Mass-Labelled PCB Solution	1.2 ml
PCB-SS-A20	Mass-Labelled PCB Solution	1.2 ml

MASS-LABELLED PCB CONGENER	*IUPAC*	PCB-SS-A (ng/ml)	PCB-SS-A100 (ng/ml)	PCB-SS-A20 (ng/ml)
3,3',4,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*79L*	1000	100	20

Catalogue Number	Product (nonane solution)	Qty/Conc
MBP-CP	Mass-Labelled Coplanar PCB Solution/Mixture	1.2 ml
	IUPAC	
3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	10 µg/ml
3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	10 µg/ml
3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	10 µg/ml
3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	10 µg/ml
MBP-MO	Mass-Labelled Mono-Ortho PCB Solution/Mixture	1.2 ml
	IUPAC	
2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	5 µg/ml
2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*114L*	5 µg/ml
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	5 µg/ml
2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*123L*	5 µg/ml
2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	5 µg/ml
2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	5 µg/ml
2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	5 µg/ml
2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	5 µg/ml
MBP-CG	Mass-Labelled Mono To Decachloro PCB Solution/Mixture	1.2 ml
	IUPAC	
4-Chloro[$^{13}C_{12}$]biphenyl	*3L*	5 µg/ml
4,4'-Dichloro[$^{13}C_{12}$]biphenyl	*15L*	5 µg/ml
2,4',5-Trichloro[$^{13}C_{12}$]biphenyl	*31L*	5 µg/ml
2,2',5,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*52L*	5 µg/ml
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	5 µg/ml
2,2',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*153L*	5 µg/ml
2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*180L*	5 µg/ml
2,2',3,3',4,4',5,5'-Octachloro[$^{13}C_{12}$]biphenyl	*194L*	5 µg/ml
2,2',3,3',4,4',5,5',6-Nonachloro[$^{13}C_{12}$]biphenyl	*206L*	5 µg/ml
Decachloro[$^{13}C_{12}$]biphenyl	*209L*	5 µg/ml

NATIVE PCBs: SOLUTION/MIXTURES

(*) Support solutions for **PCB-CVS-A10** and **PCB-CVS-A5**

Catalogue Number	Product (nonane solution)	Qty/Conc
PCB-ST-A*	Native PCB Stock Solution	1.2 ml
PCB-ST-A10*	Native PCB Stock Solution	1.2 ml
PCB-ST-A2*	Native PCB Stock Solution	1.2 ml

NATIVE PCB CONGENERS	*IUPAC*	PCB-ST-A* (ng/ml)	PCB-ST-A10* (ng/ml)	PCB-ST-A2* (ng/ml)
3,3',4,4'-Tetrachlorobiphenyl	*77*	2000	10	2
3,4,4',5-Tetrachlorobiphenyl	*81*	2000	10	2
2,3,3',4,4'-Pentachlorobiphenyl	*105*	2000	10	2
2,3,4,4',5-Pentachlorobiphenyl	*114*	2000	10	2
2,3',4,4',5-Pentachlorobiphenyl	*118*	2000	10	2
2',3,4,4',5-Pentachlorobiphenyl	*123*	2000	10	2
3,3',4,4',5-Pentachlorobiphenyl	*126*	2000	10	2
2,3,3',4,4',5-Hexachlorobiphenyl	*156*	2000	10	2
2,3,3',4,4',5'-Hexachlorobiphenyl	*157*	2000	10	2
2,3',4,4',5,5'-Hexachlorobiphenyl	*167*	2000	10	2
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	2000	10	2
2,2',3,3',4,4',5-Heptachlorobiphenyl	*170*	2000	10	2
2,2',3,4,4',5,5'-Heptachlorobiphenyl	*180*	2000	10	2
2,3,3',4,4',5,5'-Heptachlorobiphenyl	*189*	2000	10	2

BP-CP81	Native Coplanar PCB Solution/Mixture	1.2 ml
	IUPAC	
3,3',4,4'-Tetrachlorobiphenyl	*77*	10 µg/ml
3,4,4',5-Tetrachlorobiphenyl	*81*	10 µg/ml
3,3',4,4',5-Pentachlorobiphenyl	*126*	10 µg/ml
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	10 µg/ml

Catalogue Number	Product (nonane solution)	Qty/Conc
BP-WD	Native PCB Window Defining Solution/Mixture for DB-5 or Equivalent Column	1.2 ml
NATIVE PCB CONGENERS	***IUPAC***	
Biphenyl	--	2.5 µg/ml
2-Chlorobiphenyl	*1*	2.5 µg/ml
4-Chlorobiphenyl	*3*	2.5 µg/ml
2,6-Dichlorobiphenyl	*10*	2.5 µg/ml
4,4'-Dichlorobiphenyl	*15*	2.5 µg/ml
2,2',6-Trichlorobiphenyl	*19*	2.5 µg/ml
3,4,4'-Trichlorobiphenyl	*37*	2.5 µg/ml
2,2',6,6'-Tetrachlorobiphenyl	*54*	2.5 µg/ml
3,3',4,4'-Tetrachlorobiphenyl	*77*	2.5 µg/ml
2,2',4,6,6'-Pentachlorobiphenyl	*104*	2.5 µg/ml
3,3',4,4',5-Pentachlorobiphenyl	*126*	2.5 µg/ml
2,2',4,4',6,6'-Hexachlorobiphenyl	*155*	2.5 µg/ml
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	2.5 µg/ml
2,2',3,4',5,6,6'-Heptachlorobiphenyl	*188*	2.5 µg/ml
2,3,3',4,4',5,5'-Heptachlorobiphenyl	*189*	2.5 µg/ml
2,2',3,3',5,5',6,6'-Octachlorobiphenyl	*202*	2.5 µg/ml
2,3,3',4,4',5,5',6-Octachlorobiphenyl	*205*	2.5 µg/ml
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	*206*	2.5 µg/ml
2,2',3,3',4,5,5',6,6'-Nonachlorobiphenyl	*208*	2.5 µg/ml
Decachlorobiphenyl	*209*	2.5 µg/ml

BP-MS

BP-MS-PL1, **BP-MS-PL2**, and **BP-MS-PL3** were prepared to be used in the identification/confirmation of the PCB congeners in **BP-MS**. Although DB-5 data is provided with **BP-MS**, there can be changes in the elution order on "*equivalent capillary columns*".

Catalogue Number	Product (nonane solution)	Qty/Conc
BP-MS	Native PCB Solution/Mixture for MS Detection	1.2 ml
BP-MS2	Native PCB Solution/Mixture for MS Detection	1.2 ml
BP-MS-PL1	Native PCB Solution/Mixture for MS Detection	1.2 ml
BP-MS-PL2	Native PCB Solution/Mixture for MS Detection	1.2 ml
BP-MS-PL3	Native PCB Solution/Mixture for MS Detection	1.2 ml

PCB CONGENERS	*IUPAC*	BP-MS (µg/ml)	BP-MS2 (µg/ml)	BP-MS-PL1 (µg/ml)	BP-MS-PL2 (µg/ml)	BP-MS-PL3 (µg/ml)
2-Chlorobiphenyl	*1*	2.0	—	—	—	—
4-Chlorobiphenyl	*3*	2.0	—	—	—	—
2,2'-Dichlorobiphenyl	*4*	2.0	—	—	—	—
2,4'-Dichlorobiphenyl	*8*	2.0	—	—	—	—
2,6- Dichlorobiphenyl	*10*	2.0	—	—	—	—
*4,4'-Dichlorobiphenyl	*15*	2.0	—	—	—	—
*2,2',5-Trichlorobiphenyl	*18*	2.0	—	—	—	—
2,2',6-Trichlorobiphenyl	*19*	2.0	—	—	—	—
2,3,4'-Trichlorobiphenyl	*22*	2.0	—	—	—	—
2,4,4'-Trichlorobiphenyl	*28*	2.0	—	—	—	—
2',3,4-Trichlorobiphenyl	*33*	2.0	—	—	—	—
3,4,4'-Trichlorobiphenyl	*37*	2.0	—	—	—	—
2,2',3,3'-Tetrachlorobiphenyl	*40*	—	2.0	—	—	—
2,2',3,4-Tetrachlorobiphenyl	*41*	—	2.0	—	—	—
*2,2',3,5'-Tetrachlorobiphenyl	*44*	2.0	—	—	—	—
*2,2',4,5'-Tetrachlorobiphenyl	*49*	2.0	—	—	2.0	—
*2,2',5,5'-Tetrachlorobiphenyl	*52*	2.0	—	2.0	—	—
*2,2',6,6'-Tetrachlorobiphenyl	*54*	2.0	—	—	—	—
2,3,4,4'-Tetrachlorobiphenyl	*60*	—	2.0	—	—	—
2,3',4,4'-Tetrachlorobiphenyl	*66*	—	2.0	—	—	—
2,3',4',5-Tetrachlorobiphenyl	*70*	2.0	—	2.0	—	—
2,4,4',5-Tetrachlorobiphenyl	*74*	2.0	—	—	2.0	—
*3,3',4,4'-Tetrachlorobiphenyl	*77*	2.0	—	—	—	2.0
3,4,4',5-Tetrachlorobiphenyl	*81*	2.0	—	—	—	—
*2,2',3,4,5'-Pentachlorobiphenyl	*87*	2.0	—	2.0	—	—
2,2',3,4',5-Pentachlorobiphenyl	*90*	—	2.0	—	—	—
2,2',3,5',6-Pentachlorobiphenyl	*95*	2.0	—	—	2.0	—
2,2',4,4',5-Pentachlorobiphenyl	*99*	2.0	—	—	2.0	—
*2,2',4,5,5'-Pentachlorobiphenyl	*101*	2.0	—	2.0	—	—
2,2',4,6,6'-Pentachlorobiphenyl	*104*	2.0	—	—	—	—
*2,3,3',4,4'-Pentachlorobiphenyl	*105*	2.0	—	—	—	—
2,3,3',4',6-Pentachlorobiphenyl	*110*	2.0	—	2.0	—	—
*2,3,4,4',5-Pentachlorobiphenyl	*114*	2.0	—	—	—	—
*2,3',4,4',5-Pentachlorobiphenyl	*118*	2.0	—	—	—	—
2,3',4,4',6-Pentachlorobiphenyl	*119*	2.0	—	—	—	—
2',3,4,4',5-Pentachlorobiphenyl	*123*	2.0	—	—	—	—
3,3',4,4',5-Pentachlorobiphenyl	*126*	2.0	—	—	—	—
*2,2',3,3',4,4'-Hexachlorobiphenyl	*128*	2.0	—	—	—	2.0
2,2',3,3',4,5-Hexachlorobiphenyl	*129*	—	2.0	—	—	—
2,2',3,4,4',5-Hexachlorobiphenyl	*137*	—	2.0	—	—	—
*2,2',3,4,4',5'-Hexachlorobiphenyl	*138*	2.0	—	2.0	—	—
2,2',3,4,5,5'-Hexachlorobiphenyl	*141*	—	2.0	—	—	—
2,2',3,4',5,6-Hexachlorobiphenyl	*149*	2.0	—	—	2.0	—
*2,2',3,5,5',6-Hexachlorobiphenyl	*151*	2.0	—	—	2.0	—
*2,2',4,4',5,5'-Hexachlorobiphenyl	*153*	2.0	—	2.0	—	—
2,2',4,4',6,6'-Hexachlorobiphenyl	*155*	2.0	—	2.0	—	—
*2,3,3',4,4',5-Hexachlorobiphenyl	*156*	2.0	—	—	—	—
2,3,3',4,4',5'-Hexachlorobiphenyl	*157*	2.0	—	—	—	—
2,3,3',4,4',6-Hexachlorobiphenyl	*158*	2.0	—	—	2.0	—
2,3',4,4',5,5'-Hexachlorobiphenyl	*167*	2.0	—	—	—	—
2,3',4,4',5',6-Hexachlorobiphenyl	*168*	2.0	—	—	2.0	—
3,3',4,4',5,5'-Hexachlorobiphenyl	*169*	2.0	—	—	—	—
*2,2',3,3',4,4',5-Heptachlorobiphenyl	*170*	2.0	—	—	—	—
*2,2',3,3',4,4',6-Heptachlorobiphenyl	*171*	2.0	—	—	2.0	—
2,2',3,3',4',5,6-Heptachlorobiphenyl	*177*	2.0	—	2.0	—	—
2,2',3,3',5,5',6-Heptachlorobiphenyl	*178*	2.0	—	—	—	2.0
*2,2',3,4,4',5,5'-Heptachlorobiphenyl	*180*	2.0	—	2.0	—	—
*2,2',3,4,4',5',6-Heptachlorobiphenyl	*183*	2.0	—	—	—	—
*2,2',3,4',5,5',6-Heptachlorobiphenyl	*187*	2.0	—	—	—	—
2,2',3,4',5,6,6'-Heptachlorobiphenyl	*188*	2.0	—	2.0	—	—
*2,3,3',4,4',5,5'-Heptachlorobiphenyl	*189*	2.0	—	—	—	—
*2,3,3',4,4',5',6-Heptachlorobiphenyl	*191*	2.0	—	—	—	—
2,3,3',4',5,5',6-Heptachlorobiphenyl	*193*	—	2.0	—	—	—
*2,2',3,3',4,4',5,5'-Octachlorobiphenyl	*194*	2.0	—	—	—	—
*2,2',3,3',4,5,5',6'-Octachlorobiphenyl	*199*	2.0	—	—	—	—
*2,2',3,3',4,5',6,6'-Octachlorobiphenyl	*201*	2.0	—	2.0	—	—
*2,2',3,3',5,5',6,6'-Octachlorobiphenyl	*202*	2.0	—	—	—	2.0
2,2',3,4,4',5,5',6-Octachlorobiphenyl	*203*	—	2.0	—	—	—
*2,3,3',4,4',5,5',6-Octachlorobiphenyl	*205*	2.0	—	—	—	—
*2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	*206*	2.0	—	—	—	—
*2,2',3,3',4,5,5',6,6'-Nonachlorobiphenyl	*208*	2.0	—	—	—	—
*Decachlorobiphenyl	*209*	2.0	—	—	—	—

Congeners marked with an asterisk (*) are concentration-certified by direct comparison to the NRCC CLB-1 solutions.

Solution/Mixtures for the analysis of the Dutch 7 PCB Congeners.

Catalogue Number	Product (nonane solution)	Qty/Conc
BP-D7	Native PCB Congener Solution/Mixture	1.2 ml
MBP-D7	Mass-Labelled PCB Congener Solution/Mixture	1.2 ml

NATIVE PCB CONGENERS	***IUPAC***	**BP-D7 (µg/ml)**
2,4,4'-Trichlorobiphenyl	*28*	10
2,2',5,5'-Tetrachlorobiphenyl	*52*	10
2,2',4,5,5'-Pentachlorobiphenyl	*101*	10
2,3',4,4',5-Pentachlorobiphenyl	*118*	10
2,2',3,4,4',5'-Hexachlorobiphenyl	*138*	10
2,2',4,4',5,5'-Hexachlorobiphenyl	*153*	10
2,2',3,4,4',5,5'-Heptachlorobiphenyl	*180*	10

MASS-LABELLED PCB CONGENERS	***IUPAC***	**MBP-D7 (µg/ml)**
2,4,4'-Trichloro[$^{13}C_{12}$]biphenyl	*28L*	5.0
2,2',5,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*52L*	5.0
2,2',4,5,5'-Pentachloro[$^{13}C_{12}$]biphenyl	*101L*	5.0
2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	5.0
2,2',3,4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*138L*	5.0
2,2',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*153L*	5.0
2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*180L*	5.0

MASS-LABELLED PCDDs/PCDFs/PCBs: SOLUTION/MIXTURES

These three solutions were designed and prepared as support solutions to be used with the following calibration sets:

DF-CVS-A10 (see Page 42)
DF-CVS-A5 (see Page 44)
DF-CVS-B10 (see Page 46)

as well as:

PCB-CVS-A10
PCB-CVS-A5

Catalogue Number	Product (nonane solution)		Qty/Conc
DFP-LCS-A	Mass-Labelled PCDD/PCDF/PCB Solution/Mixture		1.2 ml
MASS-LABELLED PCDDs			
	2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		10 ng/ml
	1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-p-dioxin		10 ng/ml
	1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin		10 ng/ml
	1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin		10 ng/ml
	1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzo-p-dioxin		10 ng/ml
	1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-p-dioxin		10 ng/ml
	Octachloro[$^{13}C_{12}$]dibenzo-p-dioxin		20 ng/ml
MASS-LABELLED PCDFs			
	2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	Octachloro[$^{13}C_{12}$]dibenzofuran		20 ng/ml
MASS-LABELLED PCBs		***IUPAC***	
	3,3',4,4'-Tetrachloro[$^{13}C_{12}$]biphenyl	*77L*	10 ng/ml
	3,4,4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*81L*	10 ng/ml
	2,3,3',4,4'-Pentachloro[$^{13}C_{12}$]biphenyl	*105L*	10 ng/ml
	2,3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*114L*	10 ng/ml
	2,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*118L*	10 ng/ml
	2',3,4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*123L*	10 ng/ml
	3,3',4,4',5-Pentachloro[$^{13}C_{12}$]biphenyl	*126L*	10 ng/ml
	2,3,3',4,4',5-Hexachloro[$^{13}C_{12}$]biphenyl	*156L*	10 ng/ml
	2,3,3',4,4',5'-Hexachloro[$^{13}C_{12}$]biphenyl	*157L*	10 ng/ml
	2,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*167L*	10 ng/ml
	3,3',4,4',5,5'-Hexachloro[$^{13}C_{12}$]biphenyl	*169L*	10 ng/ml
	2,2',3,3',4,4',5-Heptachloro[$^{13}C_{12}$]biphenyl	*170L*	10 ng/ml
	2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*180L*	10 ng/ml
	2,3,3',4,4',5,5'-Heptachloro[$^{13}C_{12}$]biphenyl	*189L*	10 ng/ml
DFP-IS-A	Mass-Labelled PCDF/PCB Syringe Spike		1.2 ml
		IUPAC	
	2,3',4',5-Tetrachloro[$^{13}C_{12}$]biphenyl	*70L*	10 ng/ml
	1,2,3,4,6,9-Hexachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
	1,2,3,4,6,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran		10 ng/ml
DFP-SS-A	Mass-Labelled PCDD/PCB Sampling Spike		1.2 ml
		IUPAC	
	3,3',4,5'-Tetrachloro[$^{13}C_{12}$]biphenyl	*79L*	50 ng/ml
	1,2,3,4-Tetrachloro[$^{13}C_{12}$]dibenzo-p-dioxin		50 ng/ml

BROMINATED FLAME RETARDANTS & RELATED COMPOUNDS

This section was introduced in our previous catalogue and is devoted to brominated flame retardants (BFRs) and related compounds. Since 2006/2007, we have added a number of individual PBDE and PBB congeners and solution/mixtures.

In addition, several BFRs, and other halogenated flame retardants, have been prepared and are now offered; most notably:

Additional Hexabromocyclododecane (HBCD) isomers
Tetrabromocyclooctane (TBCO) isomers
Tetrabromoethylcyclohexane (TBECH) isomers
2,4,6-Tribromophenyl ethers (ATE, BATE and DPTE)
Octabromotrimethyphenylindane (OBIND)
Chloro/Bromo-cycloctane (HCDBCO)
Tetrabromo-phthalate and -benzoate
Dechlorane Plus™ (and dechlorination products)

This section also contains compounds related to BFRs that are created through metabolism, combustion or other processes, namely:

Mass-labelled hydroxy-PBDEs
Native and mass-labelled methoxy-PBDEs
Native and mass-labelled PBDDs
Native PBDFs
Mixed Br/Cl dioxins and furans
Native and mass-labelled bromophenols

BFR-CVS

Catalogue Number	Product (toluene solution)	Qty/Conc
BFR-CVS	Polybrominated Diphenyl Ethers/Brominated Flame Retardants	1 kit
	Calibration Solutions CS1-CS5	(5 ampoules)
BFR-CS1, BFR-CS2, BFR-CS3, BFR-CS4, BFR-CS5	Individual Calibration Solutions	200 µl each

NATIVE PBDEs/BFRs		BFR-CS1 (ng/ml)	BFR-CS2 (ng/ml)	BFR-CS3 (ng/ml)	BFR-CS4 (ng/ml)	BFR-CS5 (ng/ml)
2-Bromodiphenyl ether	*BDE-1*	0.25	1.0	5.0	20	100
3-Bromodiphenyl ether	*BDE-2*	0.25	1.0	5.0	20	100
4-Bromodiphenyl ether	*BDE-3*	0.25	1.0	5.0	20	100
2,4-Dibromodiphenyl ether	*BDE-7*	0.25	1.0	5.0	20	100
2,6-Dibromodiphenyl ether	*BDE-10*	0.25	1.0	5.0	20	100
4,4'-Dibromodiphenyl ether	*BDE-15*	0.25	1.0	5.0	20	100
2,2',4-Tribromodiphenyl ether	*BDE-17*	0.25	1.0	5.0	20	100
2,4,4'-Tribromodiphenyl ether	*BDE-28*	0.25	1.0	5.0	20	100
2,4,6-Tribromodiphenyl ether	*BDE-30*	0.25	1.0	5.0	20	100
Pentabromoethylbenzene	*PBEB*	0.25	1.0	5.0	20	100
Hexabromobenzene	*HBB*	0.25	1.0	5.0	20	100
2,2',4,4'-Tetrabromodiphenyl ether	*BDE-47*	0.5	2.0	10	40	200
2,2',4,5'-Tetrabromodiphenyl ether	*BDE-49*	0.5	2.0	10	40	200
2,3',4,4'-Tetrabromodiphenyl ether	*BDE-66*	0.5	2.0	10	40	200
2,3',4',6-Tetrabromodiphenyl ether	*BDE-71*	0.5	2.0	10	40	200
3,3',4,4'-Tetrabromodiphenyl ether	*BDE-77*	0.5	2.0	10	40	200
2,2',3,4,4'-Pentabromodiphenyl ether	*BDE-85*	0.5	2.0	10	40	200
2,2',4,4',5-Pentabromodiphenyl ether	*BDE-99*	0.5	2.0	10	40	200
2,2',4,4',6-Pentabromodiphenyl ether	*BDE-100*	0.5	2.0	10	40	200
2,3',4,4',6-Pentabromodiphenyl ether	*BDE-119*	0.5	2.0	10	40	200
3,3',4,4',5-Pentabromodiphenyl ether	*BDE-126*	0.5	2.0	10	40	200
2,2',3,4,4',5'-Hexabromodiphenyl ether	*BDE-138*	0.5	2.0	10	40	200
2,2',3,4,4',6-Hexabromodiphenyl ether	*BDE-139*	0.5	2.0	10	40	200
2,2',3,4,4',6'-Hexabromodiphenyl ether	*BDE-140*	0.5	2.0	10	40	200
2,2',4,4',5,5'-Hexabromodiphenyl ether	*BDE-153*	0.5	2.0	10	40	200
2,2',4,4',5,6'-Hexabromodiphenyl ether	*BDE-154*	0.5	2.0	10	40	200
2,3,3',4,4',5-Hexabromodiphenyl ether	*BDE-156*	0.5	2.0	10	40	200
3,3',4,4',5,5'-Hexabromodiphenyl ether	*BDE-169*	0.5	2.0	10	40	200
2,2',4,4',5,5'-Hexabromobiphenyl	*BB-153*	0.5	2.0	10	40	200
1,2-Bis(2,4,6-tribromophenoxy)ethane	*BTBPE*	0.5	2.0	10	40	200
2,2',3,3',4,4',6-Heptabromodiphenyl ether	*BDE-171*	1.0	4.0	20	80	400
2,2',3,4,4',5,5'-Heptabromodiphenyl ether	*BDE-180*	1.0	4.0	20	80	400
2,2',3,4,4',5',6-Heptabromodiphenyl ether	*BDE-183*	1.0	4.0	20	80	400
2,2',3,4,4',6,6'-Heptabromodiphenyl ether	*BDE-184*	1.0	4.0	20	80	400
2,3,3',4,4',5',6-Heptabromodiphenyl ether	*BDE-191*	1.0	4.0	20	80	400
2,2',3,3',4,4',5,6'-Octabromodiphenyl ether	*BDE-196*	1.0	4.0	20	80	400
2,2',3,3',4,4',6,6'-Octabromodiphenyl ether	*BDE-197*	1.0	4.0	20	80	400
2,2',3,3',4,5',6,6'-Octabromodiphenyl ether	*BDE-201*	1.0	4.0	20	80	400
2,2',3,4,4',5,5',6-Octabromodiphenyl ether	*BDE-203*	1.0	4.0	20	80	400
2,2',3,4,4',5,6,6'-Octabromodiphenyl ether	*BDE-204*	1.0	4.0	20	80	400
2,3,3',4,4',5,5',6-Octabromodiphenyl ether	*BDE-205*	1.0	4.0	20	80	400
2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether	*BDE-206*	2.5	10	50	200	1000
2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether	*BDE-207*	2.5	10	50	200	1000
2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether	*BDE-208*	2.5	10	50	200	1000
Decabromodiphenyl ether	*BDE-209*	2.5	10	50	200	1000
Decabromodiphenylethane	*DBDPE*	5.0	20	100	400	2000
BFR-LCS						
4-Bromo[$^{13}C_{12}$]diphenyl ether	*MBDE-3*	25	25	25	25	25
4,4'-Dibromo[$^{13}C_{12}$]diphenyl ether	*MBDE-15*	25	25	25	25	25
2,4,4'-Tribromo[$^{13}C_{12}$]diphenyl ether	*MBDE-28*	25	25	25	25	25
Hexabromo[$^{13}C_6$]benzene	*MHBB*	25	25	25	25	25
2,2',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-47*	50	50	50	50	50
3,3',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-77*	50	50	50	50	50
2,2',4,4',5-Pentabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-99*	50	50	50	50	50
2,2',4,4',6-Pentabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-100*	50	50	50	50	50
3,3',4,4',5-Pentabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-126*	50	50	50	50	50
2,2',4,4',5,5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-153*	50	50	50	50	50
2,2',4,4',5,6'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-154*	50	50	50	50	50
3,3',4,4',5,5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-169*	50	50	50	50	50
2,2',4,4',5,5'-Hexabromo[$^{13}C_{12}$]biphenyl	*MBB-153*	50	50	50	50	50
1,2-Bis(2,4,6-tribromo[$^{13}C_6$]phenoxy)ethane	*MBTBPE*	50	50	50	50	50
2,2',3,4,4',5',6-Heptabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-183*	100	100	100	100	100
2,2',3,3',4,4',6,6'-Octabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-197*	100	100	100	100	100
2,3,3',4,4',5,5',6-Octabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-205*	100	100	100	100	100
2,2',3,3',4,4',5,6,6'-Nonabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-207*	250	250	250	250	250
Decabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-209*	250	250	250	250	250
Decabromo[$^{13}C_{14}$]diphenylethane	*MDBDPE*	500	500	500	500	500
BFR-ISS						
3,3',4,5'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-79*	50	50	50	50	50
2,2',3,4,4',6-Hexabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-139*	50	50	50	50	50
2,2',3,4,4',5,5'-Heptabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-180*	100	100	100	100	100
2,2',3,3',4,4',5,5',6-Nonabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-206*	250	250	250	250	250
BFR-SCS						
2,2',3,4,4',5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-138*	50	50	50	50	50

Catalogue Number	Product (toluene solution)	Qty/Conc
BFR-LCS	Labelled Compounds Stock Solution	1.2 ml
BFR-ISS	Internal/Injection Standards	1.2 ml
BFR-SCS	Sampling/Cleanup Standard	1.2 ml
BFR-PAR	Native Compounds Stock Solution (nonane/toluene solution)	1.2 ml

NATIVE PBDEs/BFRs		BFR-LCS (ng/ml)	BFR-ISS (ng/ml)	BFR-SCS (ng/ml)	BFR-PAR (ng/ml)
2-Bromodiphenyl ether	*BDE-1*	—	—	—	200
3-Bromodiphenyl ether	*BDE-2*	—	—	—	200
4-Bromodiphenyl ether	*BDE-3*	—	—	—	200
2,4-Dibromodiphenyl ether	*BDE-7*	—	—	—	200
2,6-Dibromodiphenyl ether	*BDE-10*	—	—	—	200
4,4'-Dibromodiphenyl ether	*BDE-15*	—	—	—	200
2,2',4-Tribromodiphenyl ether	*BDE-17*	—	—	—	200
2,4,4'-Tribromodiphenyl ether	*BDE-28*	—	—	—	200
2,4,6-Tribromodiphenyl ether	*BDE-30*	—	—	—	200
Pentabromoethylbenzene	*PBEB*	—	—	—	200
Hexabromobenzene	*HBB*	—	—	—	200
2,2',4,4'-Tetrabromodiphenyl ether	*BDE-47*	—	—	—	400
2,2',4,5'-Tetrabromodiphenyl ether	*BDE-49*	—	—	—	400
2,3',4,4'-Tetrabromodiphenyl ether	*BDE-66*	—	—	—	400
2,3',4',6-Tetrabromodiphenyl ether	*BDE-71*	—	—	—	400
3,3',4,4'-Tetrabromodiphenyl ether	*BDE-77*	—	—	—	400
2,2',3,4,4'-Pentabromodiphenyl ether	*BDE-85*	—	—	—	400
2,2',4,4',5-Pentabromodiphenyl ether	*BDE-99*	—	—	—	400
2,2',4,4',6-Pentabromodiphenyl ether	*BDE-100*	—	—	—	400
2,3',4,4',6-Pentabromodiphenyl ether	*BDE-119*	—	—	—	400
3,3',4,4',5-Pentabromodiphenyl ether	*BDE-126*	—	—	—	400
2,2',3,4,4',5'-Hexabromodiphenyl ether	*BDE-138*	—	—	—	400
2,2',3,4,4',6-Hexabromodiphenyl ether	*BDE-139*	—	—	—	400
2,2',3,4,4',6'-Hexabromodiphenyl ether	*BDE-140*	—	—	—	400
2,2',4,4',5,5'-Hexabromodiphenyl ether	*BDE-153*	—	—	—	400
2,2',4,4',5,6'-Hexabromodiphenyl ether	*BDE-154*	—	—	—	400
2,3,3',4,4',5-Hexabromodiphenyl ether	*BDE-156*	—	—	—	400
3,3',4,4',5,5'-Hexabromodiphenyl ether	*BDE-169*	—	—	—	400
2,2',4,4',5,5'-Hexabromobiphenyl	*BB-153*	—	—	—	400
1,2-Bis(2,4,6-tribromophenoxy)ethane	*BTBPE*	—	—	—	400
2,2',3,3',4,4',6-Heptabromodiphenyl ether	*BDE-171*	—	—	—	800
2,2',3,4,4',5,5'-Heptabromodiphenyl ether	*BDE-180*	—	—	—	800
2,2',3,4,4',5',6-Heptabromodiphenyl ether	*BDE-183*	—	—	—	800
2,2',3,4,4',6,6'-Heptabromodiphenyl ether	*BDE-184*	—	—	—	800
2,3,3',4,4',5',6-Heptabromodiphenyl ether	*BDE-191*	—	—	—	800
2,2',3,3',4,4',5,6'-Octabromodiphenyl ether	*BDE-196*	—	—	—	800
2,2',3,3',4,4',6,6'-Octabromodiphenyl ether	*BDE-197*	—	—	—	800
2,2',3,3',4,5',6,6'-Octabromodiphenyl ether	*BDE-201*	—	—	—	800
2,2',3,4,4',5,5',6-Octabromodiphenyl ether	*BDE-203*	—	—	—	800
2,2',3,4,4',5,6,6'-Octabromodiphenyl ether	*BDE-204*	—	—	—	800
2,3,3',4,4',5,5',6-Octabromodiphenyl ether	*BDE-205*	—	—	—	800
2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether	*BDE-206*	—	—	—	2000
2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether	*BDE-207*	—	—	—	2000
2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether	*BDE-208*	—	—	—	2000
Decabromodiphenyl ether	*BDE-209*	—	—	—	2000
Decabromodiphenylethane	*DBDPE*	—	—	—	4000
BFR-LCS					
4-Bromo[$^{13}C_{12}$]diphenyl ether	*MBDE-3*	100	—	—	—
4,4'-Dibromo[$^{13}C_{12}$]diphenyl ether	*MBDE-15*	100	—	—	—
2,4,4'-Tribromo[$^{13}C_{12}$]diphenyl ether	*MBDE-28*	100	—	—	—
Hexabromo[$^{13}C_6$]benzene	*MHBB*	100	—	—	—
2,2',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-47*	200	—	—	—
3,3',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-77*	200	—	—	—
2,2',4,4',5-Pentabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-99*	200	—	—	—
2,2',4,4',6-Pentabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-100*	200	—	—	—
3,3',4,4',5-Pentabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-126*	200	—	—	—
2,2',4,4',5,5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-153*	200	—	—	—
2,2',4,4',5,6'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-154*	200	—	—	—
3,3',4,4',5,5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-169*	200	—	—	—
2,2',4,4',5,5'-Hexabromo[$^{13}C_{12}$]biphenyl	*MBB-153*	200	—	—	—
1,2-Bis(2,4,6-tribromo[$^{13}C_6$]phenoxy)ethane	*MBTBPE*	200	—	—	—
2,2',3,4,4',5',6-Heptabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-183*	400	—	—	—
2,2',3,3',4,4',6,6'-Octabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-197*	400	—	—	—
2,3,3',4,4',5,5',6-Octabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-205*	400	—	—	—
2,2',3,3',4,4',5,6,6'-Nonabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-207*	1000	—	—	—
Decabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-209*	1000	—	—	—
Decabromo[$^{13}C_{14}$]diphenylethane	*MDBDPE*	2000	—	—	—
BFR-ISS					
3,3',4,5'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-79*	—	200	—	—
2,2',3,4,4',6-Hexabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-139*	—	200	—	—
2,2',3,4,4',5,5'-Heptabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-180*	—	400	—	—
2,2',3,3',4,4',5,5',6-Nonabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-206*	—	1000	—	—
BFR-SCS					
2,2',3,4,4',5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*MBDE-138*	—	—	400	—

BDE-CVS-E

Catalogue Number	Product (nonane/toluene solution)	Qty/Conc
BDE-CVS-E	BDE-CVS-E Calibration Solutions CS1-CS5	1 kit (5 ampoules)
BDE-CS1-E	CS1	200 µl
BDE-CS2-E	CS2	200 µl
BDE-CS3-E	CS3	200 µl
BDE-CS4-E	CS4	200 µl
BDE-CS5-E	CS5	200 µl

NATIVE PBDE CONGENERS	*IUPAC*	BDE-E-CS1 (ng/ml)	BDE-E-CS2 (ng/ml)	BDE-E-CS3 (ng/ml)	BDE-E-CS4 (ng/ml)	BDE-E-CS5 (ng/ml)
4-Bromodiphenyl ether	*3*	1.0	5.0	20	100	400
2,4-Dibromodiphenyl ether	*7*	1.0	5.0	20	100	400
4,4'-Dibromodiphenyl ether	*15*	1.0	5.0	20	100	400
2,2',4-Tribromodiphenyl ether	*17*	1.0	5.0	20	100	400
2,4,4'-Tribromodiphenyl ether	*28*	1.0	5.0	20	100	400
2,2',4,4'-Tetrabromodiphenyl ether	*47*	1.0	5.0	20	100	400
2,2',4,5'-Tetrabromodiphenyl ether	*49*	1.0	5.0	20	100	400
2,3',4,4'-Tetrabromodiphenyl ether	*66*	1.0	5.0	20	100	400
2,3',4',6-Tetrabromodiphenyl ether	*71*	1.0	5.0	20	100	400
3,3',4,4'-Tetrabromodiphenyl ether	*77*	1.0	5.0	20	100	400
2,2',3,4,4'-Pentabromodiphenyl ether	*85*	1.0	5.0	20	100	400
2,2',4,4',5-Pentabromodiphenyl ether	*99*	1.0	5.0	20	100	400
2,2',4,4',6-Pentabromodiphenyl ether	*100*	1.0	5.0	20	100	400
2,3',4,4',6-Pentabromodiphenyl ether	*119*	1.0	5.0	20	100	400
3,3',4,4',5-Pentabromodiphenyl ether	*126*	1.0	5.0	20	100	400
2,2',3,4,4',5'-Hexabromodiphenyl ether	*138*	2.0	10	40	200	800
2,2',4,4',5,5'-Hexabromodiphenyl ether	*153*	2.0	10	40	200	800
2,2',4,4',5,6'-Hexabromodiphenyl ether	*154*	2.0	10	40	200	800
2,3,3',4,4',5-Hexabromodiphenyl ether	*156*	2.0	10	40	200	800
2,2',3,4,4',5',6-Heptabromodiphenyl ether	*183*	2.0	10	40	200	800
2,2',3,4,4',6,6'-Heptabromodiphenyl ether	*184*	2.0	10	40	200	800
2,3,3',4,4',5',6-Heptabromodiphenyl ether	*191*	2.0	10	40	200	800
2,2',3,3',4,4',5,6'-Octabromodiphenyl ether	*196*	2.0	10	40	200	800
2,2',3,3',4,4',6,6'-Octabromodiphenyl ether	*197*	2.0	10	40	200	800
2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether	*206*	5.0	25	100	500	2000
2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether	*207*	5.0	25	100	500	2000
Decabromodiphenyl ether	*209*	5.0	25	100	500	2000
MASS-LABELLED PBDE CONGENERS						
4-Bromo[$^{13}C_{12}$]diphenyl ether	*3L*	100	100	100	100	100
4,4'-Dibromo[$^{13}C_{12}$]diphenyl ether	*15L*	100	100	100	100	100
2,4,4'-Tribromo[$^{13}C_{12}$]diphenyl ether	*28L*	100	100	100	100	100
2,2',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*47L*	100	100	100	100	100
2,2',4,4',5-Pentabromo[$^{13}C_{12}$]diphenyl ether	*99L*	100	100	100	100	100
2,2',4,4',5,5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*153L*	200	200	200	200	200
2,2',4,4',5,6'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*154L*	200	200	200	200	200
2,2',3,4,4',5',6-Heptabromo[$^{13}C_{12}$]diphenyl ether	*183L*	200	200	200	200	200
2,2',3,3',4,4',6,6'-Octabromo[$^{13}C_{12}$]diphenyl ether	*197L*	200	200	200	200	200
2,2',3,3',4,4',5,6,6'-Nonabromo[$^{13}C_{12}$]diphenyl ether	*207L*	500	500	500	500	500
Decabromo[$^{13}C_{12}$]diphenyl ether	*209L*	500	500	500	500	500
MASS-LABELLED PBDE Internal Standard						
2,2',3,4,4',5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*138L*	200	200	200	200	200

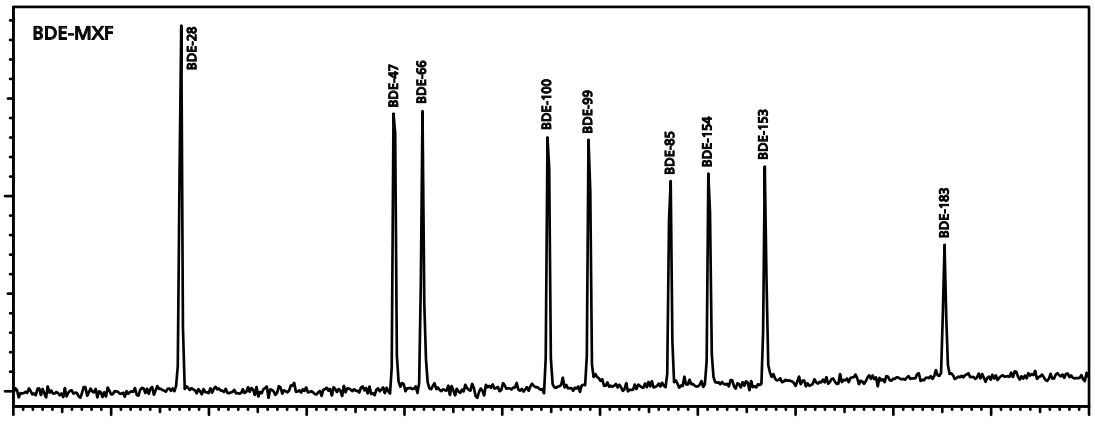
Catalogue Number	Product (nonane/toluene solution)	Qty/Conc
MBDE-MXE	Mass-Labelled PBDE Solution/Mixture	1.2 ml
BDE-CVS-EISS	Mass-Labelled PBDE Internal Standard Solution	1.2 ml
BDE-MXE	Native PBDE Solution/Mixture	1.2 ml

NATIVE PBDE CONGENERS	*IUPAC*	MBDE-MXE (ng/ml)	BDE-CVS-EISS (ng/ml)	BDE-MXE (ng/ml)
4-Bromodiphenyl ether	*3*	—	—	1000
2,4-Dibromodiphenyl ether	*7*	—	—	1000
4,4'-Dibromodiphenyl ether	*15*	—	—	1000
2,2',4-Tribromodiphenyl ether	*17*	—	—	1000
2,4,4'-Tribromodiphenyl ether	*28*	—	—	1000
2,2',4,4'-Tetrabromodiphenyl ether	*47*	—	—	1000
2,2',4,5'-Tetrabromodiphenyl ether	*49*	—	—	1000
2,3',4,4'-Tetrabromodiphenyl ether	*66*	—	—	1000
2,3',4',6-Tetrabromodiphenyl ether	*71*	—	—	1000
3,3',4,4'-Tetrabromodiphenyl ether	*77*	—	—	1000
2,2',3,4,4'-Pentabromodiphenyl ether	*85*	—	—	1000
2,2',4,4',5-Pentabromodiphenyl ether	*99*	—	—	1000
2,2',4,4',6-Pentabromodiphenyl ether	*100*	—	—	1000
2,3',4,4',6-Pentabromodiphenyl ether	*119*	—	—	1000
3,3',4,4',5-Pentabromodiphenyl ether	*126*	—	—	1000
2,2',3,4,4',5'-Hexabromodiphenyl ether	*138*	—	—	2000
2,2',4,4',5,5'-Hexabromodiphenyl ether	*153*	—	—	2000
2,2',4,4',5,6'-Hexabromodiphenyl ether	*154*	—	—	2000
2,3,3',4,4',5-Hexabromodiphenyl ether	*156*	—	—	2000
2,2',3,4,4',5',6-Heptabromodiphenyl ether	*183*	—	—	2000
2,2',3,4,4',6,6'-Heptabromodiphenyl ether	*184*	—	—	2000
2,3,3',4,4',5',6-Heptabromodiphenyl ether	*191*	—	—	2000
2,2',3,3',4,4',5,6'-Octabromodiphenyl ether	*196*	—	—	2000
2,2',3,3',4,4',6,6'-Octabromodiphenyl ether	*197*	—	—	2000
2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether	*206*	—	—	5000
2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether	*207*	—	—	5000
Decabromodiphenyl ether	*209*	—	—	5000
MASS-LABELLED PBDE CONGENERS				
4-Bromo[$^{13}C_{12}$]diphenyl ether	*3L*	100	—	—
4,4'-Dibromo[$^{13}C_{12}$]diphenyl ether	*15L*	100	—	—
2,4,4'-Tribromo[$^{13}C_{12}$]diphenyl ether	*28L*	100	—	—
2,2',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*47L*	100	—	—
2,2',4,4',5-Pentabromo[$^{13}C_{12}$]diphenyl ether	*99L*	100	—	—
2,2',4,4',5,5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*153L*	200	—	—
2,2',4,4',5,6'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*154L*	200	—	—
2,2',3,4,4',5',6-Heptabromo[$^{13}C_{12}$]diphenyl ether	*183L*	200	—	—
2,2',3,3',4,4',6,6'-Octabromo[$^{13}C_{12}$]diphenyl ether	*197L*	200	—	—
2,2',3,3',4,4',5,6,6'-Nonabromo[$^{13}C_{12}$]diphenyl ether	*207L*	500	—	—
Decabromo[$^{13}C_{12}$]diphenyl ether	*209L*	500	—	—
MASS-LABELLED PBDE Internal Standard				
2,2',3,4,4',5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*138L*	—	200	—

BDE-CVS-F

Catalogue Number	Product (toluene solution)	Qty/Conc
BDE-CVS-F	BDE-CVS-F Calibration Solutions CS1-CS5	1 kit (5 ampoules)
BDE-CS1-F	CS1	200 µl
BDE-CS2-F	CS2	200 µl
BDE-CS3-F	CS3	200 µl
BDE-CS4-F	CS4	200 µl
BDE-CS5-F	CS5	200 µl

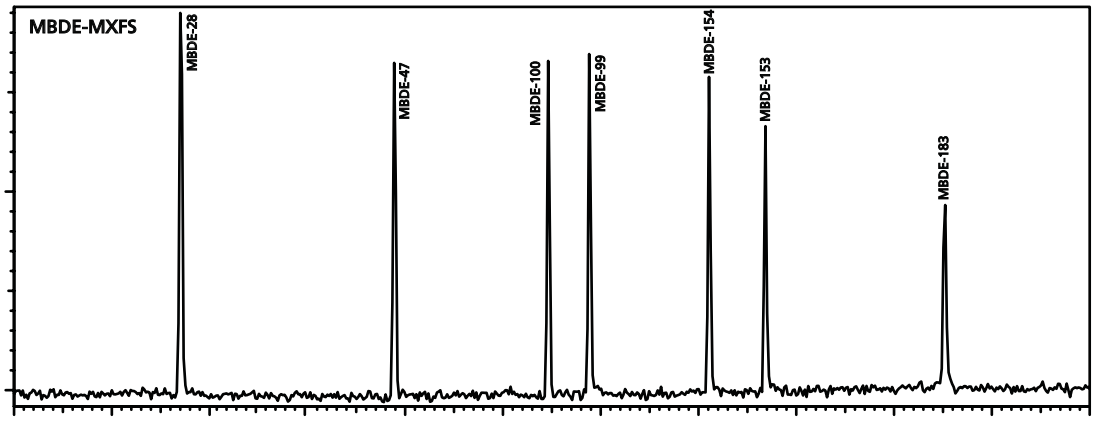
NATIVE PBDE CONGENERS	*IUPAC*	BDE-CS1-F (ng/ml)	BDE-CS2-F (ng/ml)	BDE-CS3-F (ng/ml)	BDE-CS4-F (ng/ml)	BDE-CS5-F (ng/ml)
2,4,4'-Tribromodiphenyl ether	*28*	1.0	5.0	25	100	500
2,2',4,4'-Tetrabromodiphenyl ether	*47*	1.0	5.0	25	100	500
2,3',4,4'-Tetrabromodiphenyl ether	*66*	1.0	5.0	25	100	500
2,2',3,4,4'-Pentabromodiphenyl ether	*85*	1.0	5.0	25	100	500
2,2',4,4',5-Pentabromodiphenyl ether	*99*	1.0	5.0	25	100	500
2,2',4,4',6-Pentabromodiphenyl ether	*100*	1.0	5.0	25	100	500
2,2',4,4',5,5'-Hexabromodiphenyl ether	*153*	1.0	5.0	25	100	500
2,2',4,4',5,6'-Hexabromodiphenyl ether	*154*	1.0	5.0	25	100	500
2,2',3,4,4',5',6-Heptabromodiphenyl ether	*183*	1.0	5.0	25	100	500
MASS-LABELLED PBDE SURROGATE STANDARDS						
2,4,4'-Tribromo[$^{13}C_{12}$]diphenyl ether	*28L*	20	20	20	20	20
2,2',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*47L*	20	20	20	20	20
2,2',4,4',5-Pentabromo[$^{13}C_{12}$]diphenyl ether	*99L*	20	20	20	20	20
2,2',4,4',6-Pentabromo[$^{13}C_{12}$]diphenyl ether	*100L*	20	20	20	20	20
2,2',4,4',5,5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*153L*	20	20	20	20	20
2,2',4,4',5,6'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*154L*	20	20	20	20	20
2,2',3,4,4',5',6-Heptabromo[$^{13}C_{12}$]diphenyl ether	*183L*	20	20	20	20	20
MASS-LABELLED PBDE RECOVERY STANDARDS						
3,3',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*77L*	20	20	20	20	20
2,2',3,4,4',5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*138L*	20	20	20	20	20



BDE-MXF; HRGC/LRMS TIC Chromatogram

Catalogue Number	Product (toluene solution)	Qty/Conc
MBDE-MXFS	Mass-Labelled PBDE Surrogate Stock	1.2 ml
MBDE-MXFR	Mass-Labelled PBDE Recovery Stock	1.2 ml
BDE-MXF	Native PBDE Stock	1.2 ml

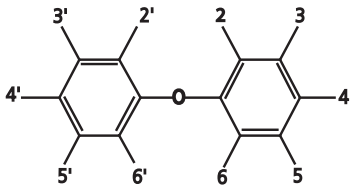
NATIVE PBDE CONGENERS	*IUPAC*	MBDE-MXFS (ng/ml)	MBDE-MXFR (ng/ml)	BDE-MXF (ng/ml)
2,4,4'-Tribromodiphenyl ether	*28*	—	—	2000
2,2',4,4'-Tetrabromodiphenyl ether	*47*	—	—	2000
2,3',4,4'-Tetrabromodiphenyl ether	*66*	—	—	2000
2,2',3,4,4'-Pentabromodiphenyl ether	*85*	—	—	2000
2,2',4,4',5-Pentabromodiphenyl ether	*99*	—	—	2000
2,2',4,4',6-Pentabromodiphenyl ether	*100*	—	—	2000
2,2',4,4',5,5'-Hexabromodiphenyl ether	*153*	—	—	2000
2,2',4,4',5,6'-Hexabromodiphenyl ether	*154*	—	—	2000
2,2',3,4,4',5',6-Heptabromodiphenyl ether	*183*	—	—	2000
MASS-LABELLED PBDE SURROGATE STANDARDS				
2,4,4'-Tribromo[$^{13}C_{12}$]diphenyl ether	*28L*	2000	—	—
2,2',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*47L*	2000	—	—
2,2',4,4',5-Pentabromo[$^{13}C_{12}$]diphenyl ether	*99L*	2000	—	—
2,2',4,4',6-Pentabromo[$^{13}C_{12}$]diphenyl ether	*100L*	2000	—	—
2,2',4,4',5,5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*153L*	2000	—	—
2,2',4,4',5,6'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*154L*	2000	—	—
2,2',3,4,4',5',6-Heptabromo[$^{13}C_{12}$]diphenyl ether	*183L*	2000	—	—
MASS-LABELLED PBDE RECOVERY STANDARDS				
3,3',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*77L*	—	2000	—
2,2',3,4,4',5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*138L*	—	2000	—



MBDE-MXFS; HRGC/LRMS TIC Chromatogram

NATIVE BROMINATED DIPHENYL ETHERS (PBDEs)

Catalogue Number	Product (nonane solution)	Qty/Conc	
BDE-1	2-Bromodiphenyl ether	1.2 ml	50 µg/ml
BDE-2	3-Bromodiphenyl ether	1.2 ml	50 µg/ml
BDE-3	4-Bromodiphenyl ether	1.2 ml	50 µg/ml
BDE-7	2,4-Dibromodiphenyl ether	1.2 ml	50 µg/ml
BDE-10	2,6-Dibromodiphenyl ether	1.2 ml	50 µg/ml
BDE-15	4,4'-Dibromodiphenyl ether	1.2 ml	50 µg/ml
BDE-17	2,2',4-Tribromodiphenyl ether	1.2 ml	50 µg/ml
BDE-21	2,3,4-Tribromodiphenyl ether	1.2 ml	50 µg/ml
BDE-28	2,4,4'-Tribromodiphenyl ether	1.2 ml	50 µg/ml
BDE-30	2,4,6-Tribromodiphenyl ether	1.2 ml	50 µg/ml
BDE-37	3,4,4'-Tribromodiphenyl ether	1.2 ml	50 µg/ml
BDE-47	2,2',4,4'-Tetrabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-49	2,2',4,5'-Tetrabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-54	2,2',6,6'-Tetrabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-60	2,3,4,4'-Tetrabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-66	2,3',4,4'-Tetrabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-71	2,3',4',6-Tetrabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-77	3,3',4,4'-Tetrabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-82	2,2',3,3',4-Pentabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-85	2,2',3,4,4'-Pentabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-99	2,2',4,4',5-Pentabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-100	2,2',4,4',6-Pentabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-104	2,2',4,6,6'-Pentabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-105	2,3,3',4,4'-Pentabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-119	2,3',4,4',6-Pentabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-126	3,3',4,4',5-Pentabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-128	2,2',3,3',4,4'-Hexabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-138	2,2',3,4,4',5'-Hexabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-139	2,2',3,4,4',6-Hexabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-140	2,2',3,4,4',6'-Hexabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-149	2,2',3,4',5',6-Hexabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-153	2,2',4,4',5,5'-Hexabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-154	2,2',4,4',5,6'-Hexabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-155	2,2',4,4',6,6'-Hexabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-156	2,3,3',4,4',5-Hexabromodiphenyl ether	1.2 ml	50 µg/ml

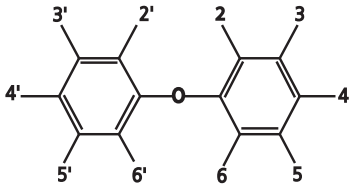


NATIVE BROMINATED DIPHENYL ETHERS (PBDEs)

Catalogue Number	Product (nonane solution)	Qty/Conc	
BDE-169	3,3',4,4',5,5'-Hexabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-170	2,2',3,3',4,4',5-Heptabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-171	2,2',3,3',4,4',6-Heptabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-176	2,2',3,3',4,6,6'-Heptabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-177	2,2',3,3',4',5,6-Heptabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-179	2,2',3,3',5,6,6'-Heptabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-180	2,2',3,4,4',5,5'-Heptabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-181	2,2',3,4,4',5,6-Heptabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-182	2,2',3,4,4',5,6'-Heptabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-183	2,2',3,4,4',5',6-Heptabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-184	2,2',3,4,4',6,6'-Heptabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-188	2,2',3,4',5,6,6'-Heptabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-189	2,3,3',4,4',5,5'-Heptabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-191*	2,3,3',4,4',5',6-Heptabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-194*	2,2',3,3',4,4',5,5'-Octabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-195*	2,2',3,3',4,4',5,6-Octabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-196*	2,2',3,3',4,4',5,6'-Octabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-197*	2,2',3,3',4,4',6,6'-Octabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-198*	2,2',3,3',4,5,5',6,-Octabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-199*	2,2',3,3',4,5,5',6'-Octabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-200*	2,2',3,3',4,5,6,6'-Octabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-201*	2,2',3,3',4,5',6,6'-Octabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-202*	2,2',3,3',5,5',6,6'-Octabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-203*	2,2',3,4,4',5,5',6-Octabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-204*	2,2',3,4,4',5,6,6'-Octabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-205*	2,3,3',4,4',5,5',6-Octabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-206*	2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-207*	2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-208*	2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether	1.2 ml	50 µg/ml
BDE-209*	Decabromodiphenyl ether	1.2 ml	50 µg/ml
4PC-BDE-208*	2,2',3,3',4,5,5',6,6'-Nonabromo-4'-chlorodiphenyl ether	1.2 ml	50 µg/ml

4PC-BDE-208 may be useful as an internal or surrogate standard for HRGC/ECD, HRGC/FID, and/or HRGC/MS analyses.

* Toluene solution



PBDE WINDOW DEFINING SOLUTION/MIXTURE

Catalogue Number	Product (nonane solution)	Qty/Conc
BDE-WD	PBDE Window Defining Solution/Mixture for use with a J&W DB-5HT column	1.2 ml

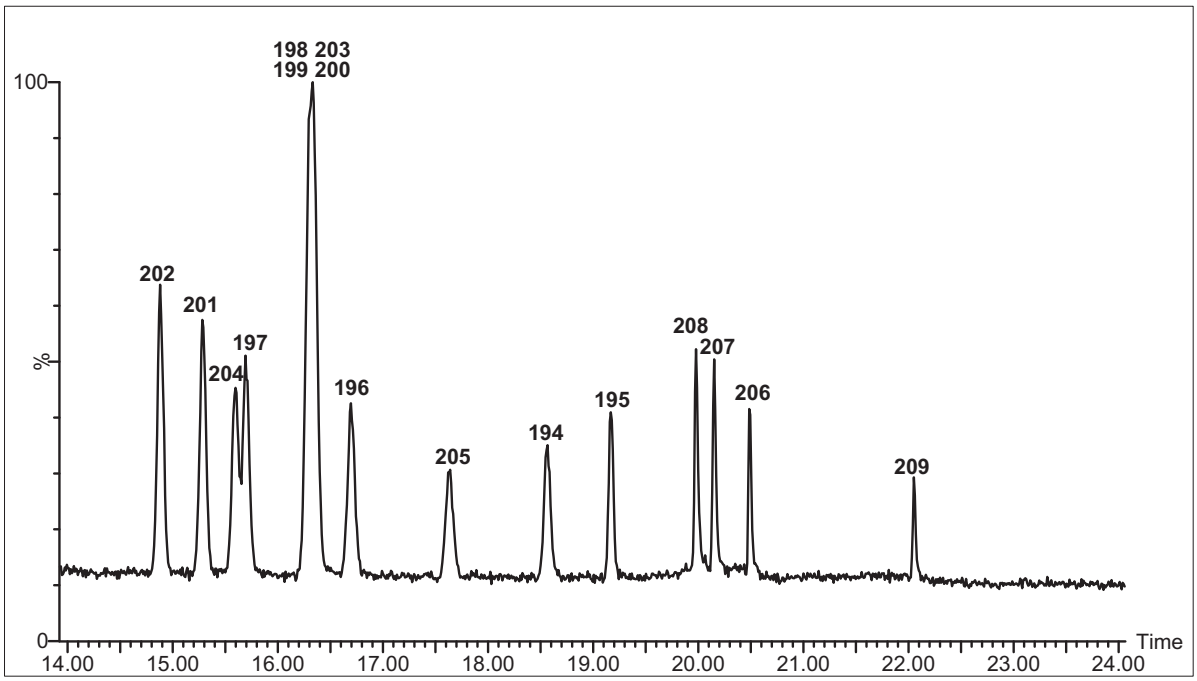
	FIRST ELUTER (IUPAC)	LAST ELUTER (IUPAC)	CONCENTRATION (µg/ml each)
Bromodiphenyl ethers	1	3	1.0
Dibromodiphenyl ethers	10	15	1.0
Tribromodiphenyl ethers	30	37	1.0
Tetrabromodiphenyl ethers	54	60	1.0
Pentabromodiphenyl ethers	104	82	1.0
Hexabromodiphenyl ethers	155	128	2.0
Heptabromodiphenyl ethers	188	170	2.0
Octabromodiphenyl ethers	202	195	2.0
Nonabromodiphenyl ethers	208	206	5.0
Decabromodiphenyl ether	209		5.0

NATIVE BROMINATED DIPHENYL ETHERS: SOLUTION/MIXTURES

Catalogue Number	Product (nonane solution)		Qty/Conc
BDE-MXA	Native PBDE Solution/Mixture		1.2 ml
		IUPAC	
	2,2',4,4'-Tetrabromodiphenyl ether	*47*	5 µg/ml
	2,2',4,4',5-Pentabromodiphenyl ether	*99*	5 µg/ml
	2,2',4,4',5,5'-Hexabromodiphenyl ether	*153*	5 µg/ml
BDE-MXB	Native PBDE Solution/Mixture		1.2 ml
		IUPAC	
	2,4,4'-Tribromodiphenyl ether	*28*	5 µg/ml
	2,2',4,4',5,6'-Hexabromodiphenyl ether	*154*	5 µg/ml
	2,2',3,4,4',5',6-Heptabromodiphenyl ether	*183*	5 µg/ml
BDE-MXD	Native PBDE Solution/Mixture		1.2 ml
		IUPAC	
	2,2',4-Tribromodiphenyl ether	*17*	5 µg/ml
	2,2',4,4'-Tetrabromodiphenyl ether	*47*	5 µg/ml
	2,3',4,4'-Tetrabromodiphenyl ether	*66*	5 µg/ml
	2,2',4,4',6-Pentabromodiphenyl ether	*100*	5 µg/ml
	2,2',4,4',5,5'-Hexabromodiphenyl ether	*153*	5 µg/ml
	2,2',3,4,4',5',6-Heptabromodiphenyl ether	*183*	5 µg/ml
	Decabromodiphenyl ether	*209*	10 µg/ml

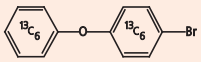
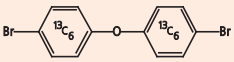
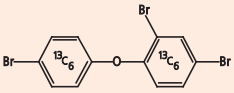
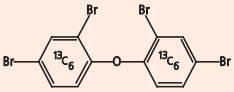
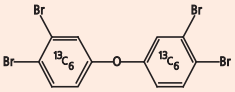
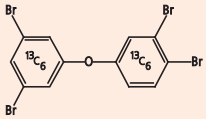
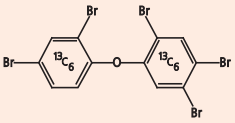
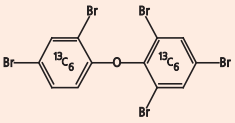
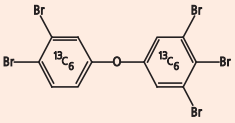
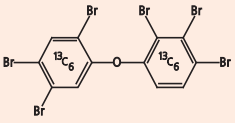
NATIVE BROMINATED DIPHENYL ETHERS: SOLUTIONS/MIXTURES

Catalogue Number	Product (nonane/toluene solution)	Qty/Conc
BDE-OND	Solution/Mixture of Octa-, Nona-, and Deca-BDEs	1.2 ml
	IUPAC	
2,2',3,3',4,4',5,5'-Octabromodiphenyl ether	*194*	1.0 µg/ml
2,2',3,3',4,4',5,6-Octabromodiphenyl ether	*195*	1.0 µg/ml
2,2',3,3',4,4',5,6'-Octabromodiphenyl ether	*196*	1.0 µg/ml
2,2',3,3',4,4',6,6'-Octabromodiphenyl ether	*197*	1.0 µg/ml
2,2',3,3',4,5,5',6-Octabromodiphenyl ether	*198*	1.0 µg/ml
2,2',3,3',4,5,5',6'-Octabromodiphenyl ether	*199*	1.0 µg/ml
2,2',3,3',4,5,6,6'-Octabromodiphenyl ether	*200*	1.0 µg/ml
2,2',3,3',4,5',6,6'-Octabromodiphenyl ether	*201*	1.0 µg/ml
2,2',3,3',5,5',6,6'-Octabromodiphenyl ether	*202*	1.0 µg/ml
2,2',3,4,4',5,5',6-Octabromodiphenyl ether	*203*	1.0 µg/ml
2,2',3,4,4',5,6,6'-Octabromodiphenyl ether	*204*	1.0 µg/ml
2,3,3',4,4',5,5',6-Octabromodiphenyl ether	*205*	1.0 µg/ml
2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether	*206*	2.5 µg/ml
2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether	*207*	2.5 µg/ml
2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether	*208*	2.5 µg/ml
Decabromodiphenyl ether	*209*	2.5 µg/ml

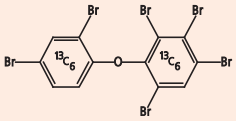
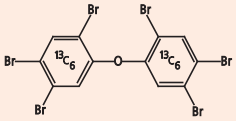
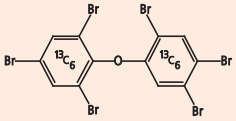
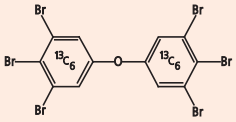
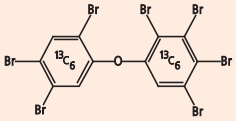
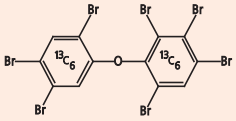
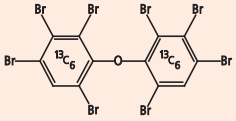
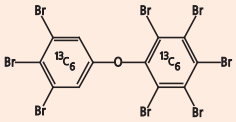
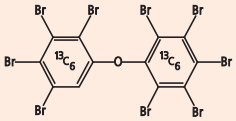
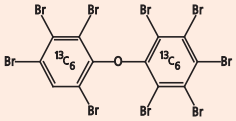


HRGC/HRMS Data for BDE-OND on a 15m DB-5HT column.

MASS-LABELLED BROMINATED DIPHENYL ETHERS

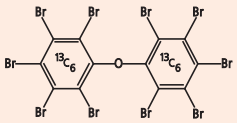
Catalogue Number		Product
MBDE-3		4-Bromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-15		4,4'-Dibromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-28		2,4,4'-Tribromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-47		2,2',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-77		3,3',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-79		3,3',4,5'-Tetrabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-99		2,2',4,4',5-Pentabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-100		2,2',4,4',6-Pentabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-126		3,3',4,4',5-Pentabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-138		2,2',3,4,4',5'-Hexabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane

* Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

Catalogue Number		Product
MBDE-139		2,2',3,4,4',6-Hexabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-153		2,2',4,4',5,5'-Hexabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-154		2,2',4,4',5,6'-Hexabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-169		3,3',4,4',5,5'-Hexabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-180		2,2',3,4,4',5,5'-Heptabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-183		2,2',3,4,4',5',6-Heptabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MBDE-197		2,2',3,3',4,4',6,6'-Octabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MBDE-205		2,3,3',4,4',5,5',6-Octabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MBDE-206		2,2',3,3',4,4',5,5',6-Nonabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
MBDE-207		2,2',3,3',4,4',5,6,6'-Nonabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene

* Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

MASS-LABELLED BROMINATED DIPHENYL ETHERS

Catalogue Number		Product
MBDE-209		Decabromo[$^{13}C_{12}$]diphenyl ether 1.2 ml; 25 µg/ml (±1.2 µg/ml); in toluene

* Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

MASS-LABELLED BROMINATED DIPHENYL ETHERS: SOLUTION/MIXTURES

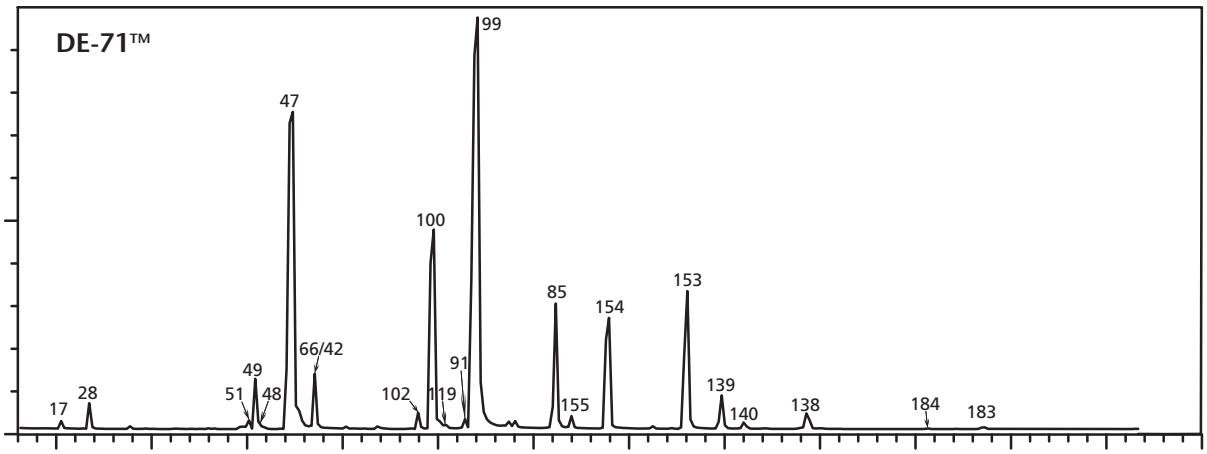
Catalogue Number	Product (nonane solution)		Qty/Conc
MBDE-MXA	Mass-Labelled PBDE Solution/Mixture		1.2 ml
		IUPAC	
	2,2',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*47L*	5 µg/ml
	2,2',4,4',5-Pentabromo[$^{13}C_{12}$]diphenyl ether	*99L*	5 µg/ml
	2,2',4,4',5,5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*153L*	5 µg/ml
MBDE-MXB	Mass-Labelled PBDE Solution/Mixture		1.2 ml
		IUPAC	
	2,4,4'-Tribromo[$^{13}C_{12}$]diphenyl ether	*28L*	5 µg/ml
	2,2',4,4',5,6'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*154L*	5 µg/ml
	2,2',3,4,4',5',6-Heptabromo[$^{13}C_{12}$]diphenyl ether	*183L*	5 µg/ml
MBDE-MXC	Mass-Labelled PBDE Solution/Mixture		1.2 ml
		IUPAC	
	4-Bromo[$^{13}C_{12}$]diphenyl ether	*3L*	5 µg/ml
	4,4'-Dibromo[$^{13}C_{12}$]diphenyl ether	*15L*	5 µg/ml
	2,4,4'-Tribromo[$^{13}C_{12}$]diphenyl ether	*28L*	5 µg/ml
	2,2',4,4'-Tetrabromo[$^{13}C_{12}$]diphenyl ether	*47L*	5 µg/ml
	2,2',4,4',5-Pentabromo[$^{13}C_{12}$]diphenyl ether	*99L*	5 µg/ml
	2,2',4,4',5,5'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*153L*	5 µg/ml
	2,2',4,4',5,6'-Hexabromo[$^{13}C_{12}$]diphenyl ether	*154L*	5 µg/ml
	2,2',3,4,4',5',6-Heptabromo[$^{13}C_{12}$]diphenyl ether	*183L*	5 µg/ml

BROMINATED DIPHENYL ETHER TECHNICAL MIXTURES: NEAT

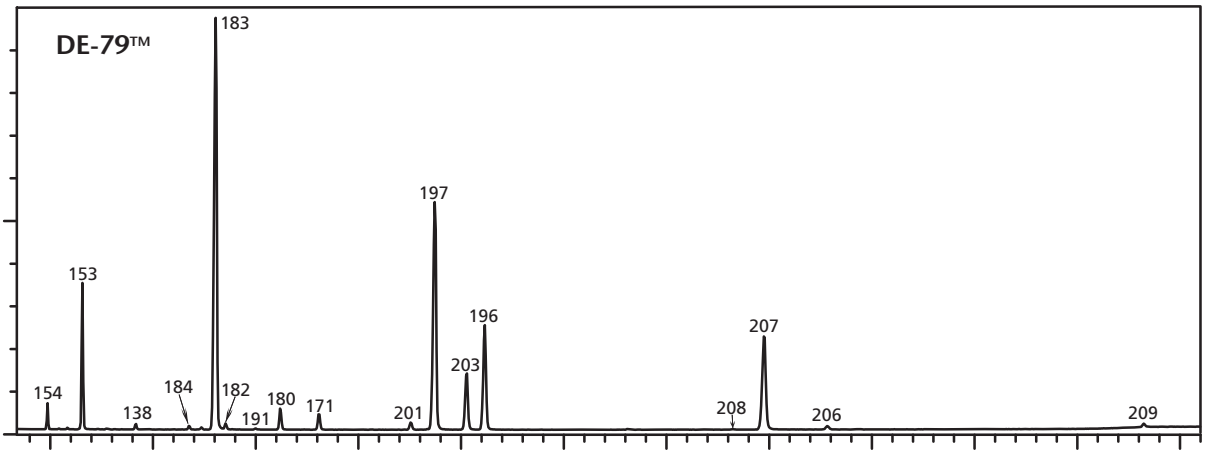
Catalogue Number	Product (neat)	Qty
TBDE-71X	Great Lakes Chemical DE-71™ Pentabromodiphenyl Oxide	100 milligrams
TBDE-79X	Great Lakes Chemical DE-79™ Octabromodiphenyl Oxide	100 milligrams
TBDE-83RX	Great Lakes Chemical DE-83R™ Decabromodiphenyl Oxide	100 milligrams

BROMINATED DIPHENYL ETHER TECHNICAL MIXTURES: SOLUTIONS

Catalogue Number	Product (toluene solution)	Qty/Conc
TBDE-71	Great Lakes Chemical DE-71™ Pentabromodiphenyl Oxide	1.2 ml 100 µg/ml
TBDE-79	Great Lakes Chemical DE-79™ Octabromodiphenyl Oxide	1.2 ml 100 µg/ml
TBDE-83R	Great Lakes Chemical DE-83R™ Decabromodiphenyl Oxide	1.2 ml 100 µg/ml

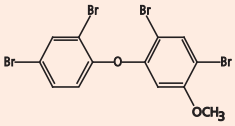
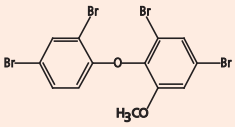
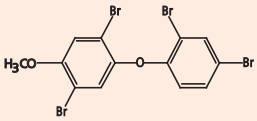
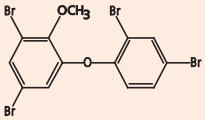
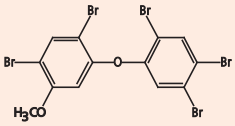
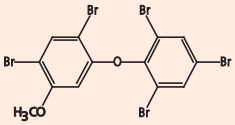
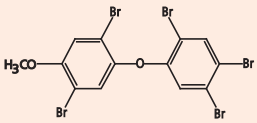
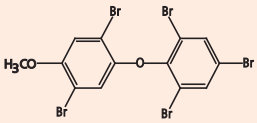


GC/MS Data for Great Lakes Chemical DE-71™ on a 30m DB-5HT column.



GC/MS Data for Great Lakes Chemical DE-79™ on a 30m DB-5HT column.

NATIVE METHOXY-BROMODIPHENYL ETHERS (MeO-BDEs)

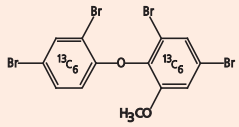
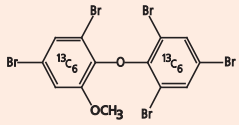
Catalogue Number		Product
5MBDE47		2,2',4,4'-Tetrabromo-5-methoxydiphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
6MBDE47		2,2',4,4'-Tetrabromo-6-methoxydiphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
4PMBDE49		2,2',4',5-Tetrabromo-4-methoxydiphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
2PMBDE68		2',3,4',5-Tetrabromo-2-methoxydiphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
5PMBDE99		2,2',4,4',5-Pentabromo-5'-methoxydiphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
5PMBDE100		2,2',4,4',6'-Pentabromo-5-methoxydiphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
4PMBDE101		2,2',4,5,5'-Pentabromo-4'-methoxydiphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
4PMBDE103		2,2',4',5,6'-Pentabromo-4-methoxydiphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane

NOTE: In order to emphasize their relationship to the corresponding PBDE, these compounds have been numbered based on the diphenyl ether as the parent molecule with bromines retaining their BDE numbers. The methoxy groups are treated as additional substituents and listed alphabetically.

METHOXY-BROMODIPHENYL ETHERS: SOLUTION/MIXTURE

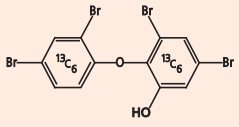
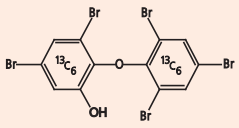
Catalogue Number	Product (nonane solution)	Qty/Conc
MeOBDES	Methoxy-Bromodiphenyl Ethers Solution/Mixture	1.2 ml
	2,2',4,4'-Tetrabromo-5-methoxydiphenyl ether	5 µg/ml
	2,2',4,4'-Tetrabromo-6-methoxydiphenyl ether	5 µg/ml
	2,2',4',5-Tetrabromo-4-methoxydiphenyl ether	5 µg/ml
	2',3,4',5-Tetrabromo-2-methoxydiphenyl ether	5 µg/ml
	2,2',4,4',5-Pentabromo-5'-methoxydiphenyl ether	5 µg/ml
	2,2',4,4',6'-Pentabromo-5-methoxydiphenyl ether	5 µg/ml
	2,2',4,5,5'-Pentabromo-4'-methoxydiphenyl ether	5 µg/ml
	2,2',4',5,6'-Pentabromo-4-methoxydiphenyl ether	5 µg/ml

MASS-LABELLED METHOXY-BROMODIPHENYL ETHERS

Catalogue Number		Product
M6MBDE47		2,2',4,4'-Tetrabromo-6-methoxy[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
M6PMBDE100		2,2',4,4',6-Pentabromo-6'-methoxy[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane

* Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

MASS-LABELLED HYDROXY-BROMODIPHENYL ETHERS

Catalogue Number		Product
M6HBDE47		2,2',4,4'-Tetrabromo-6-hydroxy[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol
M6PHBDE100		2,2',4,4',6-Pentabromo-6'-hydroxy[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol

* Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

NOTE: In order to emphasize their relationship to the corresponding PBDE, these compounds have been numbered based on the diphenyl ether as the parent molecule with bromines retaining their BDE numbers. The methoxy and hydroxy groups are treated as additional substituents and listed alphabetically.

NATIVE HEXABROMOCYCLODODECANE ISOMERS (HBCDs)

Catalogue Number	Product (toluene solution)	Qty/Conc
aHBCD	α-1,2,5,6,9,10-Hexabromocyclododecane	1.2 ml 50 µg/ml
bHBCD	β-1,2,5,6,9,10-Hexabromocyclododecane	1.2 ml 50 µg/ml
gHBCD	γ-1,2,5,6,9,10-Hexabromocyclododecane	1.2 ml 50 µg/ml
dHBCD	δ-1,2,5,6,9,10-Hexabromocyclododecane	1.2 ml 50 µg/ml
eHBCD	ε-1,2,5,6,9,10-Hexabromocyclododecane	1.2 ml 50 µg/ml

^{13}C-LABELLED HEXABROMOCYCLODODECANE ISOMERS

Catalogue Number	Product (toluene solution)	Qty/Conc
MaHBCD	α-1,2,5,6,9,10-Hexabromo[$^{13}C_{12}$]cyclododecane	1.2 ml 50 µg/ml
MbHBCD	β-1,2,5,6,9,10-Hexabromo[$^{13}C_{12}$]cyclododecane	1.2 ml 50 µg/ml
MgHBCD	γ-1,2,5,6,9,10-Hexabromo[$^{13}C_{12}$]cyclododecane	1.2 ml 50 µg/ml

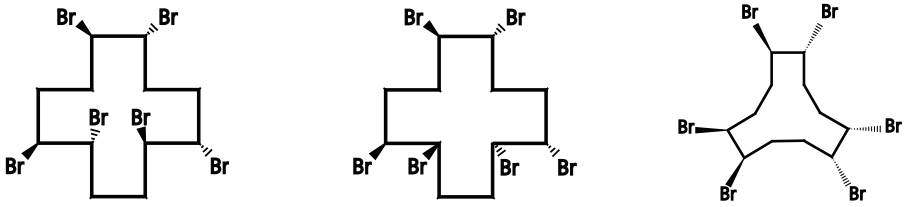
* Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

DEUTERATED HEXABROMOCYCLODODECANE ISOMERS

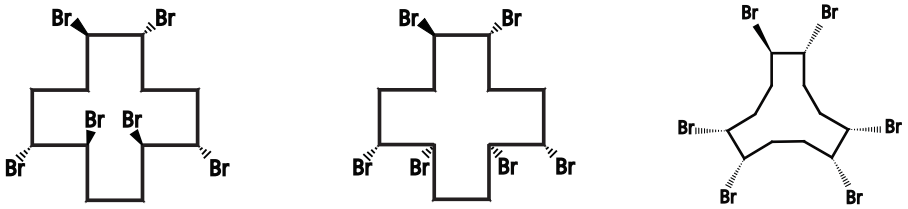
Catalogue Number	Product (toluene solution)	Qty/Conc
DaHBCD	d18-α-1,2,5,6,9,10-Hexabromocyclododecane	1.2 ml 50 µg/ml
DbHBCD	d18-β-1,2,5,6,9,10-Hexabromocyclododecane	1.2 ml 50 µg/ml
DgHBCD	d18-γ-1,2,5,6,9,10-Hexabromocyclododecane	1.2 ml 50 µg/ml

* Unless stated otherwise, isotopic purities of these compounds are 98%.

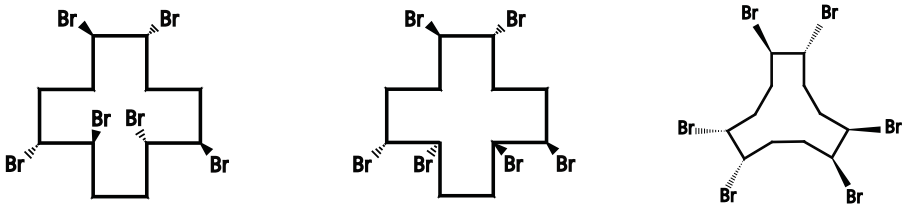
alpha



beta



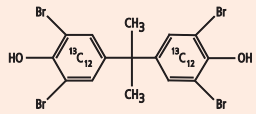
gamma



TETRABROMOBISPHENOL-A (TBBPA)

Catalogue Number	Product (methanol solution)	Qty/Conc
TBBPA	3,3',5,5'-Tetrabromobisphenol-A	1.2 ml 50 µg/ml

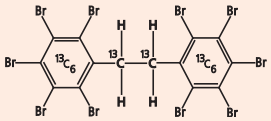
MASS-LABELLED TETRABROMOBISPHENOL-A

Catalogue Number		Product
MTBBPA		3,3',5,5'-Tetrabromobisphenol-A [rings; $^{13}C_{12}$] 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol; Isotopic purity; 99% or greater

DECABROMODIPHENYLETHANE (DBDPE)

Catalogue Number	Product (toluene solution)	Qty/Conc
DBDPE	1,2-Bis(pentabromophenyl)ethane	1.2 ml 25 µg/ml

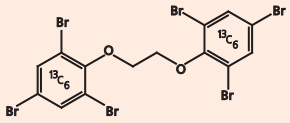
MASS-LABELLED DECABROMODIPHENYLETHANE

Catalogue Number		Product
MDBDPE		1,2-Bis(pentabromophenyl)ethane [$^{13}C_{14}$] 1.2 ml; 25 µg/ml (±1.2 µg/ml); in toluene; Isotopic purity; 99% or greater

1,2-BIS(2,4,6-TRIBROMOPHENOXY)ETHANE (BTBPE)

Catalogue Number	Product (nonane solution)	Qty/Conc
BTBPE	1,2-Bis(2,4,6-tribromophenoxy)ethane	1.2 ml 50 µg/ml

MASS-LABELLED 1,2-BIS(2,4,6-TRIBROMOPHENOXY)ETHANE

Catalogue Number		Product
MBTBPE		1,2-Bis(2,4,6-tribromo[$^{13}C_6$]phenoxy)ethane 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane; Isotopic purity; 99% or greater

HEXABROMOBENZENE (HBB)

Catalogue Number	Product (toluene solution)	Qty/Conc
HBB	Hexabromobenzene	1.2 ml 50 µg/ml

MASS-LABELLED HEXABROMOBENZENE

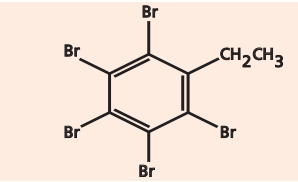
Catalogue Number		Product
MHBB		Hexabromo[$^{13}C_6$]benzene 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene; Isotopic purity; 99% or greater

PENTABROMOETHYLBENZENE (PBEB)

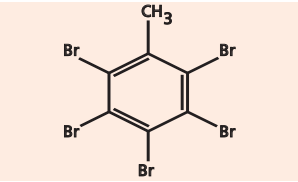
Catalogue Number	Product (toluene solution)	Qty/Conc
PBEB	Pentabromoethylbenzene	1.2 ml 50 µg/ml

PENTABROMOTOLUENE (PBT)

Catalogue Number	Product (toluene solution)	Qty/Conc
PBT	Pentabromotoluene	1.2 ml 50 µg/ml



Pentabromoethylbenzene



Pentabromotoluene

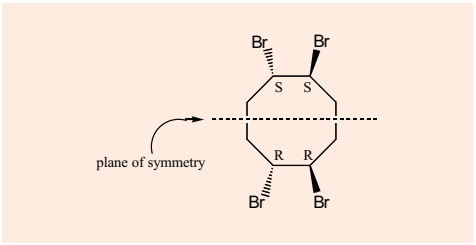
TETRABROMO-P-XYLENE (pTBX)

Catalogue Number	Product (toluene solution)	Qty/Conc	
pTBX	2,3,5,6-Tetrabromo-p-xylene	1.2 ml	50 µg/ml

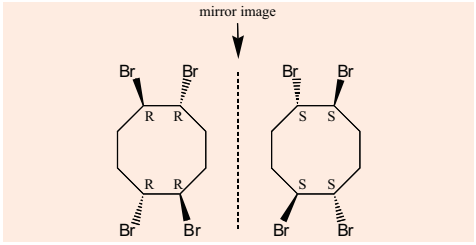
2,3,5,6-Tetrabromo-p-xylene

1,2,5,6-TETRABROMOCYCLOOCTANE (TBCO)

Catalogue Number	Product (toluene solution)	Qty/Conc	
aTBCO	(1*R*,2*R*,5*S*,6*S*)-1,2,5,6-Tetrabromocyclooctane	1.2 ml	50 µg/ml
bTBCO	*rac*-(1*R*,2*R*,5*R*,6*R*)-1,2,5,6-Tetrabromocyclooctane	1.2 ml	50 µg/ml



aTBCO



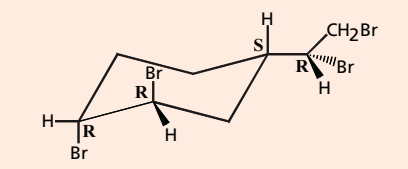
bTBCO

TETRABROMOETHYLCYCLOHEXANE (TBECH)

Catalogue Number	Product (toluene solution)	Qty/Conc	
bTBECH	*rac*-(1*R*,2*R*)-1,2-dibromo-(4*S*)-4-((1*S*)-1,2-dibromoethyl)cyclohexane	1.2 ml	50 µg/ml

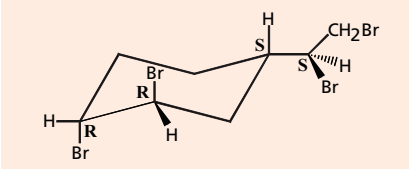
TETRABROMOETHYLCYCLOHEXANE ISOMERIC SOLUTION/MIXTURES

Catalogue Number	Product (toluene solution)	Qty/Conc
abTBECH	TBECH Isomeric Solution/Mixture	1.2 ml
aTBECH	*rac*-(1*R*,2*R*)-1,2-dibromo-(4*S*)-4-((1*R*)-1,2-dibromoethyl)cyclohexane	50 µg/ml
bTBECH	*rac*-(1*R*,2*R*)-1,2-dibromo-(4*S*)-4-((1*S*)-1,2-dibromoethyl)cyclohexane	50 µg/ml
gdTBECH	TBECH Isomeric Solution/Mixture	1.2 ml
gTBECH	*rac*-(1*R*,2*R*)-1,2-dibromo-(4*R*)-4-((1*R*)-1,2-dibromoethyl)cyclohexane	50 µg/ml
dTBECH	*rac*-(1*R*,2*R*)-1,2-dibromo-(4*R*)-4-((1*S*)-1,2-dibromoethyl)cyclohexane	50 µg/ml



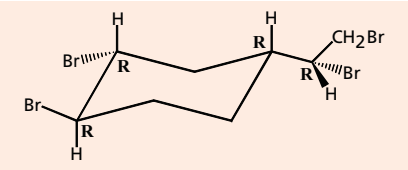
aTBECH

rac-(1*R*,2*R*)-1,2-dibromo-(4*S*)-4-((1*R*)-1,2-dibromoethyl)cyclohexane



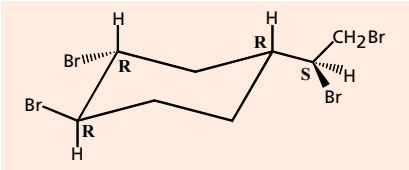
bTBECH

rac-(1*R*,2*R*)-1,2-dibromo-(4*S*)-4-((1*S*)-1,2-dibromoethyl)cyclohexane



gTBECH

rac-(1*R*,2*R*)-1,2-dibromo-(4*R*)-4-((1*R*)-1,2-dibromoethyl)cyclohexane

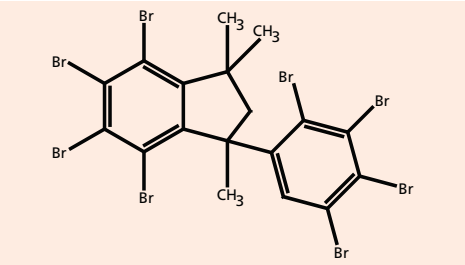


dTBECH

rac-(1*R*,2*R*)-1,2-dibromo-(4*R*)-4-((1*S*)-1,2-dibromoethyl)cyclohexane

OCTABROMOTRIMETHYLPHENYLINDANE

Catalogue Number	Product (toluene solution)	Qty/Conc	
OBIND	4,5,6,7-Tetrabromo-1,1,3-trimethyl-3-(2,3,4,5-tetrabromophenyl)-indane	1.2 ml	50 µg/ml



Octabromotrimethylphenylindane

BIS(2-ETHYLHEXYL)TETRABROMOPHTHALATE (BEHTBP)

Catalogue Number	Product (toluene solution)	Qty/Conc
BEHTBP	Bis(2-ethylhexyl)tetrabromophthalate	1.2 ml 50 µg/ml

2-ETHYLHEXYL-2,3,4,5-TETRABROMOBENZOATE (EHTBB)

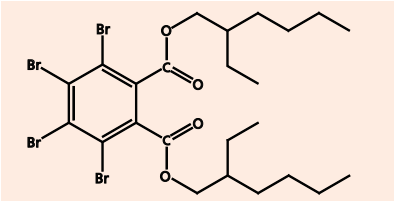
Catalogue Number	Product (toluene solution)	Qty/Conc
EHTBB	2-ethylhexyl-2,3,4,5-Tetrabromobenzoate	1.2 ml 50 µg/ml

HEXACHLOROCYCLOPENTENYL-DIBROMOCYCLOOCTANE (HCDBCO)

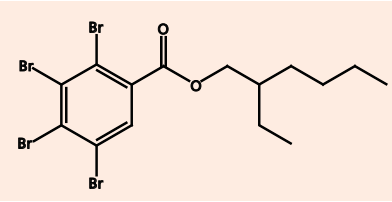
Catalogue Number	Product (toluene solution)	Qty/Conc
HCDBCO	*rac*-(1*R*,2*R*,5*R*,6*R*,9*S*,10*S*)-5,6-dibromo-1,10,11,12,13,13-hexachlorotricyclo[8.2.1.0^{2,9}]tridec-11-ene	1.2 ml 50 µg/ml

2,4,6-TRIBROMOPHENYL ETHERS

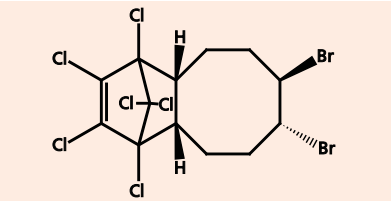
Catalogue Number	Product (toluene solution)	Qty/Conc
ATE	Allyl 2,4,6-tribromophenyl ether	1.2 ml 50 µg/ml
DPTE	2,3-Dibromopropyl 2,4,6-tribromophenyl ether	1.2 ml 50 µg/ml
BATE	2-Bromoallyl 2,4,6-tribromophenyl ether	1.2 ml 50 µg/ml



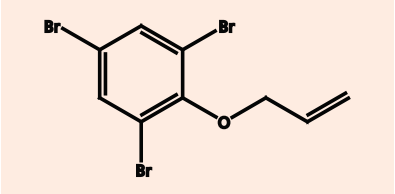
BEHTBP



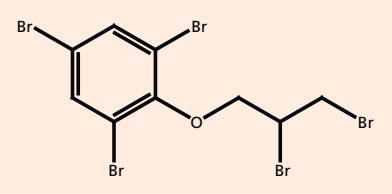
EHTBB



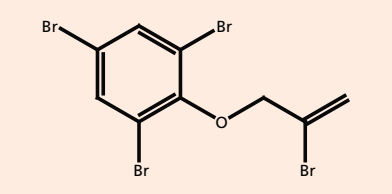
HCDBCO



ATE



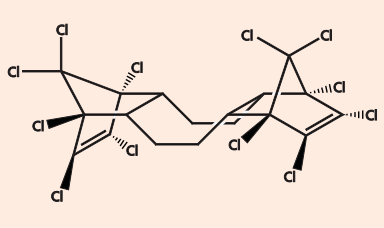
DPTE



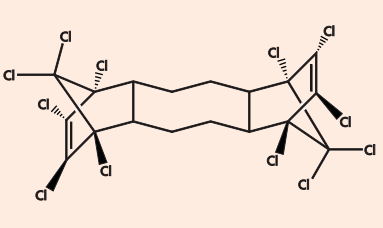
BATE

DECHLORANE PLUS®

Catalogue Number	Product (toluene solution)	Qty/Conc
s-DP	*syn*-Dechlorane Plus®	1.2 ml 50 µg/ml
a-DP	*anti*-Dechlorane Plus®	1.2 ml 50 µg/ml



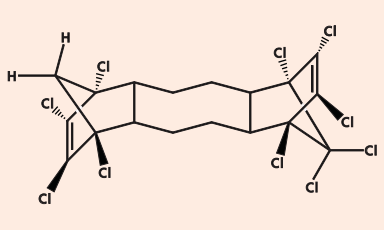
syn-Dechlorane Plus®



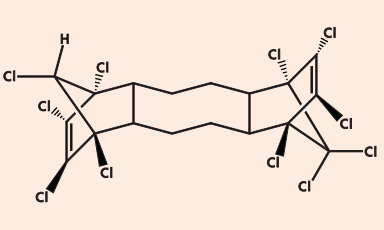
anti-Dechlorane Plus®

DECHLORINATED DECHLORANE PLUS®

Catalogue Number	Product (toluene solution)	Qty/Conc
aCl10DP	Cl10 Dechlorane Plus®	1.2 ml 50 µg/ml
aCl11DP	Cl11 Dechlorane Plus®	1.2 ml 50 µg/ml



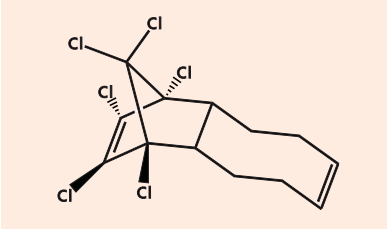
Cl10 Dechlorane Plus®



Cl11 Dechlorane Plus®

DECHLORANE PLUS® MONO ADDUCT

Catalogue Number	Product (toluene solution)	Qty/Conc
DPMA	Dechlorane Plus® Mono adduct	1.2 ml 50 µg/ml



Dechlorane Plus® mono adduct

NATIVE BROMINATED BIPHENYLS (PBBs)

Catalogue Number	Product (nonane solution)	Qty/Conc	
BB-1	2-Bromobiphenyl	1.2 ml	50 µg/ml
BB-2	3-Bromobiphenyl	1.2 ml	50 µg/ml
BB-3	4-Bromobiphenyl	1.2 ml	50 µg/ml
BB-4	2,2'-Dibromobiphenyl	1.2 ml	50 µg/ml
BB-7	2,4-Dibromobiphenyl	1.2 ml	50 µg/ml
BB-9	2,5-Dibromobiphenyl	1.2 ml	50 µg/ml
BB-10	2,6-Dibromobiphenyl	1.2 ml	50 µg/ml
BB-15	4,4'-Dibromobiphenyl	1.2 ml	50 µg/ml
BB-18	2,2',5-Tribromobiphenyl	1.2 ml	50 µg/ml
BB-22	2,3,4'-Tribromobiphenyl	1.2 ml	50 µg/ml
BB-26	2,3',5-Tribromobiphenyl	1.2 ml	50 µg/ml
BB-29	2,4,5-Tribromobiphenyl	1.2 ml	50 µg/ml
BB-30	2,4,6-Tribromobiphenyl	1.2 ml	50 µg/ml
BB-31	2,4',5-Tribromobiphenyl	1.2 ml	50 µg/ml
BB-37	3,4,4'-Tribromobiphenyl	1.2 ml	50 µg/ml
BB-38	3,4,5-Tribromobiphenyl	1.2 ml	50 µg/ml
BB-49	2,2',4,5'-Tetrabromobiphenyl	1.2 ml	50 µg/ml
BB-52	2,2',5,5'-Tetrabromobiphenyl	1.2 ml	50 µg/ml
BB-53	2,2',5,6'-Tetrabromobiphenyl	1.2 ml	50 µg/ml
BB-56	2,3,3',4'-Tetrabromobiphenyl	1.2 ml	50 µg/ml
BB-75	2,4,4',6-Tetrabromobiphenyl	1.2 ml	50 µg/ml
BB-77	3,3',4,4'-Tetrabromobiphenyl	1.2 ml	50 µg/ml
BB-80	3,3',5,5'-Tetrabromobiphenyl	1.2 ml	50 µg/ml
BB-101	2,2',4,5,5'-Pentabromobiphenyl	1.2 ml	50 µg/ml
BB-103	2,2',4,5',6-Pentabromobiphenyl	1.2 ml	50 µg/ml
BB-153	2,2',4,4',5,5'-Hexabromobiphenyl	1.2 ml	50 µg/ml
BB-154	2,2',4,4',5,6'-Hexabromobiphenyl	1.2 ml	50 µg/ml
BB-155	2,2',4,4',6,6'-Hexabromobiphenyl	1.2 ml	50 µg/ml
BB-156	2,3,3',4,4',5-Hexabromobiphenyl	1.2 ml	50 µg/ml
BB-169	3,3',4,4',5,5'-Hexabromobiphenyl	1.2 ml	50 µg/ml
BB-180	2,2',3,4,4',5,5'-Heptabromobiphenyl	1.2 ml	50 µg/ml
BB-189	2,3,3',4,4',5,5'-Heptabromobiphenyl	1.2 ml	50 µg/ml
BB-194	2,2',3,3',4,4',5,5'-Octabromobiphenyl	1.2 ml	50 µg/ml
BB-205	2,3,3',4,4',5,5',6-Octabromobiphenyl	1.2 ml	50 µg/ml
BB-206	2,2',3,3',4,4',5,5',6-Nonabromobiphenyl	1.2 ml	50 µg/ml
BB-209	Decabromobiphenyl	1.2 ml	50 µg/ml

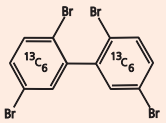
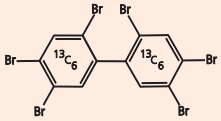
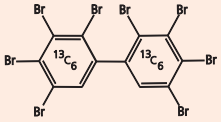
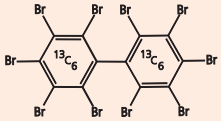
NATIVE BROMINATED BIPHENYLS: SOLUTION/MIXTURE

Catalogue Number	Product (nonane solution)		Qty/Conc
PBB-MXA	Native PBB Solution/Mixture		1.2 ml
		IUPAC	
	4-Bromobiphenyl	*3*	1 µg/ml
	4,4'-Dibromobiphenyl	*15*	1 µg/ml
	2,2',5-Tribromobiphenyl	*18*	1 µg/ml
	2,2',5,5'-Tetrabromobiphenyl	*52*	1 µg/ml
	2,2',4,5,5'-Pentabromobiphenyl	*101*	2 µg/ml
	2,2',4,4',5,5'-Hexabromobiphenyl	*153*	2 µg/ml
	2,2',3,4,4',5,5'-Heptabromobiphenyl	*180*	2 µg/ml
	2,2',3,3',4,4',5,5'-Octabromobiphenyl	*194*	2 µg/ml
	2,2',3,3',4,4',5,5',6-Nonabromobiphenyl	*206*	5 µg/ml
	Decabromobiphenyl	*209*	5 µg/ml

POLYBROMINATED BIPHENYL TECHNICAL MIXTURES

Catalogue Number	Product (nonane solution)	Qty/Conc	
TBB-BP6	Great Lakes Chemical Firemaster BP-6™ Hexabromobiphenyl	1.2 ml	100 µg/ml
TBB-809D	Chemische Fabrik Kalk Bromkal80-9D™ Nonabromobiphenyl	1.2 ml	100 µg/ml

MASS-LABELLED BROMINATED BIPHENYLS

Catalogue Number		Product
MBB-52		2,2',5,5'-Tetrabromo[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane; Isotopic purity; 99% or greater
MBB-153		2,2',4,4',5,5'-Hexabromo[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane; Isotopic purity; 99% or greater
MBB-194		2,2',3,3',4,4',5,5'-Octabromo[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane; Isotopic purity; 99% or greater
MBB-209		Decabromo[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane; Isotopic purity; 99% or greater

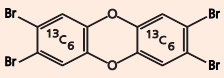
MASS-LABELLED BROMINATED BIPHENYLS: SOLUTION/MIXTURE

Catalogue Number	Product (nonane solution)	Qty/Conc
MBB-MXA	Mass-Labelled PBB Solution/Mixture	1.2 ml
	IUPAC	
2,2',5,5'-Tetrabromo[$^{13}C_{12}$]biphenyl	*52L*	1 µg/ml
2,2',4,4',5,5'-Hexabromo[$^{13}C_{12}$]biphenyl	*153L*	2 µg/ml
2,2',3,3',4,4',5,5'-Octabromo[$^{13}C_{12}$]biphenyl	*194L*	2 µg/ml
Decabromo[$^{13}C_{12}$]biphenyl	*209L*	5 µg/ml

NATIVE BROMINATED DIBENZO-p-DIOXINS (PBDDs)

Catalogue Number	Product (toluene solution)	Qty/Conc
BDD-1	1-Bromodibenzo-p-dioxin	1.2 ml 50 µg/ml
BDD-27/28	2,7/2,8-Dibromodibenzo-p-dioxin mix	1.2 ml 50 µg/ml
BDD-237	2,3,7-Tribromodibenzo-p-dioxin	1.2 ml 50 µg/ml
BDD-1234	1,2,3,4-Tetrabromodibenzo-p-dioxin	1.2 ml 50 µg/ml
BDD-1378	1,3,7,8-Tetrabromodibenzo-p-dioxin	1.2 ml 50 µg/ml
BDD-2378	2,3,7,8-Tetrabromodibenzo-p-dioxin	1.2 ml 50 µg/ml
BDD-12378	1,2,3,7,8-Pentabromodibenzo-p-dioxin	1.2 ml 50 µg/ml
BDD-12478	1,2,4,7,8-Pentabromodibenzo-p-dioxin	1.2 ml 50 µg/ml
BDD-12346789	Octabromodibenzo-p-dioxin	1.2 ml 10 µg/ml

MASS-LABELLED BROMINATED DIBENZO-p-DIOXIN

Catalogue Number		Product
MBDD-2378		2,3,7,8-Tetrabromo[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene; Isotopic purity; 99% or greater

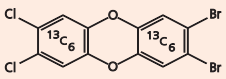
NATIVE BROMINATED DIBENZOFURANS (PBDFs)

Catalogue Number	Product (toluene solution)	Qty/Conc	
BDF-4	4-Bromodibenzofuran	1.2 ml	50 µg/ml
BDF-24	2,4-Dibromodibenzofuran	1.2 ml	50 µg/ml
BDF-28	2,8-Dibromodibenzofuran	1.2 ml	50 µg/ml
BDF-138	1,3,8-Tribromodibenzofuran	1.2 ml	50 µg/ml
BDF-234	2,3,4-Tribromodibenzofuran	1.2 ml	50 µg/ml
BDF-238	2,3,8-Tribromodibenzofuran	1.2 ml	50 µg/ml
BDF-247	2,4,7-Tribromodibenzofuran	1.2 ml	50 µg/ml
BDF-1278	1,2,7,8-Tetrabromodibenzofuran	1.2 ml	50 µg/ml
BDF-2378	2,3,7,8-Tetrabromodibenzofuran	1.2 ml	50 µg/ml
BDF-12378	1,2,3,7,8-Pentabromodibenzofuran	1.2 ml	50 µg/ml
BDF-23478	2,3,4,7,8-Pentabromodibenzofuran	1.2 ml	50 µg/ml
BDF-1234678	1,2,3,4,6,7,8-Heptabromodibenzofuran	1.2 ml	25 µg/ml
BDF-12346789	Octabromodibenzofuran	1.2 ml	25 µg/ml

NATIVE BROMO/CHLORO DIBENZO-p-DIOXINS

Catalogue Number	Product (toluene solution)	Qty/Conc	
7-B-23-CDD	7-Bromo-2,3-dichlorodibenzo-p-dioxin (96%)	1.2 ml	48 µg/ml
2-B-378-CDD	2-Bromo-3,7,8-trichlorodibenzo-p-dioxin (96%)	1.2 ml	48 µg/ml
2-B-1378-CDD	2-Bromo-1,3,7,8-tetrachlorodibenzo-p-dioxin (96%)	1.2 ml	48 µg/ml
23-B-78-CDD	2,3-Dibromo-7,8-dichlorodibenzo-p-dioxin	1.2 ml	50 µg/ml

MASS-LABELLED BROMO/CHLORO DIBENZO-p-DIOXIN

Catalogue Number		Product
M23-B-78-CDD		2,3-Dibromo-7,8-dichloro[$^{13}C_{12}$]dibenzo-p-dioxin 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene; Isotopic purity; 99% or greater

NATIVE BROMO/CHLORO DIBENZOFURANS

Catalogue Number	Product (toluene solution)	Qty/Conc	
8-B-23-CDF	8-Bromo-2,3-dichlorodibenzofuran	1.2 ml	50 µg/ml
8-B-234-CDF	8-Bromo-2,3,4-trichlorodibenzofuran	1.2 ml	50 µg/ml

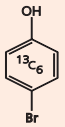
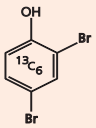
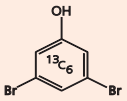
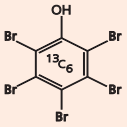
NATIVE BROMOPHENOLS

Catalogue Number	Product (toluene solution)	Qty/Conc	
BRP-2	2-Bromophenol	1.2 ml	100 µg/ml
BRP-3	3-Bromophenol	1.2 ml	100 µg/ml
BRP-4	4-Bromophenol	1.2 ml	100 µg/ml
BRP-23	2,3-Dibromophenol	1.2 ml	100 µg/ml
BRP-24	2,4-Dibromophenol	1.2 ml	100 µg/ml
BRP-25	2,5-Dibromophenol	1.2 ml	100 µg/ml
BRP-26	2,6-Dibromophenol	1.2 ml	100 µg/ml
BRP-34	3,4-Dibromophenol	1.2 ml	100 µg/ml
BRP-35	3,5-Dibromophenol	1.2 ml	100 µg/ml
BRP-234	2,3,4-Tribromophenol	1.2 ml	100 µg/ml
BRP-235	2,3,5-Tribromophenol	1.2 ml	100 µg/ml
BRP-236	2,3,6-Tribromophenol	1.2 ml	100 µg/ml
BRP-245	2,4,5-Tribromophenol	1.2 ml	100 µg/ml
BRP-246	2,4,6-Tribromophenol	1.2 ml	100 µg/ml
BRP-345	3,4,5-Tribromophenol	1.2 ml	100 µg/ml
BRP-2345	2,3,4,5-Tetrabromophenol	1.2 ml	100 µg/ml
BRP-2346	2,3,4,6-Tetrabromophenol	1.2 ml	100 µg/ml
BRP-2356	2,3,5,6-Tetrabromophenol	1.2 ml	100 µg/ml
BRP-23456	Pentabromophenol	1.2 ml	100 µg/ml

NATIVE BROMOPHENOLS: SOLUTION/MIXTURE

Catalogue Number	Product (toluene solution)	Qty/Conc
BRPS	Native Bromophenols; Solution/Mixture	1.2 ml
2-Bromophenol		5 µg/ml
3-Bromophenol		5 µg/ml
4-Bromophenol		5 µg/ml
2,3-Dibromophenol		5 µg/ml
2,4-Dibromophenol		5 µg/ml
2,5-Dibromophenol		5 µg/ml
2,6-Dibromophenol		5 µg/ml
3,4-Dibromophenol		5 µg/ml
3,5-Dibromophenol		5 µg/ml
2,3,4-Tribromophenol		5 µg/ml
2,3,5-Tribromophenol		5 µg/ml
2,3,6-Tribromophenol		5 µg/ml
2,4,5-Tribromophenol		5 µg/ml
2,4,6-Tribromophenol		5 µg/ml
3,4,5-Tribromophenol		5 µg/ml
2,3,4,5-Tetrabromophenol		5 µg/ml
2,3,4,6-Tetrabromophenol		5 µg/ml
2,3,5,6-Tetrabromophenol		5 µg/ml
Pentabromophenol		5 µg/ml

MASS-LABELLED BROMOPHENOLS

Catalogue Number		Product
MBRP-4		4-Bromo[$^{13}C_6$]phenol 1.2 ml; 100 µg/ml (±5.0 µg/ml); in toluene
MBRP-24		2,4-Dibromo[$^{13}C_6$]phenol 1.2 ml; 100 µg/ml (±5.0 µg/ml); in toluene
MBRP-35		3,5-Dibromo[$^{13}C_6$]phenol 1.2 ml; 100 µg/ml (±5.0 µg/ml); in toluene
MBRP-246		2,4,6-Tribromo[$^{13}C_6$]phenol 1.2 ml; 100 µg/ml (±5.0 µg/ml); in toluene
MBRP-2346		2,3,4,6-Tetrabromo[$^{13}C_6$]phenol 1.2 ml; 100 µg/ml (±5.0 µg/ml); in toluene
MBRP-23456		Pentabromo[$^{13}C_6$]phenol 1.2 ml; 100 µg/ml (±5.0 µg/ml); in toluene

***** Unless stated otherwise, isotopic purities of these compounds are 99% or greater.

MASS-LABELLED BROMOPHENOLS: SOLUTION/MIXTURE

Catalogue Number	Product (toluene solution)	Qty/Conc
MBRPS	Mass-Labelled Bromophenol; Solution/Mixture	1.2 ml
	4-Bromo[$^{13}C_6$]phenol	5 µg/ml
	2,4-Dibromo[$^{13}C_6$]phenol	5 µg/ml
	2,4,6-Tribromo[$^{13}C_6$]phenol	5 µg/ml
	2,3,4,6-Tetrabromo[$^{13}C_6$]phenol	5 µg/ml
	Pentabromo[$^{13}C_6$]phenol	5 µg/ml

In order to keep up-to-date on new releases from Wellington Laboratories Inc., please visit our web-site at www.well-labs.com.

New Products are announced in the Wellington Reporter.

PERFLUORINATED COMPOUNDS (PFCs)

This section, devoted to perfluorinated compounds, was first introduced in our 2006/2007 catalogue. Wellington began synthesis of these compounds in 2004 and we have regularly added new native and mass-labelled standards to our inventory. In this section you will find individual standards of the following groups of compounds including, in most cases, mass-labelled analogues as well as some useful solution/mixtures:

Perfluorocarboxylic acids (PFCAs)
Perfluorosulfonates (PFASs)
Perfluorosulfonamides (FOSAs)
Perfluorosulfonamidoethanols (FOSEs)
Perfluorooctanesulfonamidoacetic acids (FOSAAs)
Fluorinated Telomer Alcohols (FTOHs)
Fluorinated Telomer Acids (FTAs)
Unsaturated Fluorinated Telomer Acids (FTUAs)
Perfluoroalkylphosphonic Acids (PFAPAs)

PFCs are emerging environmental contaminants and each of the groups of compounds listed above pose unique analytical challenges. In addition, the individual isomers, such as the branched PFOA and PFOS isomers, are being found to have different toxicokinetic and ecokinetic properties. Thus our inventory of PFCs will continue to grow and we would urge you to visit our website for announcements of new products.

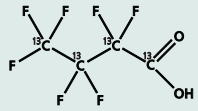
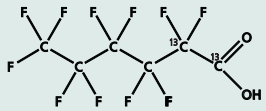
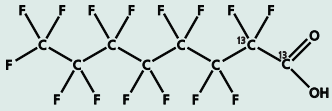
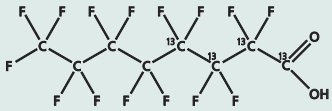
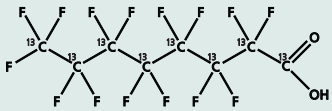
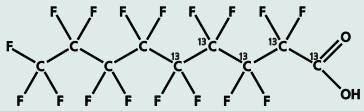
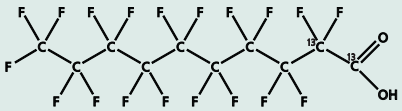
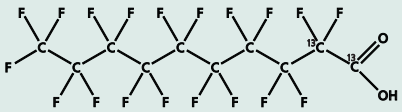
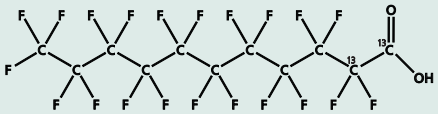
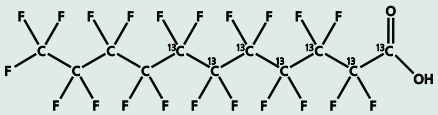
NATIVE PERFLUOROALKYLCARBOXYLIC ACIDS (PFCAs)

Catalogue Number	Product (methanol solution)	Qty/Conc
PFBA	Perfluoro-n-butanoic acid	1.2 ml 50 µg/ml
PFPeA	Perfluoro-n-pentanoic acid	1.2 ml 50 µg/ml
PFHxA	Perfluoro-n-hexanoic acid	1.2 ml 50 µg/ml
PFHpA	Perfluoro-n-heptanoic acid	1.2 ml 50 µg/ml
PFOA	Perfluoro-n-octanoic acid	1.2 ml 50 µg/ml
PFNA	Perfluoro-n-nonanoic acid	1.2 ml 50 µg/ml
ipPFNA	Perfluoro-7-methyloctanoic acid (90%)	1.2 ml 45 µg/ml
PFDA	Perfluoro-n-decanoic acid	1.2 ml 50 µg/ml
PFUdA	Perfluoro-n-undecanoic acid	1.2 ml 50 µg/ml
PFDoA	Perfluoro-n-dodecanoic acid	1.2 ml 50 µg/ml
PFTrDA	Perfluoro-n-tridecanoic acid	1.2 ml 50 µg/ml
PFTeDA	Perfluoro-n-tetradecanoic acid	1.2 ml 50 µg/ml
PFHxDA	Perfluoro-n-hexadecanoic acid	1.2 ml 50 µg/ml
PFODA	Perfluoro-n-octadecanoic acid	1.2 ml 50 µg/ml

NATIVE PERFLUOROALKYLCARBOXYLIC ACIDS: SOLUTION/MIXTURE

Catalogue Number	Product (methanol solution)	Qty/Conc
PFC-MXA	Native PFCA Solution/Mixture	1.2 ml
	Perfluoro-n-butanoic acid	2 µg/ml
	Perfluoro-n-pentanoic acid	2 µg/ml
	Perfluoro-n-hexanoic acid	2 µg/ml
	Perfluoro-n-heptanoic acid	2 µg/ml
	Perfluoro-n-octanoic acid	2 µg/ml
	Perfluoro-n-nonanoic acid	2 µg/ml
	Perfluoro-n-decanoic acid	2 µg/ml
	Perfluoro-n-undecanoic acid	2 µg/ml
	Perfluoro-n-dodecanoic acid	2 µg/ml
	Perfluoro-n-tridecanoic acid	2 µg/ml
	Perfluoro-n-tetradecanoic acid	2 µg/ml

MASS-LABELLED PERFLUOROALKYLCARBOXYLIC ACIDS

Catalogue Number		Product
MPFBA		Perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; >99% $^{13}C_4$
MPFHxA		Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; >99% $^{13}C_2$
M2PFOA		Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; >99% $^{13}C_2$
MPFOA		Perfluoro-n-[1,2,3,4-$^{13}C_4$]octanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; >99% $^{13}C_4$
M8PFOA		Perfluoro-n-[$^{13}C_8$]octanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; 97.9% $^{13}C_8$ and 2.1% $^{13}C_4$
MPFNA		Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; >99% $^{13}C_5$
MPFDA		Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; >99% $^{13}C_2$
MPFDA-A		Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in acetonitrile >99% linear; >99% $^{13}C_2$
MPFUdA		Perfluoro-n-[1,2-$^{13}C_2$]undecanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; >99% $^{13}C_2$
M7PFUdA		Perfluoro-n-[1,2,3,4,5,6,7-$^{13}C_7$]undecanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; >99% $^{13}C_7$
MPFDoA		Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; >99% $^{13}C_2$

NATIVE PERFLUOROALKYLSULFONATES (PFASs)

Catalogue Number	Product (methanol solution)	Qty/Conc
L-PFBS	Potassium perfluoro-1-butanesulfonate	1.2 ml 50 µg/ml
L-PFHxS	Sodium perfluoro-1-hexanesulfonate	1.2 ml 50 µg/ml
L-PFHpS	Sodium perfluoro-1-heptanesulfonate	1.2 ml 50 µg/ml
L-PFOS	Sodium perfluoro-1-octanesulfonate	1.2 ml 50 µg/ml
L-PFOSK	Potassium perfluoro-1-octanesulfonate	1.2 ml 50 µg/ml
brPFOSK	L-PFOSK with branched isomers	1.2 ml 50 µg/ml
T-PFOS	Potassium perfluorooctanesulfonate (Technical Grade)	1.2 ml 50 µg/ml
ipPFNS	Sodium perfluoro-7-methyloctanesulfonate	1.2 ml 50 µg/ml
L-PFDS	Sodium perfluoro-1-decanesulfonate	1.2 ml 50 µg/ml

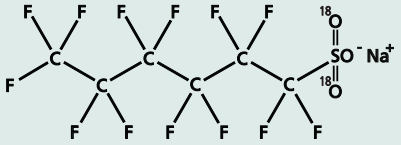
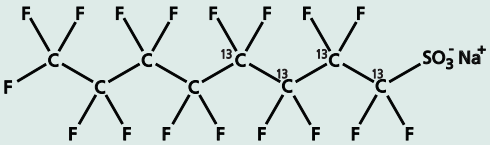
NOTE: Listed concentrations are reported as the salt.

NATIVE PERFLUOROALKYLSULFONATES: SOLUTION/MIXTURE

Catalogue Number	Product (methanol solution)	Qty/Conc
PFS-MXA	Native PFAS Solution/Mixture	1.2 ml
	Potassium perfluoro-1-butanesulfonate	2 µg/ml
	Sodium perfluoro-1-hexanesulfonate	2 µg/ml
	Sodium perfluoro-1-heptanesulfonate	2 µg/ml
	Sodium perfluoro-1-octanesulfonate	2 µg/ml
	Sodium perfluoro-1-decanesulfonate	2 µg/ml

NOTE: Listed concentrations are reported as the salt.

MASS-LABELLED PERFLUOROALKYLSULFONATES

Catalogue Number		Product
MPFHxS		Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; 94% $^{18}O_2$
MPFOS		Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]-octanesulfonate 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; >99% $^{13}C_4$

NOTE: Listed concentrations are reported as the salt.

MIXED NATIVE PFCAs AND PFASs: SOLUTION/MIXTURES

Catalogue Number	Product (methanol solution)	Qty/Conc
PFAC-MXA	Native PFCAs and PFASs Solution/Mixture	1.2 ml
Perfluoro-n-butanoic acid		5 µg/ml
Perfluoro-n-pentanoic acid		5 µg/ml
Perfluoro-n-hexanoic acid		5 µg/ml
Perfluoro-n-heptanoic acid		5 µg/ml
Perfluoro-n-octanoic acid		5 µg/ml
Perfluoro-n-nonanoic acid		5 µg/ml
Perfluoro-n-decanoic acid		5 µg/ml
Potassium perfluoro-1-butanesulfonate		5 µg/ml
Sodium perfluoro-1-hexanesulfonate		5 µg/ml
Sodium perfluoro-1-octanesulfonate		5 µg/ml
PFAC-MXB	Native PFCAs and PFASs Solution/Mixture	1.2 ml
Perfluoro-n-butanoic acid		2 µg/ml
Perfluoro-n-pentanoic acid		2 µg/ml
Perfluoro-n-hexanoic acid		2 µg/ml
Perfluoro-n-heptanoic acid		2 µg/ml
Perfluoro-n-octanoic acid		2 µg/ml
Perfluoro-n-nonanoic acid		2 µg/ml
Perfluoro-n-decanoic acid		2 µg/ml
Perfluoro-n-undecanoic acid		2 µg/ml
Perfluoro-n-dodecanoic acid		2 µg/ml
Perfluoro-n-tridecanoic acid		2 µg/ml
Perfluoro-n-tetradecanoic acid		2 µg/ml
Perfluoro-n-hexadecanoic acid		2 µg/ml
Perfluoro-n-octadecanoic acid		2 µg/ml
Potassium perfluoro-1-butanesulfonate		2 µg/ml
Sodium perfluoro-1-hexanesulfonate		2 µg/ml
Sodium perfluoro-1-octanesulfonate		2 µg/ml
Sodium perfluoro-1-decanesulfonate		2 µg/ml

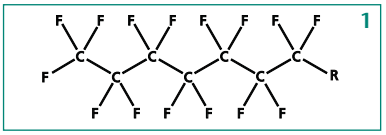
MIXED MASS-LABELLED PFCAs AND PFASs: SOLUTION/MIXTURE

Catalogue Number	Product (methanol solution)	Qty/Conc
MPFAC-MXA	Mass-Labelled PFCAs and PFASs Solution/Mixture	1.2 ml
Perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid		2 µg/ml
Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid		2 µg/ml
Perfluoro-n-[1,2,3,4-$^{13}C_4$]octanoic acid		2 µg/ml
Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid		2 µg/ml
Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid		2 µg/ml
Perfluoro-n-[1,2-$^{13}C_2$]undecanoic acid		2 µg/ml
Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid		2 µg/ml
Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate		2 µg/ml
Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate		2 µg/ml

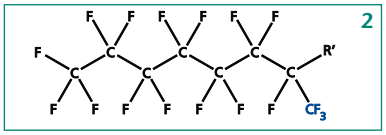
NOTE: Listed concentrations for the perfluoroalkylsulfonates are reported as the salt.

PFOS/PFOA ISOMERS

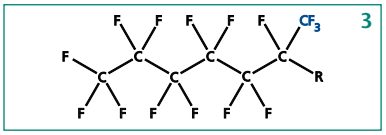
Catalogue Number	Product (methanol solution)	Qty/Conc	
P1MHpS	Perfluoro-1-methylheptane sulfonate	200 µl	1.00 µg/ml
P2MHpS	Perfluoro-2-methylheptane sulfonate	200 µl	1.00 µg/ml
	Perfluoro-2-methylheptanoic acid		1.05 µg/ml
P3MHpS	Perfluoro-3-methylheptane sulfonate	200 µl	1.00 µg/ml
	Perfluoro-3-methylheptanoic acid		1.90 µg/ml
P4MHpS	Perfluoro-4-methylheptane sulfonate	200 µl	1.00 µg/ml
	Perfluoro-4-methylheptanoic acid		2.20 µg/ml
P5MHpS	Perfluoro-5-methylheptane sulfonate	200 µl	1.00 µg/ml
	Perfluoro-5-methylheptanoic acid		1.96 µg/ml
P6MHpS	Perfluoro-6-methylheptane sulfonate	200 µl	1.00 µg/ml
	Perfluoro-6-methylheptanoic acid		3.10 µg/ml
P55DMHxS	Perfluoro-5,5-dimethylhexane sulfonate	200 µl	1.00 µg/ml
	Perfluoro-5,5-dimethylhexanoic acid		1.95 µg/ml
P44DMHxS	Perfluoro-4,4-dimethylhexane sulfonate	200 µl	1.00 µg/ml
	Perfluoro-4,4-dimethylhexanoic acid		3.14 µg/ml
P45DMHxS	Perfluoro-4,5-dimethylhexane sulfonate	200 µl	1.00 µg/ml
	Perfluoro-4,5-dimethylhexanoic acid		1.22 µg/ml
	Perfluoro-3,5-dimethylhexane sulfonate		0.50 µg/ml
	Perfluoro-3,5-dimethylhexanoic acid		0.60 µg/ml



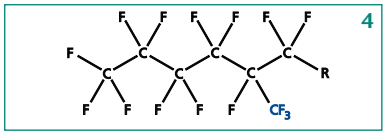
Linear



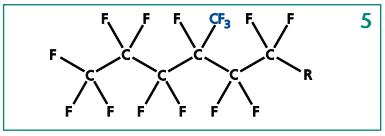
Perfluoro-1-methyl-



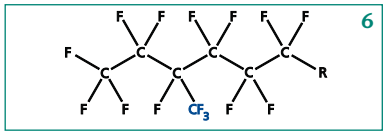
Perfluoro-2-methyl-



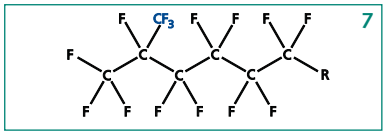
Perfluoro-3-methyl-



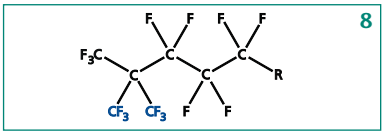
Perfluoro-4-methyl-



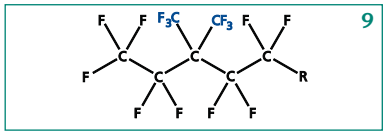
Perfluoro-5-methyl-



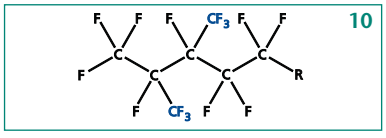
Perfluoro-6-methyl-



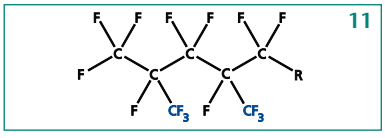
Perfluoro-5,5-dimethyl-



Perfluoro-4,4-dimethyl-



Perfluoro-4,5-dimethyl-



Perfluoro-3,5-dimethyl-

NOTE: R = CO_2^- and $CF_2SO_3^-$ except for Isomer 2 where R' = SO_3^- only

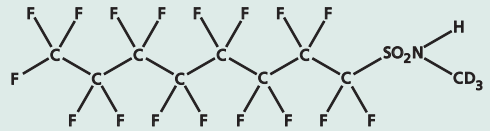
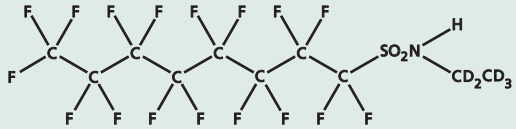
NATIVE PERFLUOROOCTANESULFONAMIDES (FOSAs)

Catalogue Number	Product (nonane solution)	Qty/Conc
FOSA	Perfluoro-1-octanesulfonamide	1.2 ml 50 µg/ml
N-MeFOSA	N-methylperfluoro-1-octanesulfonamide	1.2 ml 50 µg/ml
N,N-Me2FOSA	N,N-dimethylperfluoro-1-octanesulfonamide	1.2 ml 50 µg/ml
N-EtFOSA	N-ethylperfluoro-1-octanesulfonamide	1.2 ml 50 µg/ml

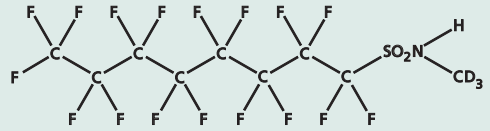
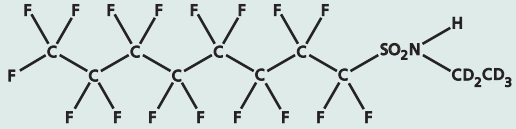
NATIVE PERFLUOROOCTANESULFONAMIDES (FOSAs)

Catalogue Number	Product (methanol solution)	Qty/Conc
FOSA-M	Perfluoro-1-octanesulfonamide	1.2 ml 50 µg/ml
N-MeFOSA-M	N-methylperfluoro-1-octanesulfonamide	1.2 ml 50 µg/ml
N-EtFOSA-M	N-ethylperfluoro-1-octanesulfonamide	1.2 ml 50 µg/ml

MASS-LABELLED PERFLUOROOCTANESULFONAMIDES

Catalogue Number		Product
d-N-MeFOSA		N-methyl-d_3-perfluoro-1-octanesulfonamide 1.2 ml; 50 µg/ml (±2.5 µg/ml); in **nonane** >99% linear; 98% $^2H_3$
d-N-EtFOSA		N-ethyl-d_5-perfluoro-1-octanesulfonamide 1.2 ml; 50 µg/ml (±2.5 µg/ml); in **nonane** >99% linear; 98% $^2H_5$

MASS-LABELLED PERFLUOROOCTANESULFONAMIDES

Catalogue Number		Product
d-N-MeFOSA-M		N-methyl-d_3-perfluoro-1-octanesulfonamide 1.2 ml; 50 µg/ml (±2.5 µg/ml); in **methanol** >99% linear; 98% $^2H_3$
d-N-EtFOSA-M		N-ethyl-d_5-perfluoro-1-octanesulfonamide 1.2 ml; 50 µg/ml (±2.5 µg/ml); in **methanol** >99% linear; 98% $^2H_5$

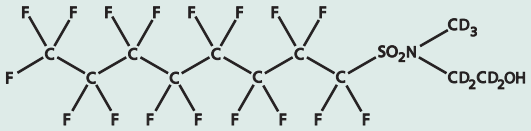
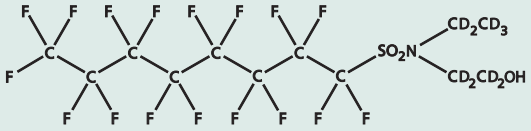
NATIVE PERFLUOROOCTANESULFONAMIDOETHANOLS (FOSEs)

Catalogue Number	Product (nonane solution)	Qty/Conc	
N-MeFOSE	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	1.2 ml	50 µg/ml
N-EtFOSE	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	1.2 ml	50 µg/ml

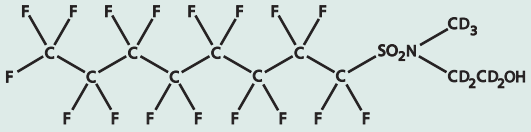
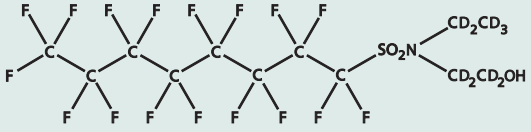
NATIVE PERFLUOROOCTANESULFONAMIDOETHANOLS (FOSEs)

Catalogue Number	Product (methanol solution)	Qty/Conc	
N-MeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	1.2 ml	50 µg/ml
N-EtFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	1.2 ml	50 µg/ml

MASS-LABELLED PERFLUOROOCTANESULFONAMIDOETHANOLS

Catalogue Number		Product
d7-N-MeFOSE		2-(N-deuteriomethylperfluoro-1-octane-sulfonamido)-1,1,2,2-tetradeuterioethanol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in **nonane** >99% linear; 98% $^{2}H_{7}$
d9-N-EtFOSE		2-(N-deuterioethylperfluoro-1-octane-sulfonamido)-1,1,2,2-tetradeuterioethanol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in **nonane** >99% linear; 98% $^{2}H_{9}$

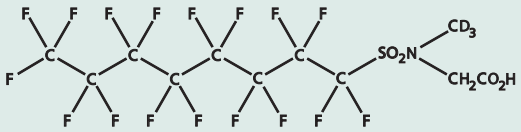
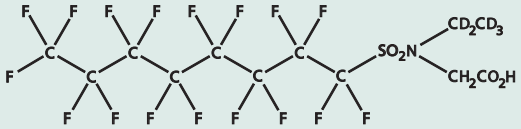
MASS-LABELLED PERFLUOROOCTANESULFONAMIDOETHANOLS

Catalogue Number		Product
d7-N-MeFOSE-M		2-(N-deuteriomethylperfluoro-1-octane-sulfonamido)-1,1,2,2-tetradeuterioethanol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in **methanol** >99% linear; 98% $^{2}H_{7}$
d9-N-EtFOSE-M		2-(N-deuterioethylperfluoro-1-octane-sulfonamido)-1,1,2,2-tetradeuterioethanol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in **methanol** >99% linear; 98% $^{2}H_{9}$

NATIVE PERFLUOROOCTANESULFONAMIDOACETIC ACIDS (FOSAAs)

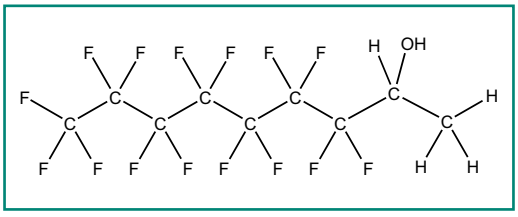
Catalogue Number	Product (methanol solution)	Qty/Conc	
FOSAA	Perfluoro-1-octanesulfonamidoacetic acid	1.2 ml	50 µg/ml
N-MeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid	1.2 ml	50 µg/ml
N-EtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid	1.2 ml	50 µg/ml

MASS-LABELLED PERFLUOROOCTANESULFONAMIDOACETIC ACIDS

Catalogue Number		Product
d3-N-MeFOSAA		N-deuteriomethylperfluoro-1-octane-sulfonamidoacetic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; 98% $^{2}H_{3}$
d5-N-EtFOSAA		N-deuterioethylperfluoro-1-octane-sulfonamidoacetic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol >99% linear; 98% $^{2}H_{5}$

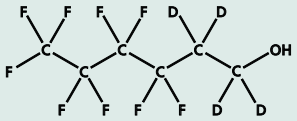
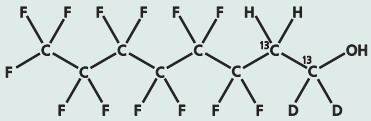
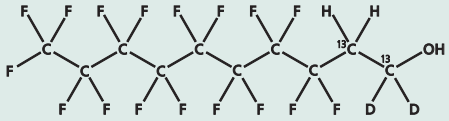
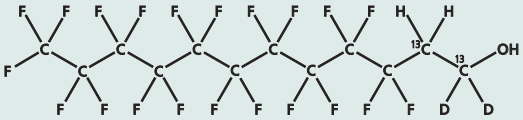
NATIVE TELOMER ALCOHOLS (FTOHs)

Catalogue Number	Product (methanol solution)	Qty/Conc	
FBET	2-Perfluorobutyl ethanol ***(4:2)***	1.2 ml	50 µg/ml
FHET	2-Perfluorohexyl ethanol ***(6:2)***	1.2 ml	50 µg/ml
7:2sFTOH	1-Perfluoroheptyl ethanol ***(7:2 secondary)***	1.2 ml	50 µg/ml
FOET	2-Perfluorooctyl ethanol ***(8:2)***	1.2 ml	50 µg/ml
FDET	2-Perfluorodecyl ethanol ***(10:2)***	1.2 ml	50 µg/ml



7:2sFTOH: 1-Perfluoroheptyl ethanol

MASS-LABELLED TELOMER ALCOHOLS

Catalogue Number		Product
MFBET		2-Perfluorobutyl-[1,1,2,2-$^{2}H_4$]-ethanol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol; > 98% $^{2}H_4$
MFHET		2-Perfluorohexyl-[1,1-$^{2}H_2$]-[1,2-$^{13}C_2$]-ethanol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol; > 99% $^{13}C_2$; 98% $^{2}H_2$
MFOET		2-Perfluorooctyl-[1,1-$^{2}H_2$]-[1,2-$^{13}C_2$]-ethanol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol; > 99% $^{13}C_2$; 98% $^{2}H_2$
MFDET		2-Perfluorodecyl-[1,1-$^{2}H_2$]-[1,2-$^{13}C_2$]-ethanol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol; > 99% $^{13}C_2$; 98% $^{2}H_2$

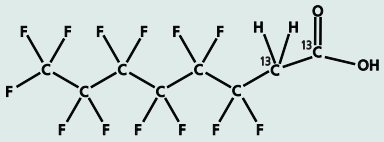
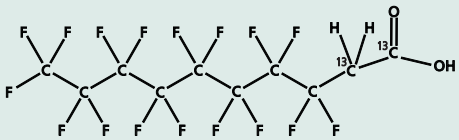
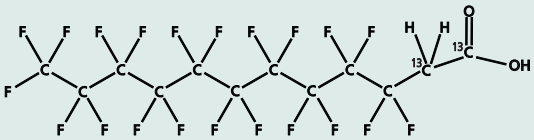
NATIVE TELOMER ACIDS (FTAs)

Catalogue Number	Product (isopropanol solution)	Qty/Conc
FHEA	2-Perfluorohexyl ethanoic acid ***(6:2)***	1.2 ml 50 µg/ml
FOEA	2-Perfluorooctyl ethanoic acid ***(8:2)***	1.2 ml 50 µg/ml
FDEA	2-Perfluorodecyl ethanoic acid ***(10:2)***	1.2 ml 50 µg/ml

NATIVE TELOMER ACIDS: SOLUTION/MIXTURE

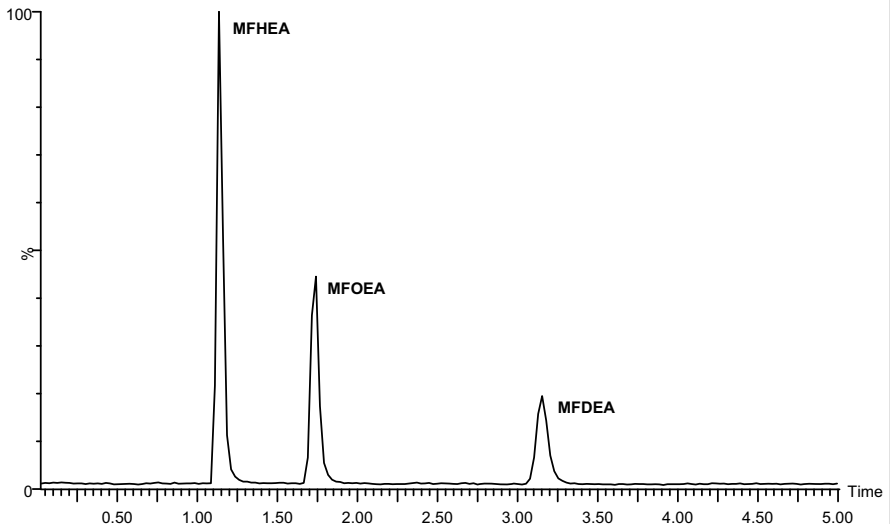
Catalogue Number	Product (isopropanol solution)	Qty/Conc
FTA-MXA	Native FTA Solution/Mixture	1.2 ml
	2-Perfluorohexyl ethanoic acid ***(6:2)***	2 µg/ml
	2-Perfluorooctyl ethanoic acid ***(8:2)***	2 µg/ml
	2-Perfluorodecyl ethanoic acid ***(10:2)***	2 µg/ml

MASS-LABELLED TELOMER ACIDS

Catalogue Number		Product
MFHEA		2-Perfluorohexyl-[1,2-$^{13}C_2$]-ethanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in isopropanol; > 99% $^{13}C_2$
MFOEA		2-Perfluorooctyl-[1,2-$^{13}C_2$]-ethanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in isopropanol; > 99% $^{13}C_2$
MFDEA		2-Perfluorodecyl-[1,2-$^{13}C_2$]-ethanoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in isopropanol; > 99% $^{13}C_2$

MASS-LABELLED TELOMER ACIDS: SOLUTION/MIXTURE

Catalogue Number	Product (isopropanol solution)	Qty/Conc
MFTA-MXA	Mass-Labelled FTA Solution/Mixture	1.2 ml
	2-Perfluorohexyl-[1,2-$^{13}C_2$]-ethanoic acid ***(6:2)***	2 µg/ml
	2-Perfluorooctyl-[1,2-$^{13}C_2$]-ethanoic acid ***(8:2)***	2 µg/ml
	2-Perfluorodecyl-[1,2-$^{13}C_2$]-ethanoic acid ***(10:2)***	2 µg/ml

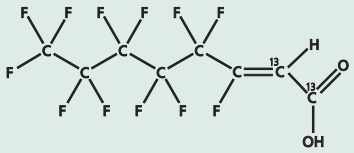
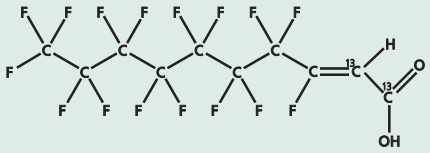
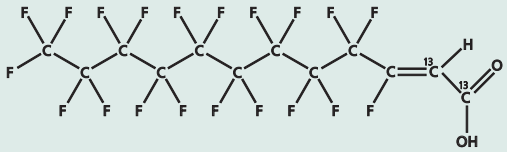


Chromatogram of MFTA-MXA (Acquity UPLC BEH Shield RP_{18} column)

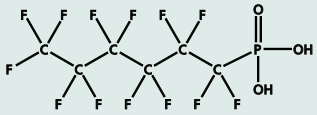
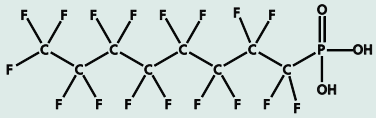
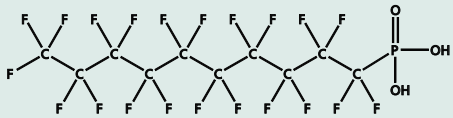
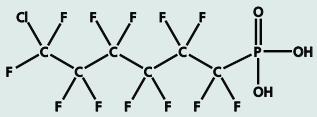
NATIVE UNSATURATED TELOMER ACIDS (FTUAs)

Catalogue Number	Product (methanol solution)	Qty/Conc
FHUEA	2H-Perfluoro-2-octenoic acid ***(6:2)***	1.2 ml 50 µg/ml
FOUEA	2H-Perfluoro-2-decenoic acid ***(8:2)***	1.2 ml 50 µg/ml
FDUEA	2H-Perfluoro-2-dodecenoic acid ***(10:2)***	1.2 ml 50 µg/ml

MASS-LABELLED UNSATURATED TELOMER ACIDS

Catalogue Number		Product
MFHUEA		2H-Perfluoro-[1,2-$^{13}C_2$]-2-octenoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol; > 99% $^{13}C_2$
MFOUEA		2H-Perfluoro-[1,2-$^{13}C_2$]-2-decenoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol; > 99% $^{13}C_2$
MFDUEA		2H-Perfluoro-[1,2-$^{13}C_2$]-2-dodecenoic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol; > 99% $^{13}C_2$

NATIVE PERFLUOROALKYLPHOSPHONIC ACIDS (PFAPAs)

Catalogue Number		Product
PFHxPA		Perfluorohexylphosphonic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol;
PFOPA		Perfluorooctylphosphonic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol;
PFDPA		Perfluorodecylphosphonic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol;
Cl-PFHxPA		6-Chloroperfluorohexylphosphonic acid 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol;

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New Products are announced in the Wellington Reporter.

CERTIFIED REFERENCE MATERIALS

Wellington currently offers three certified reference materials (CRMs) for use in testing an analytical lab's ability to generate accurate and reproducible data using real, as opposed to fortified, samples.

The following CRMs are currently offered:

WMS-01: Lake Sediment for Organic Contaminant Analysis.

WMF-01: Freeze-Dried Fish Tissue for Organic Contaminant Analysis.

CARP-2: Fish Tissue for Organic Contaminant Analysis.

More details on each of these CRMs, including the analytes and their certified values, are given in the following section.

WMS-01: REFERENCE LAKE SEDIMENT for ORGANIC CONTAMINANT ANALYSIS

Catalogue Number	Product	Qty/Conc
WMS-01	Reference Lake Sediment, WMS-01	25 g

Chlorinated Dibenzo-p-dioxins (PCDDs)	Certified Reference value (pg/g)
2,3,7,8-Tetrachlorodibenzo-p-dioxin	17.7 ± 5.6
Total Tetrachlorodibenzo-p-dioxins	**60.1 ± 25**
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	7.96 ± 2.8
Total Pentachlorodibenzo-p-dioxins	**69.5 ± 23**
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	8.66 ± 2.7
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	20.8 ± 4.8
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	17.3 ± 8.0
Total Hexachlorodibenzo-p-dioxins	**238 ± 86**
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	293 ± 63
Total Heptachlorodibenzo-p-dioxins	**608 ± 152**
Octachlorodibenzo-p-dioxin	1899 ± 456
Chlorinated Dibenzofurans (PCDFs)	
2,3,7,8-Tetrachlorodibenzofuran	52.5 ± 16
Total Tetrachlorodibenzofurans	**374 ± 162**
1,2,3,7,8-Pentachlorodibenzofuran	12.6 ± 5.0
2,3,4,7,8-Pentachlorodibenzofuran	18.5 ± 6.1
Total Pentachlorodibenzofurans	**225 ± 113**
1,2,3,4,7,8-Hexachlorodibenzofuran	67.3 ± 24
1,2,3,6,7,8-Hexachlorodibenzofuran	20.3 ± 8.7
1,2,3,7,8,9-Hexachlorodibenzofuran	2.68* ± 4.0
2,3,4,6,7,8-Hexachlorodibenzofuran	16 ± 8.0
Total Hexachlorodibenzofurans	**262 ± 95**
1,2,3,4,6,7,8-Heptachlorodibenzofuran	299 ± 73
1,2,3,4,7,8,9-Heptachlorodibenzofuran	15.1 ± 4.6
Total Heptachlorodibenzofurans	**411 ± 100**
Octachlorodibenzofuran	509 + 157
Chlorinated Biphenyls (PCBs-IUPAC)	
3,3',4,4'-Tetrachlorobiphenyl (77)	1717 ± 520
3,4,4',5-Tetrachlorobiphenyl (81)	75* ± 79
2,3,3',4,4'-Pentachlorobiphenyl (105)	3998 ± 951
2,3,4,4',5-Pentachlorobiphenyl (114)	207 ± 128
2,3',4,4',5-Pentachlorobiphenyl (118)	8115 ± 1663
2',3,4,4',5-Pentachlorobiphenyl (123)	209 ± 191
3,3',4,4',5-Pentachlorobiphenyl (126)	84.9 ± 35
2,3,3',4,4',5-Hexachlorobiphenyl (156)	715 ± 248
2,3,3',4,4',5'-Hexachlorobiphenyl (157)	186 ± 81
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	330 ± 85
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	7.97 ± 5.3
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	85.2 ± 17.8

* Provisional value for information purposes only. Any negative deviation is inadmissable.
The concentrations of these analytes may be certified at a later date as more data becomes available.

WMF-01: REFERENCE FISH TISSUE for ORGANIC CONTAMINANT ANALYSIS

Catalogue Number	Product	Qty/Conc
WMF-01	Reference "*Freeze-Dried*" Fish Tissue, WMF-01	1 x 10 g

Chlorinated Dibenzo-p-dioxins (PCDDs)	Certified Reference value (pg/g)
2,3,7,8-Tetrachlorodibenzo-p-dioxin	13.1 ± 4.4
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	2.72 ± 1.3
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.22* ± 0.3
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.88 ± 0.4
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.27* ± 0.4
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.59* ± 0.7
Octachlorodibenzo-p-dioxin	3.91* ± 6.2
Chlorinated Dibenzofurans (PCDFs)	
2,3,7,8-Tetrachlorodibenzofuran	13.1 ± 4.9
1,2,3,7,8-Pentachlorodibenzofuran	1.53* ± 1.4
2,3,4,7,8-Pentachlorodibenzofuran	7.15 ± 2.2
1,2,3,4,7,8-Hexachlorodibenzofuran	0.86* ± 1.0
1,2,3,6,7,8-Hexachlorodibenzofuran	0.51* ± 0.7
1,2,3,7,8,9-Hexachlorodibenzofuran	0.25* ± 0.4
2,3,4,6,7,8-Hexachlorodibenzofuran	0.68* ± 1.2
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1.01* ± 1.9
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.30* ± 0.5
Octachlorodibenzofuran	1.38* ± 2.1
Chlorinated Biphenyls (PCBs-IUPAC)	
3,3',4,4'-Tetrachlorobiphenyl (77)	2233 ± 720
3,4,4',5-Tetrachlorobiphenyl (81)	201 ± 58
2,3,3',4,4'-Pentachlorobiphenyl (105)	49050 ± 14200
2,3,4,4',5-Pentachlorobiphenyl (114)	3523 ± 1670
2,3',4,4',5-Pentachlorobiphenyl (118)	130100 ± 32500
2',3,4,4',5-Pentachlorobiphenyl (123)	4233* ± 2620
3,3',4,4',5-Pentachlorobiphenyl (126)	739 ± 260
2,3,3',4,4',5-Hexachlorobiphenyl (156)	14890 ± 5020
2,3,3',4,4',5'-Hexachlorobiphenyl (157)	3488 ± 870
2,3',4,4',5,5'-Hexachlorobiphenyl (167)	9750 ± 3090
3,3',4,4',5,5'-Hexachlorobiphenyl (169)	76 ± 30
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)	2016 ± 611
Brominated Diphenyl Ethers (PBDEs-IUPAC)	
2,4,4'-Tribromodiphenyl ether (28)	3124 ± 290
2,2',4,4'-Tetrabromodiphenyl ether (47)	123200 ± 24800
2,2',4,4',5-Pentabromodiphenyl ether (99)	37500 ± 4220
2,2',4,4',6-Pentabromodiphenyl ether (100)	35870 ± 14500
2,2',4,4',5,5'-Hexabromodiphenyl ether (153)	17040 ± 8000
2,2',4,4',5,6'-Hexabromodiphenyl ether (154)	19790 ± 2880
2,2',3,4,4',5',6-Heptabromodiphenyl ether (183)	532* ± 400

* Provisional value for information purposes only. Any negative deviation is inadmissable.
The concentrations of these analytes may be certified at a later date as more data becomes available.

CARP-2: REFERENCE FISH TISSUE for ORGANIC CONTAMINANT ANALYSIS

Catalogue Number	Product	Qty/Conc
CARP-2	Reference Fish Tissue, CARP-2	6 x 9 g

Polychlorinated Biphenyls (PCBs) Congener (IUPAC)	**Certified Concentration** **µg/kg (wet weight basis)**
18	27.3 ± 4.0
28	34.0 ± 7.2
44	86.6 ± 25.9
52	138 ± 43
118	148 ± 33
128	20.4 ± 4.4
153	105 ± 22
180	53.3 ± 13.0
194	10.9 ± 3.1
206	4.4 ± 1.1
Polychlorinated Biphenyls (PCBs) Congener (IUPAC)	**Reference Concentration*** **µg/kg (wet weight basis)**
8	4.8 ± 1.8
66/95	174 ± 52
101/90	145 ± 48
105	53.2 ± 15.6
138/163/164	103 ± 30
170/190	20.6 ± 2.9
187/182	37.1 ± 6.3
209	4.6 ± 2.0
Polychlorinated dibenzo-p-dioxins (PCDDs)	**ng/kg (wet weight basis)***
2,3,7,8-Tetrachlorodibenzo-p-dioxin	7.4 ± 0.7
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	5.3 ± 1.3
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	1.6 ± 0.3
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	5.8 ± 0.8
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.78 ± 0.12
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	6.4 ± 0.9
Octachlorodibenzo-p-dioxin	9.4 ± 1.7
Polychlorinated dibenzofurans (PCDFs)	**ng/kg (wet weight basis)***
2,3,7,8-Tetrachlorodibenzofuran	18.2 ± 1.6
1,2,3,7,8-Pentachlorodibenzofuran	5.6 ± 0.3
Pesticides	**µg/kg (wet weight basis)***
gamma-chlordane	4.5 ± 0.7
2,4'-DDE	2.9 ± 0.5
trans-nonachlor	11.0 ± 0.9
dieldrin	8.3 ± 0.8
4,4'-DDE	158 ± 14
2,4'-DDD	21.8 ± 0.7
4,4'-DDD	90.9 ± 8.5

* Not Certified

CARP-2 was prepared and certified by the National Research Council of Canada (NRCC), Institute for Environmental Research and Technology.

ADDITIONAL PRODUCTS

PAH Calibration Sets
and Native and Mass-Labelled Support Solutions

Chlorinated Biphenylols (HO-PCBs):
Native and Mass-Labelled Individuals; Mass-Labelled Solution/Mixture

Methoxy Chlorobiphenyls (MeO-PCBs):
Native and Mass-Labelled Individuals and Solution/Mixtures

Chlorinated Biphenylenes (PCBPs):
Native and Mass-Labelled

Triclocarban:
Native and Mass-Labelled

Triclosan and Methyl Triclosan:
Native and Mass-Labelled and Chlorinated Derivatives

Chloroxanthenes

Tris(4-chlorophenyl) Methane and Methanol:
Native and Mass-Labelled

Chlorinated Naphthalenes (PCNs):
Native Individuals and Solution/Mixtures

Chlorinated Diphenyl Ethers (PCDEs):
Native and Mass-Labelled

Methylated/Chlorinated Dibenzo-p-dioxins and Dibenzofurans

Native and Mass-Labelled Chlorobenzene and Chlorophenol Solution/Mixtures

Mass-Labelled Chlorobenzenes, Chlorophenols, Chlorocatechols and Chloroveratroles

Melamine and Cyanuric Acid:
Native and Mass-Labelled

PAH-CVS-A

Catalogue Number	Product (isooctane solution)	Qty/Conc
PAH-CVS-A	PAH-CVS-A Calibration Solutions CS1-CS5	1 kit (5 ampoules)
PAH-A-CS1	CS1	1.0 ml
PAH-A-CS2	CS2	1.0 ml
PAH-A-CS3	CS3	1.0 ml
PAH-A-CS4	CS4	1.0 ml
PAH-A-CS5	CS5	1.0 ml

Native PAHs	**PAH-A-CS1 (ng/ml)**	**PAH-A-CS2 (ng/ml)**	**PAH-A-CS3 (ng/ml)**	**PAH-A-CS4 (ng/ml)**	**PAH-A-CS5 (ng/ml)**
Naphthalene	2.0	10	40	200	800
Acenaphthylene	2.0	10	40	200	800
Acenaphthene	2.0	10	40	200	800
Fluorene	2.0	10	40	200	800
Phenanthrene	2.0	10	40	200	800
Anthracene	2.0	10	40	200	800
Fluoranthene	2.0	10	40	200	800
Pyrene	2.0	10	40	200	800
Cyclopenta[c,d]pyrene	2.0	10	40	200	800
Benz[a]anthracene	2.0	10	40	200	800
Chrysene	2.0	10	40	200	800
5-Methylchrysene	2.0	10	40	200	800
Benzo[b]fluoranthene	2.0	10	40	200	800
Benzo[k]fluoranthene	2.0	10	40	200	800
Benzo[j]fluoranthene	2.0	10	40	200	800
Benzo[a]pyrene	2.0	10	40	200	800
Indeno[1,2,3-c,d]pyrene	2.0	10	40	200	800
Benzo[g,h,i]perylene	2.0	10	40	200	800
Dibenz[a,h]anthracene	2.0	10	40	200	800
Dibenzo[a,l]pyrene	2.0	10	40	200	800
Dibenzo[a,e]pyrene	2.0	10	40	200	800
Dibenzo[a,i]pyrene	2.0	10	40	200	800
Dibenzo[a,h]pyrene	2.0	10	40	200	800
Deuterated PAHs					
Naphthalene-d_8	100	100	100	100	100
Acenaphthene-d_{10}	100	100	100	100	100
Fluorene-d_{10}	100	100	100	100	100
Phenanthrene-d_{10}	100	100	100	100	100
Anthracene-d_{10}	100	100	100	100	100
Fluoranthene-d_{10}	100	100	100	100	100
Pyrene-d_{10}	100	100	100	100	100
Benz[a]anthracene-d_{12}	100	100	100	100	100
Chyrsene-d_{12}	100	100	100	100	100
Benzo[b]fluoranthene-d_{12}	100	100	100	100	100
Benzo[k]fluoranthene-d_{12}	100	100	100	100	100
Benzo[a]pyrene-d_{12}	100	100	100	100	100
Indeno[1,2,3-c,d]pyrene-d_{12}	100	100	100	100	100
Benzo[g,h,i]perylene-d_{12}	100	100	100	100	100
Dibenz[a,h]anthracene-d_{14}	100	100	100	100	100
Dibenzo[a,i]pyrene-d_{14}	100	100	100	100	100
Deuterated PAH Internal Standards					
Acenaphthylene-d_8	100	100	100	100	100
p-Terphenyl-d_{14}	100	100	100	100	100
Benzo[e]pyrene-d_{12}	100	100	100	100	100

Catalogue Number	Product (isooctane solution)	Qty/Conc
PAH-LCS-A	PAH Labelled Compound Solution	1.2 ml
PAH-ISS-A	PAH Internal Standard Spiking Solution	1.2 ml
PAH-STK-A	PAH Native Stock Solution	1.2 ml

Native PAHs	PAH-LCS-A (ng/ml)	PAH-ISS-A (ng/ml)	PAH-STK-A (ng/ml)
Naphthalene	—	—	4000
Acenaphthylene	—	—	4000
Acenaphthene	—	—	4000
Fluorene	—	—	4000
Phenanthrene	—	—	4000
Anthracene	—	—	4000
Fluoranthene	—	—	4000
Pyrene	—	—	4000
Cyclopenta[c,d]pyrene	—	—	4000
Benz[a]anthracene	—	—	4000
Chrysene	—	—	4000
5-Methylchrysene	—	—	4000
Benzo[b]fluoranthene	—	—	4000
Benzo[k]fluoranthene	—	—	4000
Benzo[j]fluoranthene	—	—	4000
Benzo[a]pyrene	—	—	4000
Indeno[1,2,3-c,d]pyrene	—	—	4000
Benzo[g,h,i]perylene	—	—	4000
Dibenz[a,h]anthracene	—	—	4000
Dibenzo[a,l]pyrene	—	—	4000
Dibenzo[a,e]pyrene	—	—	4000
Dibenzo[a,i]pyrene	—	—	4000
Dibenzo[a,h]pyrene	—	—	4000
Deuterated PAHs			
Naphthalene-d_8	2000	—	—
Acenaphthene-d_{10}	2000	—	—
Fluorene-d_{10}	2000	—	—
Phenanthrene-d_{10}	2000	—	—
Anthracene-d_{10}	2000	—	—
Fluoranthene-d_{10}	2000	—	—
Pyrene-d_{10}	2000	—	—
Benz[a]anthracene-d_{12}	2000	—	—
Chyrsene-d_{12}	2000	—	—
Benzo[b]fluoranthene-d_{12}	2000	—	—
Benzo[k]fluoranthene-d_{12}	2000	—	—
Benzo[a]pyrene-d_{12}	2000	—	—
Indeno[1,2,3-c,d]pyrene-d_{12}	2000	—	—
Benzo[g,h,i]perylene-d_{12}	2000	—	—
Dibenz[a,h]anthracene-d_{14}	2000	—	—
Dibenzo[a,i]pyrene-d_{14}	2000	—	—
Deuterated PAH Internal Standards			
Acenaphthylene-d_8	—	2000	—
p-Terphenyl-d_{14}	—	2000	—
Benzo[e]pyrene-d_{12}	—	2000	—

METHOD 429: HRGC/LRMS CALIBRATION SOLUTIONS FOR PAHs

Catalogue Number	Product (isooctane solution)	Qty/Conc
L429-CVS	L429-CVS Calibration Solutions CS1-CS5	1 kit (5 ampoules)
L429-CS1	CS1	1.0 ml
L429-CS2	CS2	1.0 ml
L429-CS3	CS3	1.0 ml
L429-CS4	CS4	1.0 ml
L429-CS5	CS5	1.0 ml

Native PAHs	L429-CS1 (ng/µl)	L429-CS2 (ng/µl)	L429-CS3 (ng/µl)	L429-CS4 (ng/µl)	L429-CS5 (ng/µl)
Naphthalene	0.25	0.5	1.0	2.5	5.0
2-Methylnaphthalene	0.25	0.5	1.0	2.5	5.0
Acenaphthene	0.25	0.5	1.0	2.5	5.0
Acenaphthylene	0.25	0.5	1.0	2.5	5.0
Fluorene	0.25	0.5	1.0	2.5	5.0
Phenanthrene	0.25	0.5	1.0	2.5	5.0
Anthracene	0.25	0.5	1.0	2.5	5.0
Fluoranthene	0.25	0.5	1.0	2.5	5.0
Pyrene	0.25	0.5	1.0	2.5	5.0
Benz[a]anthracene	0.25	0.5	1.0	2.5	5.0
Chrysene	0.25	0.5	1.0	2.5	5.0
Benzo[b]fluoranthene	0.25	0.5	1.0	2.5	5.0
Benzo[k]fluoranthene	0.25	0.5	1.0	2.5	5.0
Benzo[e]pyrene	0.25	0.5	1.0	2.5	5.0
Benzo[a]pyrene	0.25	0.5	1.0	2.5	5.0
Perylene	0.25	0.5	1.0	2.5	5.0
Indeno[1,2,3-c,d]pyrene	0.25	0.5	1.0	2.5	5.0
Dibenz[a,h]anthracene	0.25	0.5	1.0	2.5	5.0
Benzo[g,h,i]perylene	0.25	0.5	1.0	2.5	5.0
Surrogate Standards					
Fluorene-d_{10}	1.0	1.0	1.0	1.0	1.0
p-Terphenyl-d_{14}	1.0	1.0	1.0	1.0	1.0
Internal Standards					
Naphthalene-d_8	1.0	1.0	1.0	1.0	1.0
2-Methylnaphthalene-d_{10}	1.0	1.0	1.0	1.0	1.0
Acenaphthylene-d_8	1.0	1.0	1.0	1.0	1.0
Phenanthrene-d_{10}	1.0	1.0	1.0	1.0	1.0
Fluoranthene-d_{10}	1.0	1.0	1.0	1.0	1.0
Benz[a]anthracene-d_{12}	1.0	1.0	1.0	1.0	1.0
Chyrsene-d_{12}	1.0	1.0	1.0	1.0	1.0
Benzo[b]fluoranthene-d_{12}	1.0	1.0	1.0	1.0	1.0
Benzo[k]fluoranthene-d_{12}	1.0	1.0	1.0	1.0	1.0
Benzo[a]pyrene-d_{12}	1.0	1.0	1.0	1.0	1.0
Perylene-d_{12}	1.0	1.0	1.0	1.0	1.0
Indeno[1,2,3-c,d]pyrene-d_{12}	1.0	1.0	1.0	1.0	1.0
Dibenz[a,h]anthracene-d_{14}	1.0	1.0	1.0	1.0	1.0
Benzo[g,h,i]perylene-d_{12}	1.0	1.0	1.0	1.0	1.0
Alternate Standard					
Anthracene-d_{10}	1.0	1.0	1.0	1.0	1.0
Recovery Standards					
Acenaphthene-d_{10}	1.0	1.0	1.0	1.0	1.0
Pyrene-d_{10}	1.0	1.0	1.0	1.0	1.0
Benzo[e]pyrene-d_{12}	1.0	1.0	1.0	1.0	1.0

METHOD 429: HRGC/LRMS CALIBRATION SOLUTIONS FOR PAHs

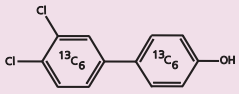
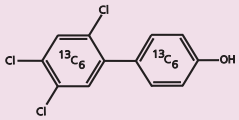
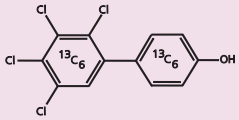
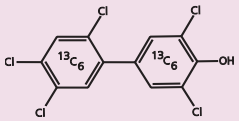
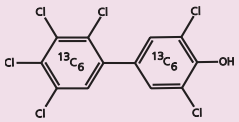
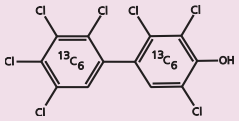
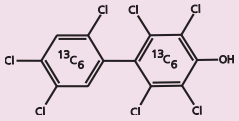
Catalogue Number	Product (isooctane solution)	Qty/Conc
L429-SS	Method 429 Surrogate Standard Stock Solution	1.2 ml
L429-IS	Method 429 Internal Standard Stock Solution	1.2 ml
L429-AS	Method 429 Alternate Standard Stock Solution	1.2 ml
L429-RS	Method 429 Recovery Standard Stock Solution	1.2 ml
L429-PAR	Method 429 Native PAH Stock Solution	1.2 ml

Native PAHs	L429-SS (µg/ml)	L429-IS (µg/ml)	L429-AS (µg/ml)	L429-RS (µg/ml)	L429-PAR (µg/ml)
Naphthalene	—	—	—	—	2.0
2-Methylnaphthalene	—	—	—	—	2.0
Acenaphthene	—	—	—	—	2.0
Acenaphthylene	—	—	—	—	2.0
Fluorene	—	—	—	—	2.0
Phenanthrene	—	—	—	—	2.0
Anthracene	—	—	—	—	2.0
Fluoranthene	—	—	—	—	2.0
Pyrene	—	—	—	—	2.0
Benz[a]anthracene	—	—	—	—	2.0
Chrysene	—	—	—	—	2.0
Benzo[b]fluoranthene	—	—	—	—	2.0
Benzo[k]fluoranthene	—	—	—	—	2.0
Benzo[e]pyrene	—	—	—	—	2.0
Benzo[a]pyrene	—	—	—	—	2.0
Perylene	—	—	—	—	2.0
Indeno[1,2,3-c,d]pyrene	—	—	—	—	2.0
Dibenz[a,h]anthracene	—	—	—	—	2.0
Benzo[g,h,i]perylene	—	—	—	—	2.0
Surrogate Standards					
Fluorene-d_{10}	100	—	—	—	—
p-Terphenyl-d_{14}	100	—	—	—	—
Internal Standards					
Naphthalene-d_8	—	100	—	—	—
2-Methylnaphthalene-d_{10}	—	100	—	—	—
Acenaphthylene-d_8	—	100	—	—	—
Phenanthrene-d_{10}	—	100	—	—	—
Fluoranthene-d_{10}	—	100	—	—	—
Benz[a]anthracene-d_{12}	—	100	—	—	—
Chyrsene-d_{12}	—	100	—	—	—
Benzo[b]fluoranthene-d_{12}	—	100	—	—	—
Benzo[k]fluoranthene-d_{12}	—	100	—	—	—
Benzo[a]pyrene-d_{12}	—	100	—	—	—
Perylene-d_{12}	—	100	—	—	—
Indeno[1,2,3-c,d]pyrene-d_{12}	—	100	—	—	—
Dibenz[a,h]anthracene-d_{14}	—	100	—	—	—
Benzo[g,h,i]perylene-d_{12}	—	100	—	—	—
Alternate Standard					
Anthracene-d_{10}	—	—	100	—	—
Recovery Standards					
Acenaphthene-d_{10}	—	—	—	100	—
Pyrene-d_{10}	—	—	—	100	—
Benzo[e]pyrene-d_{12}	—	—	—	100	—

NATIVE CHLORINATED BIPHENYLOLS (HO-PCBs)

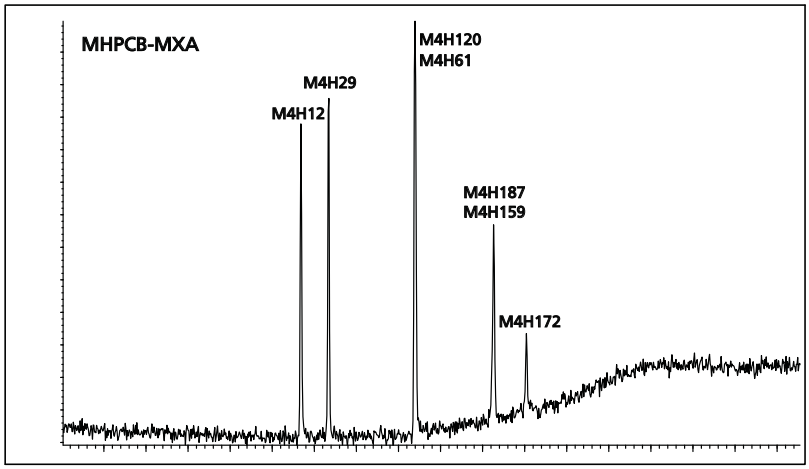
Catalogue Number	Product (nonane solution)	Qty/Conc
4H107	2,3,3',4',5-Pentachloro-4-biphenylol	1.2 ml 50 µg/ml
4H108	2',3,3',4',5-Pentachloro-4-biphenylol (95%)	1.2 ml 47.5 µg/ml
3H118	2,3',4,4',5-Pentachloro-3-biphenylol	1.2 ml 50 µg/ml
4H130	2,2',3,3',4',5-Hexachloro-4-biphenylol	1.2 ml 50 µg/ml
3H138	2,2',3',4,4',5-Hexachloro-3-biphenylol	1.2 ml 50 µg/ml
4H146	2,2',3,4',5,5'-Hexachloro-4-biphenylol	1.2 ml 50 µg/ml
4H172	2,2',3,3',4',5,5'-Heptachloro-4-biphenylol	1.2 ml 50 µg/ml
3H180	2,2',3',4,4',5,5'-Heptachloro-3-biphenylol	1.2 ml 50 µg/ml
4H187	2,2',3,4',5,5',6-Heptachloro-4-biphenylol	1.2 ml 50 µg/ml

MASS-LABELLED CHLORINATED BIPHENYLOLS

Catalogue Number		Product
M4H12		3',4'-Dichloro-4-[$^{13}C_{12}$]biphenylol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene; Isotopic Purity 99% or greater
M4H29		2',4',5'-Trichloro-4-[$^{13}C_{12}$]biphenylol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene; Isotopic Purity 99% or greater
M4H61		2',3',4',5'-Tetrachloro-4-[$^{13}C_{12}$]biphenylol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene; Isotopic Purity 99% or greater
M4H120		2',3,4',5,5'-Pentachloro-4-[$^{13}C_{12}$]biphenylol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene; Isotopic Purity 99% or greater
M4H159		2',3,3',4',5,5'-Hexachloro-4-[$^{13}C_{12}$]biphenylol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene; Isotopic Purity 99% or greater
M4H172		2,2',3,3',4',5,5'-Heptachloro-4-[$^{13}C_{12}$]biphenylol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene; Isotopic Purity 99% or greater
M4H187		2,2',3,4',5,5',6-Heptachloro-4-[$^{13}C_{12}$]biphenylol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene; Isotopic Purity 99% or greater

MASS-LABELLED CHLORINATED BIPHENYLOLS: SOLUTION/MIXTURE

Catalogue Number	Product (toluene solution)		Qty/Conc
MHPCB-MXA	Mass-Labelled Chlorinated Biphenylol Solution/Mixture		1.2 ml
3',4'-Dichloro-4-[$^{13}C_{12}$]biphenylol		M4H12	5 µg/ml
2',4',5'-Trichloro-4-[$^{13}C_{12}$]biphenylol		M4H29	5 µg/ml
2',3',4',5'-Tetrachloro-4-[$^{13}C_{12}$]biphenylol		M4H61	5 µg/ml
2',3,4',5,5'-Pentachloro-4-[$^{13}C_{12}$]biphenylol		M4H120	5 µg/ml
2',3,3',4',5,5'-Hexachloro-4-[$^{13}C_{12}$]biphenylol		M4H159	5 µg/ml
2,2',3,3',4',5,5'-Heptachloro-4-[$^{13}C_{12}$]biphenylol		M4H172	5 µg/ml
2,2',3,4',5,5',6-Heptachloro-4-[$^{13}C_{12}$]biphenylol		M4H187	5 µg/ml



MHPCB-MXA; HRGC/LRMS TIC Chromatogram

NATIVE METHOXY-CHLOROBIPHENYLS (MeO-PCBs)

Catalogue Number	Product (nonane solution)	Qty/Conc
4PM79	3,3',4',5-Tetrachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
4PM97	2,2',3,4',5'-Pentachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
4PM101	2,2',4,5,5'-Pentachloro-4'-methoxybiphenyl	1.2 ml 50 µg/ml
4M107	2,3,3',4',5-Pentachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
4PM108	2,3,3',4,5'-Pentachloro-4'-methoxybiphenyl	1.2 ml 50 µg/ml
2PM114	2,3,4,4',5-Pentachloro-2'-methoxybiphenyl	1.2 ml 50 µg/ml
3M118	2,3',4,4',5-Pentachloro-3-methoxybiphenyl	1.2 ml 50 µg/ml
4PM120	2,3',4,5,5'-Pentachloro-4'-methoxybiphenyl	1.2 ml 50 µg/ml
4PM127	3,3',4,5,5'-Pentachloro-4'-methoxybiphenyl	1.2 ml 50 µg/ml
4PM130	2,2',3,3',4',5-Hexachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
4M134	2,2',3,3',5,6-Hexachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
3PM138	2,2',3',4,4',5-Hexachloro-3-methoxybiphenyl	1.2 ml 50 µg/ml
4M146	2,2',3,4',5,5'-Hexachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
33PDM155	2,2',4,4',6,6'-Hexachloro-3,3'-dimethoxybiphenyl	1.2 ml 50 µg/ml
4PM159	2,3,3',4,5,5'-Hexachloro-4'-methoxybiphenyl	1.2 ml 50 µg/ml
4M162	2,3,3',4',5,5'-Hexachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
4M163	2,3,3',4',5,6-Hexachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
4PM172	2,2',3,3',4,5,5'-Heptachloro-4'-methoxybiphenyl	1.2 ml 50 µg/ml
4M177	2,2',3,3',4',5,6-Heptachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
4M178	2,2',3,3',5,5',6-Heptachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
3PM180	2,2',3,4,4',5,5'-Heptachloro-3'-methoxybiphenyl	1.2 ml 50 µg/ml
3PM182	2,2',3,4,4',5,6'-Heptachloro-3'-methoxybiphenyl	1.2 ml 50 µg/ml
3PM183	2,2',3',4,4',5,6'-Heptachloro-3-methoxybiphenyl	1.2 ml 50 µg/ml
3PM184	2,2',3,4,4',6,6'-Heptachloro-3'-methoxybiphenyl	1.2 ml 50 µg/ml
4M187	2,2',3,4',5,5',6-Heptachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
4M193	2,3,3',4',5,5',6-Heptachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
4PM198	2,2',3,3',4,5,5',6-Octachloro-4'-methoxybiphenyl	1.2 ml 50 µg/ml
4PM199	2,2',3,3',4',5,5',6-Octachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
4PM200	2,2',3,3',4,5,6,6'-Octachloro-4'-methoxybiphenyl	1.2 ml 50 µg/ml
4PM201	2,2',3,3',4',5,6,6'-Octachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
4M202	2,2',3,3',5,5',6,6'-Octachloro-4-methoxybiphenyl	1.2 ml 50 µg/ml
44PDM202	2,2',3,3',5,5',6,6'-Octachloro-4,4'-dimethoxybiphenyl	1.2 ml 50 µg/ml
3PM203	2,2',3,4,4',5,5',6-Octachloro-3'-methoxybiphenyl	1.2 ml 50 µg/ml
4PM208	2,2',3,3',4,5,5',6,6'-Nonachloro-4'-methoxybiphenyl	1.2 ml 50 µg/ml

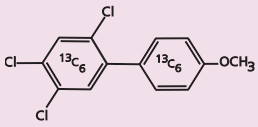
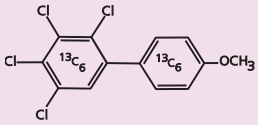
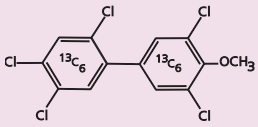
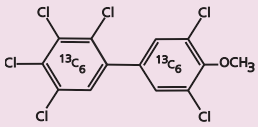
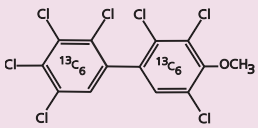
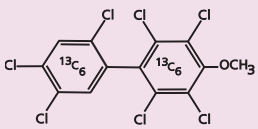
NATIVE METHOXY-CHLOROBIPHENYLS: SOLUTION/MIXTURES

Catalogue Number	Product (nonane solution)		Qty/Conc
MPCB-MXA	Native Chlorinated Methoxybiphenyl Solution/Mixture		1.2 ml
2,3,4,5-Tetrachloro-4'-methoxybiphenyl		4PM61	5 µg/ml
2,3',4,5,5'-Pentachloro-4'-methoxybiphenyl		4PM120	5 µg/ml
2,2',4,4',6,6'-Hexachloro-3,3'-dimethoxybiphenyl		33PDM155	5 µg/ml
2,2',3,4,4',6,6'-Heptachloro-3'-methoxybiphenyl		3PM184	5 µg/ml
2,2',3,3',5,5',6,6'-Octachloro-4-methoxybiphenyl		4M202	5 µg/ml
MPCB-MXB	Native Chlorinated Methoxybiphenyl Solution/Mixture		1.2 ml
3,3',4',5-Tetrachloro-4-methoxybiphenyl		4PM79	5 µg/ml
2,2',4,5,5'-Pentachloro-4'-methoxybiphenyl		4PM101	5 µg/ml
2,2',3,3',5,6-Hexachloro-4-methoxybiphenyl		4M134	5 µg/ml
2,2',3,3',5,5',6-Heptachloro-4-methoxybiphenyl		4M178	5 µg/ml
2,2',3,3',4',5,6,6'-Octachloro-4-methoxybiphenyl		4PM201	5 µg/ml
MPCB-MXC	Native Chlorinated Methoxybiphenyl Solution/Mixture		1.2 ml
2,3,4,4',5-Pentachloro-2'-methoxybiphenyl		2PM114	5 µg/ml
2,2',3,4',5,5'-Hexachloro-4-methoxybiphenyl		4M146	5 µg/ml
2,2',3,4,4',5,6'-Heptachloro-3'-methoxybiphenyl		3PM182	5 µg/ml
2,2',3,4,4',5,5',6-Octachloro-3'-methoxybiphenyl		3PM203	5 µg/ml
2,2',3,3',4,5,5',6,6'-Nonachloro-4'-methoxybiphenyl		4PM208	5 µg/ml
MPCB-MXD	Native Chlorinated Methoxybiphenyl Solution/Mixture		1.2 ml
2,3',4,4',5-Pentachloro-3-methoxybiphenyl		3M118	5 µg/ml
2,2',3',4,4',5-Hexachloro-3-methoxybiphenyl		3PM138	5 µg/ml
2,2',3',4,4',5,6'-Heptachloro-3-methoxybiphenyl		3PM183	5 µg/ml
2,2',3,3',4,5,5',6-Octachloro-4'-methoxybiphenyl		4PM198	5 µg/ml
MPCB-MXE	Native Chlorinated Methoxybiphenyl Solution/Mixture		1.2 ml
2,3,3',4,5'-Pentachloro-4'-methoxybiphenyl		4PM108	5 µg/ml
2,2',3,3',4',5-Hexachloro-4-methoxybiphenyl		4PM130	5 µg/ml
2,2',3,4',5,5',6-Heptachloro-4-methoxybiphenyl		4M187	5 µg/ml
2,2',3,3',4',5,5',6-Octachloro-4-methoxybiphenyl		4PM199	5 µg/ml
MPCB-MXF	Native Chlorinated Methoxybiphenyl Solution/Mixture		1.2 ml
2,3,3',4',5-Pentachloro-4-methoxybiphenyl		4M107	5 µg/ml
2,3,3',4',5,6-Hexachloro-4-methoxybiphenyl		4M163	5 µg/ml
2,2',3,3',4',5,6-Heptachloro-4-methoxybiphenyl		4M177	5 µg/ml
2,2',3,3',4,5,6,6'-Octachloro-4'-methoxybiphenyl		4PM200	5 µg/ml

NATIVE METHOXY-CHLOROBIPHENYLS: SOLUTION/MIXTURES

Catalogue Number	Product (nonane solution)		Qty/Conc
MPCB-MXG	Native Chlorinated Methoxybiphenyl Solution/Mixture		1.2 ml
	2,2',3,4',5'-Pentachloro-4-methoxybiphenyl	4PM97	5 µg/ml
	2,3,3',4,5,5'-Hexachloro-4'-methoxybiphenyl	4PM159	5 µg/ml
	2,2',3,4,4',5,5'-Heptachloro-3'-methoxybiphenyl	3PM180	5 µg/ml
	2,2',3,3',5,5',6,6'-Octachloro-4,4'-dimethoxybiphenyl	44PDM202	5 µg/ml
MPCB-MXH	Native Chlorinated Methoxybiphenyl Solution/Mixture		1.2 ml
	3,3',4,5,5'-Pentachloro-4'-methoxybiphenyl	4PM127	5 µg/ml
	2,2',3,3',4,5,5'-Heptachloro-4'-methoxybiphenyl	4PM172	5 µg/ml
MPCB-MXI	Native Chlorinated Methoxybiphenyl Solution/Mixture		1.2 ml
	2,3,3',4',5,5'-Hexachloro-4-methoxybiphenyl	4M162	5 µg/ml
	2,3,3',4',5,5',6-Heptachloro-4-methoxybiphenyl	4M193	5 µg/ml

MASS-LABELLED METHOXY-CHLOROBIPHENYLS

Catalogue Number		Product
M4M29		2,4,5-Trichloro-4'-methoxy[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
M4M61		2,3,4,5-Tetrachloro-4'-methoxy[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
M4M120		2,3',4,5,5'-Pentachloro-4'-methoxy[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
M4M159		2,3,3',4,5,5'-Hexachloro-4'-methoxy[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
M4M172		2,2',3,3',4,5,5'-Heptachloro-4'-methoxy[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene
M4M187		2,2',3,4',5,5',6-Heptachloro-4-methoxy[$^{13}C_{12}$]biphenyl 1.2 ml; 50 µg/ml (±2.5 µg/ml); in toluene

***** Unless stated otherwise, Isotopic Purities of these compounds are 99% or greater.

MASS-LABELLED METHOXY-CHLOROBIPHENYLS: SOLUTION/MIXTURE

Catalogue Number	Product (toluene solution)		Qty/Conc
MMPCB-MXA	Mass-Labelled Chlorinated Methoxybiphenyl Solution/Mixture		1.2 ml
	2,4,5-Trichloro-4'-methoxy[$^{13}C_{12}$]biphenyl	M4M29	5 µg/ml
	2,3,4,5-Tetrachloro-4'-methoxy[$^{13}C_{12}$]biphenyl	M4M61	5 µg/ml
	2,3',4,5,5'-Pentachloro-4'-methoxy[$^{13}C_{12}$]biphenyl	M4M120	5 µg/ml
	2,3,3',4,5,5'-Hexachloro-4'-methoxy[$^{13}C_{12}$]biphenyl	M4M159	5 µg/ml
	2,2',3,3',4,5,5'-Heptachloro-4'-methoxy[$^{13}C_{12}$]biphenyl	M4M172	5 µg/ml
	2,2',3,4',5,5',6-Heptachloro-4-methoxy[$^{13}C_{12}$]biphenyl	M4M187	5 µg/ml

NATIVE CHLORINATED BIPHENYLENES (PCBPs)

Chlorinated Biphenylenes have been detected in samples taken in the aftermath of PCB fires. It is thought that they may be formed as the result of incomplete combustion of the PCBs.

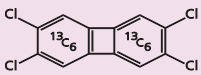
In microsomal enzyme studies, the 2,3,6,7-tetrachlorobiphenylene has shown similar potency to that of 2,3,7,8-tetrachlorodibenzo-p-dioxin in its toxicological effects.

Catalogue Number	Product (nonane solution)	Qty/Conc	
CBP-2	2-Chlorobiphenylene	1.2 ml	50 µg/ml
CBP-23	2,3-Dichlorobiphenylene	1.2 ml	50 µg/ml
CBP-236	2,3,6-Trichlorobiphenylene	1.2 ml	50 µg/ml
CBP-2367	2,3,6,7-Tetrachlorobiphenylene	1.2 ml	50 µg/ml

NATIVE CHLORINATED BIPHENYLENES FOR TOXICOLOGICAL STUDIES

Catalogue Number	Product (DMSO solution)	Qty/Conc	
CBP-2-D	2-Chlorobiphenylene	1.2 ml	1 x 10^{-4} M
CBP-23-D	2,3-Dichlorobiphenylene	1.2 ml	1 x 10^{-4} M
CBP-236-D	2,3,6-Trichlorobiphenylene	1.2 ml	1 x 10^{-4} M
CBP-2367-D	2,3,6,7-Tetrachlorobiphenylene	1.2 ml	1 x 10^{-4} M

MASS-LABELLED CHLORINATED BIPHENYLENE

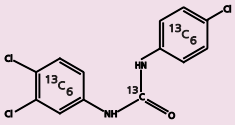
Catalogue Number		Product
MCBP-2367		2,3,6,7-Tetrachloro[$^{13}C_{12}$]biphenylene 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane; Isotopic Purity 99% or greater

NATIVE TRICLOCARBAN

Triclocarban, like Triclosan, is an antimicrobial additive used in a variety of personal care products.

Catalogue Number	Product (methanol solution)	Qty/Conc
TCC	N-(4-chlorophenyl)-N'-(3,4-dichlorophenyl)urea	1.2 ml 50 µg/ml

MASS-LABELLED TRICLOCARBAN

Catalogue Number		Product
MTCC		N-(4-chloro[$^{13}C_6$]phenyl)-N'-(3,4-dichloro[$^{13}C_6$]phenyl)[^{13}C]urea 1.2 ml; 50 µg/ml (±2.5 µg/ml); in methanol; Isotopic Purity 99% or greater

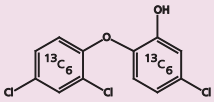
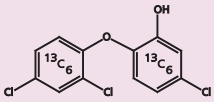
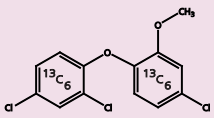
NATIVE TRICLOSAN AND METHYL TRICLOSAN

Triclosan is a widely used antibacterial and antifungal agent that has been incorporated into many common consumer products including toothpastes, deodorants and antibacterial soaps and detergents.

The increasing use of these products over the last 30 years has led to Triclosan, and its biotransformation product, Methyl Triclosan, being found in the environment.

Catalogue Number	Product (nonane solution)	Qty/Conc
TCS	5-Chloro-2-(2,4-dichlorophenoxy)phenol	1.2 ml 50 µg/ml
TCS-M	5-Chloro-2-(2,4-dichlorophenoxy)phenol (in methanol)	1.2 ml 50 µg/ml
MeTCS	5-Chloro-2-(2,4-dichlorophenoxy)anisole	1.2 ml 50 µg/ml

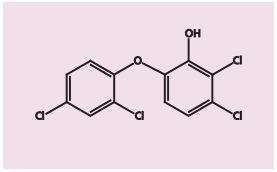
MASS-LABELLED TRICLOSAN AND METHYL TRICLOSAN

Catalogue Number		Product
MTCS		5-Chloro-2-(2,4-dichloro[$^{13}C_6$]phenoxy)[$^{13}C_6$]phenol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in **nonane**; Isotopic Purity 99% or greater
MTCS-M		5-Chloro-2-(2,4-dichloro[$^{13}C_6$]phenoxy)[$^{13}C_6$]phenol 1.2 ml; 50 µg/ml (±2.5 µg/ml); in **methanol**; Isotopic Purity 99% or greater
MMeTCS		5-Chloro-2-(2,4-dichloro[$^{13}C_6$]phenoxy)[1,2,3,4,5,6-$^{13}C_6$]anisole 1.2 ml; 50 µg/ml (±2.5 µg/ml); in **nonane**; Isotopic Purity 99% or greater

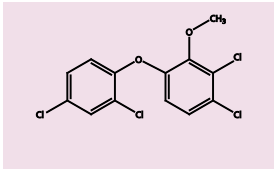
CHLORINATED DERIVATIVES OF TRICLOSAN AND METHYL TRICLOSAN

The reaction of Triclosan with free chlorine in water, or during wastewater treatment processes, may result in the formation of further chlorinated Triclosan isomers.

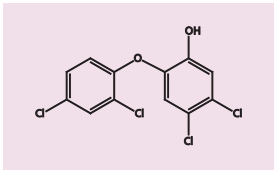
Catalogue Number	Product (nonane solution)		Qty/Conc	
6TCS	2,3-Dichloro-6-(2,4-dichlorophenoxy)phenol	(6-Chlorotriclosan)	1.2 ml	50 µg/ml
6MeTCS	2,3-Dichloro-6-(2,4-dichlorophenoxy)anisole	(6-Chloro-methyltriclosan)	1.2 ml	50 µg/ml
4TCS	4,5-Dichloro-2-(2,4-dichlorophenoxy)phenol	(4-Chlorotriclosan)	1.2 ml	50 µg/ml
4MeTCS	4,5-Dichloro-2-(2,4-dichlorophenoxy)anisole	(4-Chloro-methyltriclosan)	1.2 ml	50 µg/ml
46TCS	2,3,4-Trichloro-6-(2,4-dichlorophenoxy)phenol	(4,6-Dichlorotriclosan)	1.2 ml	50 µg/ml
46MeTCS	2,3,4-Trichloro-6-(2,4-dichlorophenoxy)anisole	(4,6-Dichloro-methyltriclosan)	1.2 ml	50 µg/ml



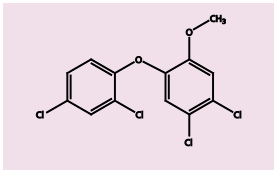
2,3-Dichloro-6-(2,4-dichlorophenoxy)phenol



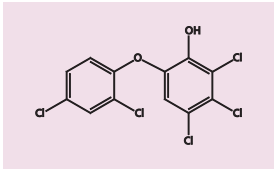
2,3-Dichloro-6-(2,4-dichlorophenoxy)anisole



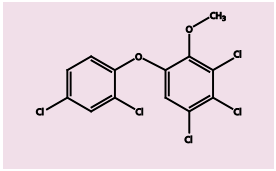
4,5-Dichloro-2-(2,4-dichlorophenoxy)phenol



4,5-Dichloro-2-(2,4-dichlorophenoxy)anisole



2,3,4-Trichloro-6-(2,4-dichlorophenoxy)phenol



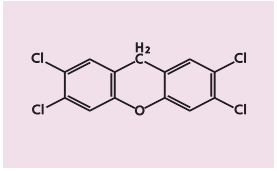
2,3,4-Trichloro-6-(2,4-dichlorophenoxy)anisole

NATIVE CHLOROXANTHENES

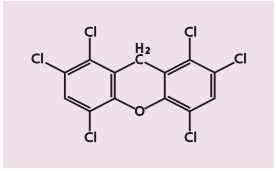
The tetrachloroxanthene was originally suspected to be an environmental contaminant due to pulp bleaching.

The hexachloroxanthene has been found as a contaminant in the environment as a result of the production and use of hexachlorophene.

Catalogue Number	Product (toluene solution)	Qty/Conc	
XE-2367-S	2,3,6,7-Tetrachloroxanthene (97%)	1.2 ml	50 µg/ml
HXCX	1,2,4,5,7,8-Hexachloroxanthene (in nonane)	1.2 ml	50 µg/ml



2,3,6,7-Tetrachloroxanthene

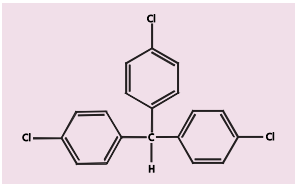


1,2,4,5,7,8-Hexachloroxanthene

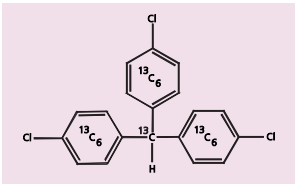
TRIS(4-CHLOROPHENYL)METHANE AND TRIS(4-CHLOROPHENYL)METHANOL; NATIVE AND MASS-LABELLED

These two compounds have been found in a variety of environmental samples including fish, marine mammals and birds.
It is possible that they may originate from DDT or other agrochemicals.

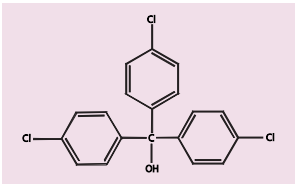
Catalogue Number	Product (nonane solution)	Qty/Conc
T4CPM	Tris(4-chlorophenyl)methane	1.2 ml 50 µg/ml
T4CPME	Tris(4-chlorophenyl)methanol	1.2 ml 50 µg/ml
MT4CPM	Tris(4-chlorophenyl)methane-$^{13}C_{19}$; 99 atom% $^{13}C_{19}$	1.2 ml 50 µg/ml
MT4CPME	Tris(4-chlorophenyl)methanol-$^{13}C_{19}$; 99 atom% $^{13}C_{19}$	1.2 ml 50 µg/ml



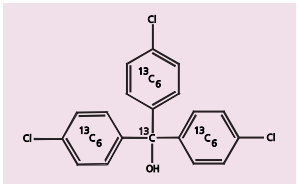
Tris(4-chlorophenyl)methane



Tris(4-chlorophenyl)methane-$^{13}C_{19}$



Tris(4-chlorophenyl)methanol



Tris(4-chlorophenyl)methanol-$^{13}C_{19}$

NATIVE CHLORINATED NAPHTHALENES (PCNs)

Catalogue Number	Product (nonane solution)	Qty/Conc
PN-2S	2-Chloronaphthalene	1.2 ml 50 µg/ml
PN-6S	1,5-Dichloronaphthalene	1.2 ml 50 µg/ml
PN-12S	2,7-Dichloronaphthalene	1.2 ml 50 µg/ml
PN-13S	1,2,3-Trichloronaphthalene	1.2 ml 50 µg/ml
PN-27S	1,2,3,4-Tetrachloronaphthalene	1.2 ml 50 µg/ml
PN-28S	1,2,3,5-Tetrachloronaphthalene	1.2 ml 50 µg/ml
PN-31S	1,2,3,8-Tetrachloronaphthalene	1.2 ml 50 µg/ml
PN-36S	1,2,5,6-Tetrachloronaphthalene (95%)	1.2 ml 47.5 µg/ml
PN-46S	1,4,5,8-Tetrachloronaphthalene	1.2 ml 50 µg/ml
PN-48S	2,3,6,7-Tetrachloronaphthalene	1.2 ml 50 µg/ml
PN-50S	1,2,3,4,6-Pentachloronaphthalene	1.2 ml 50 µg/ml
PN-52S	1,2,3,5,7-Pentachloronaphthalene	1.2 ml 50 µg/ml
PN-53S	1,2,3,5,8-Pentachloronaphthalene	1.2 ml 50 µg/ml
PN-66S	1,2,3,4,6,7-Hexachloronaphthalene	1.2 ml 50 µg/ml
PN-69S	1,2,3,5,7,8-Hexachloronaphthalene	1.2 ml 50 µg/ml
PN-72S	1,2,4,5,7,8-Hexachloronaphthalene	1.2 ml 50 µg/ml
PN-73S	1,2,3,4,5,6,7-Heptachloronaphthalene	1.2 ml 50 µg/ml
PN-75S	Octachloronaphthalene	1.2 ml 50 µg/ml

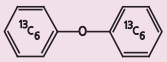
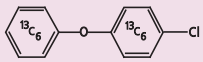
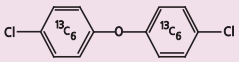
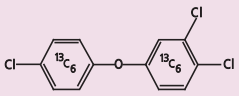
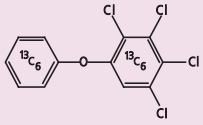
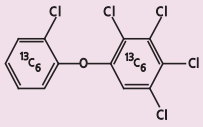
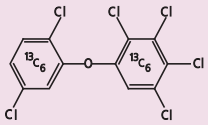
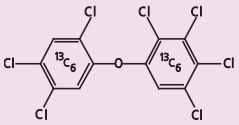
NATIVE CHLORINATED NAPHTHALENES: SOLUTION/MIXTURES

Catalogue Number	Product (nonane solution)		Qty/Conc
PCN-MXA	Native PCN Solution/Mixture		1.2 ml
		IUPAC	
	2-Chloronaphthalene	*2*	5 µg/ml
	1,5-Dichloronaphthalene	*6*	5 µg/ml
	1,2,3-Trichloronaphthalene	*13*	5 µg/ml
	1,2,3,5-Tetrachloronaphthalene	*28*	5 µg/ml
	1,2,3,5,7-Pentachloronaphthalene	*52*	5 µg/ml
	1,2,3,4,6,7-Hexachloronaphthalene	*66*	5 µg/ml
	1,2,3,4,5,6,7-Heptachloronaphthalene	*73*	5 µg/ml
	Octachloronaphthalene	*75*	5 µg/ml
PCN-MXC	Native PCN Solution/Mixture		1.2 ml
		IUPAC	
	1,2,3,4-Tetrachloronaphthalene	*27*	5 µg/ml
	1,2,5,6-Tetrachloronaphthalene	*36*	4.75 µg/ml
	1,4,5,8-Tetrachloronaphthalene	*46*	5 µg/ml
	2,3,6,7-Tetrachloronaphthalene	*48*	5 µg/ml
	1,2,3,4,6-Pentachloronaphthalene	*50*	5 µg/ml
	1,2,3,5,8-Pentachloronaphthalene	*53*	5 µg/ml
	1,2,3,5,7,8-Hexachloronaphthalene	*69*	5 µg/ml
	1,2,4,5,7,8-Hexachloronaphthalene	*72*	5 µg/ml

NATIVE CHLORINATED DIPHENYL ETHERS (PCDEs)

Catalogue Number	Product (nonane solution)	Qty/Conc	
DPE-0	Diphenyl ether	1.2 ml	50 µg/ml
DPE-3	4-Chlorodiphenyl ether	1.2 ml	50 µg/ml
DPE-15	4,4'-Dichlorodiphenyl ether	1.2 ml	50 µg/ml
DPE-28	2,4,4'-Trichlorodiphenyl ether	1.2 ml	50 µg/ml
DPE-74	2,4,4',5-Tetrachlorodiphenyl ether	1.2 ml	50 µg/ml
DPE-77	3,3',4,4'-Tetrachlorodiphenyl ether	1.2 ml	50 µg/ml
DPE-99	2,2',4,4',5-Pentachlorodiphenyl ether	1.2 ml	50 µg/ml
DPE-180	2,2',3,4,4',5,5'-Heptachlorodiphenyl ether (purity 94%)	1.2 ml	47 µg/ml
DPE-209	Decachlorodiphenyl ether	1.2 ml	50 µg/ml

MASS-LABELLED CHLORINATED DIPHENYL ETHERS

Catalogue Number		Product
MCDE-0		[$^{13}C_{12}$]Diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MCDE-3		4-Chloro[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MCDE-15		4,4'-Dichloro[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MCDE-37		3,4,4'-Trichloro[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MCDE-61		2,3,4,5-Tetrachloro[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MCDE-86		2,2',3,4,5-Pentachloro[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MCDE-141		2,2',3,4,5,5'-Hexachloro[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane
MCDE-180		2,2',3,4,4',5,5'-Heptachloro[$^{13}C_{12}$]diphenyl ether 1.2 ml; 50 µg/ml (±2.5 µg/ml); in nonane

***** Unless stated otherwise, Isotopic Purities of these compounds are 99% or greater.

METHYLATED/CHLORINATED DIBENZO-p-DIOXINS and DIBENZOFURANS

Catalogue Number	Product (toluene solution)	Qty/Conc	
8-M-237-CDD	2,3,7-Trichloro-8-methyldibenzo-p-dioxin	1.2 ml	50 µg/ml
7-M-1234-CDD	1,2,3,4-Tetrachloro-7-methyldibenzo-p-dioxin	1.2 ml	50 µg/ml
8-M-23-CDF	2,3-Dichloro-8-methyldibenzofuran	1.2 ml	50 µg/ml
8-M-137-CDF	1,3,7-Trichloro-8-methyldibenzofuran	1.2 ml	50 µg/ml
6-M-138-CDF	1,3,8-Trichloro-6-methyldibenzofuran	1.2 ml	50 µg/ml
8-M-234-CDF	2,3,4-Trichloro-8-methyldibenzofuran	1.2 ml	50 µg/ml
78-M-234-CDF	2,3,4-Trichloro-7,8-dimethyldibenzofuran	1.2 ml	50 µg/ml
6-M-238-CDF	2,3,8-Trichloro-6-methyldibenzofuran	1.2 ml	50 µg/ml
8-M-1247-CDF	1,2,4,7-Tetrachloro-8-methyldibenzofuran	1.2 ml	50 µg/ml
6-M-1248-CDF	1,2,4,8-Tetrachloro-6-methyldibenzofuran	1.2 ml	50 µg/ml

NATIVE CHLOROBENZENES: SOLUTION/MIXTURE

Catalogue Number	Product (isooctane solution)	Qty/Conc
CBS	Native Chlorobenzene Solution/Mixture	1.2 ml
Chlorobenzene		100 µg/ml
1,2-Dichlorobenzene		100 µg/ml
1,3-Dichlorobenzene		100 µg/ml
1,4-Dichlorobenzene		100 µg/ml
1,2,3-Trichlorobenzene		100 µg/ml
1,2,4-Trichlorobenzene		100 µg/ml
1,3,5-Trichlorobenzene		100 µg/ml
1,2,3,4-Tetrachlorobenzene		100 µg/ml
1,2,3,5-Tetrachlorobenzene		100 µg/ml
1,2,4,5-Tetrachlorobenzene		100 µg/ml
Pentachlorobenzene		100 µg/ml
Hexachlorobenzene		100 µg/ml

MASS-LABELLED CHLOROBENZENES: SOLUTION/MIXTURE

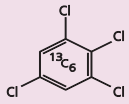
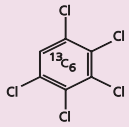
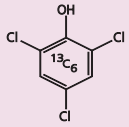
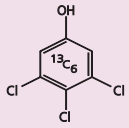
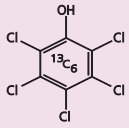
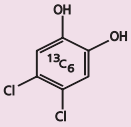
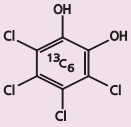
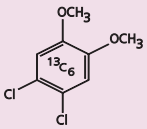
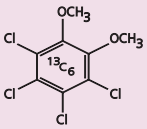
Catalogue Number	Product (isooctane solution)	Qty/Conc
MCBS	Mass-Labelled Chlorobenzene Solution/Mixture	1.2 ml
Chloro[$^{13}C_6$]benzene		100 µg/ml
1,4-Dichloro[$^{13}C_6$]benzene		100 µg/ml
1,2,3-Trichloro[$^{13}C_6$]benzene		100 µg/ml
1,2,3,4-Tetrachloro[$^{13}C_6$]benzene		100 µg/ml
Pentachloro[$^{13}C_6$]benzene		100 µg/ml
Hexachloro[$^{13}C_6$]benzene		100 µg/ml

NATIVE CHLOROPHENOLS: SOLUTION/MIXTURE

Catalogue Number	Product (isooctane solution)	Qty/Conc
CPS	Native Chlorophenol Solution/Mixture	1.2 ml
2-Chlorophenol		100 µg/ml
3-Chlorophenol		100 µg/ml
4-Chlorophenol		100 µg/ml
2,3-Dichlorophenol		100 µg/ml
2,4-Dichlorophenol		100 µg/ml
2,5-Dichlorophenol		100 µg/ml
2,6-Dichlorophenol		100 µg/ml
3,4-Dichlorophenol		100 µg/ml
3,5-Dichlorophenol		100 µg/ml
2,3,4-Trichlorophenol		100 µg/ml
2,3,5-Trichlorophenol		100 µg/ml
2,3,6-Trichlorophenol		100 µg/ml
2,4,5-Trichlorophenol		100 µg/ml
2,4,6-Trichlorophenol		100 µg/ml
3,4,5-Trichlorophenol		100 µg/ml
2,3,4,5-Tetrachlorophenol		100 µg/ml
2,3,4,6-Tetrachlorophenol		100 µg/ml
2,3,5,6-Tetrachlorophenol		100 µg/ml
Pentachlorophenol		100 µg/ml

MASS-LABELLED CHLOROPHENOLS: SOLUTION/MIXTURE

Catalogue Number	Product (isooctane solution)	Qty/Conc
MCPS	Mass-Labelled Chlorophenol Solution/Mixture	1.2 ml
4-Chloro[$^{13}C_6$]phenol		100 µg/ml
2,4-Dichloro[$^{13}C_6$]phenol		100 µg/ml
2,4,5-Trichloro[$^{13}C_6$]phenol		100 µg/ml
2,3,4,5-Tetrachloro[$^{13}C_6$]phenol		100 µg/ml
Pentachloro[$^{13}C_6$]phenol		100 µg/ml

Catalogue Number		Product
MBZ-1235		1,2,3,5-Tetrachloro[$^{13}C_6$]benzene 1.2 ml; 100 µg/ml (±5.0 µg/ml); in isooctane
MCBZ-12345		1,2,3,4,5-Pentachloro[$^{13}C_6$]benzene 1.2 ml; 100 µg/ml (±5.0 µg/ml); in isooctane
MCP-246		2,4,6-Trichloro[$^{13}C_6$]phenol 1.2 ml; 100 µg/ml (±5.0 µg/ml); in isooctane
MCP-345		3,4,5-Trichloro[$^{13}C_6$]phenol 1.2 ml; 100 µg/ml (±5.0 µg/ml); in isooctane
MCP-23456		Pentachloro[$^{13}C_6$]phenol 1.2 ml; 100 µg/ml (±5.0 µg/ml); in isooctane
MCC-45		4,5-Dichloro[$^{13}C_6$]catechol 1.2 ml; 100 µg/ml (±5.0 µg/ml); in isooctane
MCC-3456		3,4,5,6-Tetrachloro[$^{13}C_6$]catechol 1.2 ml; 100 µg/ml (±5.0 µg/ml); in isooctane
MCV-45		4,5-Dichloro[$^{13}C_6$]veratrole 1.2 ml; 100 µg/ml (±5.0 µg/ml); in isooctane
MCV-3456		3,4,5,6-Tetrachloro[$^{13}C_6$]veratrole 1.2 ml; 100 µg/ml (±5.0 µg/ml); in isooctane

***** Unless stated otherwise, Isotopic Purities of these compounds are 99% or greater.

NATIVE MELAMINE AND CYANURIC ACID

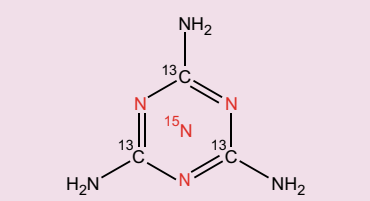
Catalogue Number	Product (water solution)	Qty/Conc
MEL	Melamine	1.2 ml 100 µg/ml
CYA	Cyanuric Acid	1.2 ml 100 µg/ml

MASS LABELLED MELAMINE

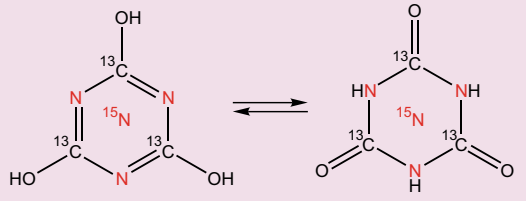
Catalogue Number	Product (water solution)	Qty/Conc
M3-MEL	$^{13}C_3$-Melamine	1.2 ml 100 µg/ml
M6-MEL	$^{13}C_3$,$^{15}N_3$-Melamine	1.2 ml 100 µg/ml

MASS LABELLED CYANURIC ACID

Catalogue Number	Product (water solution)	Qty/Conc
M3-CYA	$^{13}C_3$-Cyanuric Acid	1.2 ml 100 µg/ml
M6-CYA	$^{13}C_3$,$^{15}N_3$-Cyanuric Acid	1.2 ml 100 µg/ml



$^{13}C_3$,$^{15}N_3$-Melamine



$^{13}C_3$,$^{15}N_3$-Cyanuric Acid

In order to keep up-to-date on new releases from Wellington Laboratories Inc., please visit our web-site at www.well-labs.com.

New Products are announced in the Wellington Reporter.

APPENDIX

Some of the information provided in this Appendix can also be found in our **Reference and Handling Guide: GC/MS Characterization and Analysis of Selected Halogenated Aromatic Compounds**, which is available separately in hard copy and is also posted on our website. On the following pages you will find:

Guidelines for the Use and Handling of Wellington Products

General Structure and Numbering System of Selected Aromatic Hydrocarbons

Number of Possible Isomers for Selected Halogenated Aromatic Compounds

Molecular Weights for Selected Chlorinated and Brominated Aromatic Hydrocarbons

Exact Mass & Relative Ion Abundance of Selected Chlorinated Aromatic Hydrocarbons

Molecular Ion Clusters for Chlorinated Aromatic Hydrocarbons

Molecular Ion Clusters for Brominated Aromatic Hydrocarbons

Exact Mass & Relative Ion Abundance of Selected Brominated Aromatic Hydrocarbons

Systematic Numbering of Chlorinated Dibenzo-p-dioxins

Systematic Numbering of Chlorinated Dibenzofurans

Systematic Numbering of Chlorinated Biphenyls

Systematic Numbering of Chlorinated Naphthalenes

NOTE: We have also prepared a ***NEW*** **Reference and Handling Guide for Perfluoroalkyl Compounds**, which can be downloaded from our website, and a more consise **Quick Reference Guide for Perfluoroalkyl Compounds**,which is available in hard copy.

If you would like to receive copies of either Reference Guide, please contact us or one of our distributors. In addition, if you have any ideas on how we can improve these Reference Guides, or if you have suggestions for future guides, please contact us.

HAZARDS

The majority of our products are halogenated aromatic hydrocarbons in solution in organic solvents such as nonane, toluene and isooctane. Although the maximum concentration is 100 µg/ml, that is 0.01% (w/v), these compounds must be considered toxic and potentially carcinogenic and should be handled accordingly.

With all of our products due care should be exercised to prevent human contact and ingestion. The absence of a toxicity warning for any of our products must not be interpreted as an indication that there is no possible health hazard.

NOTE:
THESE MATERIALS SHOULD ONLY BE USED BY PERSONNEL TRAINED IN THE HANDLING OF HAZARDOUS CHEMICALS.
ALL PROCEDURES SHOULD BE PERFORMED IN A FUME HOOD AND SUITABLE GLOVES, EYE PROTECTION AND CLOTHING SHOULD BE WORN AT ALL TIMES.

RECEIPT, INSPECTION, HANDLING AND STORAGE

Unless crystalline material is provided, all of our reference standard solutions come in flame-sealed, pre-scored amber glass ampoules. Upon receipt, inspect the ampoules for breakage and leakage and then store them upright until needed. The ampoules can be stored at ambient temperature until opened.

Prior to opening, allow the solution to drain into the bottom of the ampoule, lightly tapping the ampoule if necessary. Using the plastic ampoule collar provided, hold the ampoule upright and snap the top off, breaking away from the body.

Transfer the solution to an amber glass container that can be tightly sealed for storage. To prevent evaporation of the solvent, it is suggested that this solution, and subsequent mixtures and/or dilutions, be stored at refrigerator temperatures.

DISPOSAL

All waste materials generated during the use of these solutions should be treated as hazardous in accordance with national and regional regulations. A licensed disposal company should be employed. Some options for the destruction of these materials include high temperature incineration, photolysis, or chemical treatment using reagents such as sodium naphthalene or KPEG reagent. Literature references for some of these methods can be provided upon request.

ACCURACY

Each of our stock solutions is prepared from crystalline material that has been well characterized as to its structure and purity.

The crystalline material is weighed using microbalances that are externally calibrated using NIST-traceable weights. Solutions are prepared by completely dissolving the crystalline material in ultrapure, distilled-in-glass solvents. The volumetric flasks used for this purpose, and the pipets used for subsequent preparation of dilutions and mixtures, are all of class A tolerance and NIST-traceable.

The maximum percent relative combined uncertainty for solution preparation is calculated to be ± 5 %.

INTERLABORATORY CERTIFICATION

Wellington continues to submit its standards for independent interlaboratory testing and certification. Since 1991, our standards have been tested in 20 international round-robins.

To date, solutions of the compounds listed below have been repeatedly tested and the approximate total number of analyses are given.

- 2,3,7,8 - substituted PCDDs and PCDFs .....1000 HRMS analyses
- Dioxin-like (WHO) PCB congeners .....1000 HRMS analyses
- PBDEs .....100 HRMS analyses

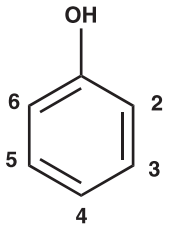
The overall averages of the data received for all of the compounds were found to be well within ± 10 % of the design values.

EXPIRY DATE/SHELF LIFE

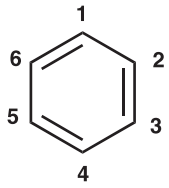
In order to accurately determine the shelf life of products such as ours, testing must reveal significant degradation or loss in concentration of the particular analyte. In comparing freshly prepared solutions to older solutions by GC/MS, we have not detected any significant changes. Many of these older solutions were prepared and ampouled more than 15 years ago. Thus our stability studies, as they should, remain ongoing.

For our products where the expiry date on the C of A states, "stability studies ongoing", we consider that our reference standard solutions retain their accuracy for a period of 5 years from delivery in the unopened ampoule.

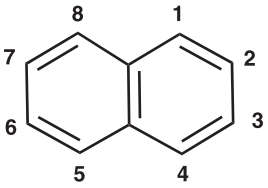
NOTE: The predominant degradation pathway for our compounds is likely photolysis and thus protection from light is critical.



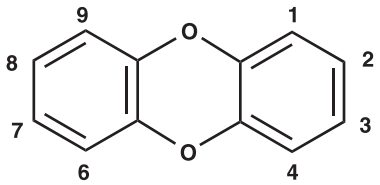
phenol



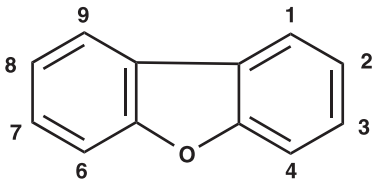
benzene



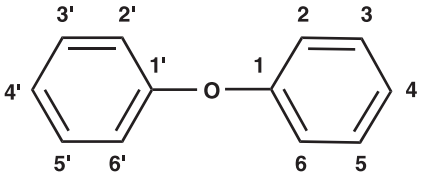
naphthalene



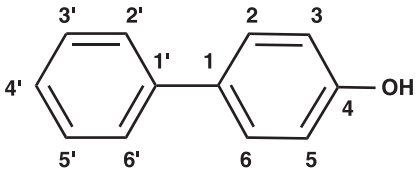
dibenzo-p-dioxin



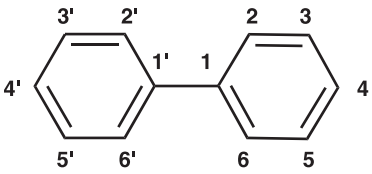
dibenzofuran



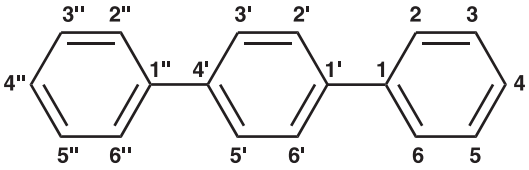
diphenyl ether



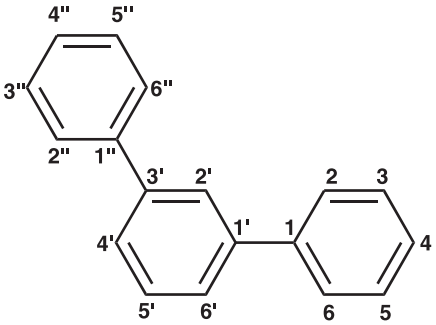
4-hydroxybiphenyl



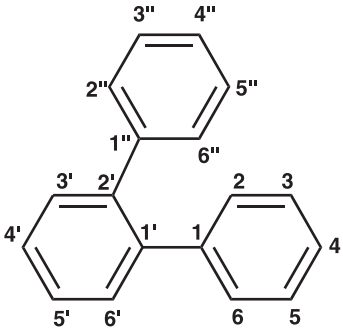
biphenyl



p-terphenyl



m-terphenyl



o-terphenyl

NUMBER OF POSSIBLE ISOMERS FOR SELECTED HALOGENATED AROMATIC COMPOUNDS

# of X	Terphenyl			Biphenyl	Biphenylol	Dibenzo-p-dioxin	Dibenzofuran	Naphthalene	Benzene	Phenol
	ortho	meta	para							
1	5	6	4	3	19	2	4	2	1	3
2	28	28	21	12	64	10	16	10	3	6
3	80	87	55	24	136	14	28	14	3	6
4	211	211	139	42	198	22	38	22	3	3
5	355	382	226	46	198	14	28	14	1	1
6	544	544	351	42	136	10	16	10	1	
7	596	638	358	24	64	2	4	2		
8	544	544	351	12	19	1	1	1		
9	355	382	226	3	3					
10	211	211	139	1						
11	80	87	55							
12	28	28	21							
13	5	6	4							
14	1	1	1							

X= Halogen (does not apply to mixed halogenated compounds)
For diphenyl ethers use the biphenyl values

MOLECULAR WEIGHTS FOR SELECTED CHLORINATED AND BROMINATED AROMATIC HYDROCARBONS

# of Cl/Br	PCTs	PCBs	PCDEs	PCDDs	PCDFs	PCNs	CBs	CPs	PBBs	PBDEs	PBDDs	PBDFs
0	230.31	154.21	170.21	184.19	168.19	128.17	78.11	94.11	154.21	170.21	184.19	168.19
1	264.75	188.66	204.66	218.64	202.64	162.62	112.56	128.56	233.11	249.11	263.09	247.09
2	299.20	223.10	239.10	253.08	237.09	197.06	147.00	163.00	312.00	328.00	341.99	325.99
3	333.64	257.55	273.55	287.53	271.53	231.51	181.45	197.45	390.90	406.90	420.88	404.88
4	368.09	291.99	307.99	321.97	305.98	265.95	215.89	231.89	469.80	485.80	499.78	483.78
5	402.53	326.44	342.44	356.42	340.42	300.40	250.34	266.34	548.69	564.69	578.67	562.68
6	436.98	360.88	376.88	390.86	374.87	334.84	284.78		627.59	643.59	657.57	641.57
7	471.42	395.33	411.33	425.31	409.31	369.29			706.48	722.48	736.47	720.47
8	505.87	429.77	445.77	459.75	443.76	403.73			785.38	801.38	815.36	799.36
9	540.31	464.22	480.22						864.28	880.28		
10	574.76	498.66	514.66						943.17	959.17		
11	609.20											
12	643.65											
13	678.09											
14	712.54											

Note: The molecular weight for PCHBs ($C_{12}H_{9-n}Cl_nOH$) is the same as the PCDEs ($C_{12}H_{10-n}Cl_nO$), but the maximum # of Chlorines is one less for the PCHBs.

PCTs = polychlorinated terphenyls, **PCBs** = polychlorinated biphenyls, **PCDEs** = polychlorinated diphenyl ethers
PCHBs = polychlorinated hydroxybiphenyls (biphenylols), **PCDDs** = polychlorinated dibenzo-p-dioxin,
PCDFs = polychlorinated dibenzofurans, **PCNs** = polychlorinated naphthalenes, **CBs** = chlorobenzenes, **CPs** = chlorophenols,
PBBs = polybrominated biphenyls, **PBDEs** = polybrominated diphenyl ethers,
PBDDs = polybrominated dibenzo-p-dioxins, **PBDFs** = polybrominated dibenzofurans

EXACT MASS & RELATIVE ION ABUNDANCE OF SELECTED CHLORINATED AROMATIC HYDROCARBONS

	PCTs			PCBs			PCHBs			PCDDs		
	$^{12}C_{18}$	$C_{18}H_{14-n}Cl_n$	$^{13}C_{18}$	$^{12}C_{12}$	$C_{12}H_{10-n}Cl_n$	$^{13}C_{12}$	$^{12}C_{12}$	$C_{12}H_{9-n}Cl_nOH$	$^{13}C_{12}$	$^{12}C_{12}$	$C_{12}H_{8-n}Cl_nO_2$	$^{13}C_{12}$
# of Cl	Exact Mass	Relative Abundance	Exact Mass	Exact Mass	Relative Abundance	Exact Mass	Exact Mass	Relative Abundance	Exact Mass	Exact Mass	Relative Abundance	Exact Mass
0	230.1096	**100**	248.1699	154.0783	**100**	166.1185	170.0732	**100**	182.1134	184.0524	**100**	196.0927
1	264.0706	**100**	282.1310	188.0393	**100**	200.0795	204.0342	**100**	216.0745	218.0135	**100**	230.0537
	266.0676	34.4	284.1280	190.0363	33.2	202.0766	206.0312	33.5	218.0715	220.0105	33.7	232.0508
2	298.0316	**100**	316.0920	222.0003	**100**	234.0406	237.9952	**100**	250.0355	251.9745	**100**	264.0147
	300.0287	66.8	318.0890	223.9974	65.6	236.0376	239.9923	65.9	252.0325	253.9715	66.1	266.0118
	302.0257	11.8	320.0861	225.9944	11.0	238.0347	241.9893	11.2	254.0296	255.9686	11.3	268.0088
3	331.9926	**100**	350.0530	255.9613	**100**	268.0016	271.9562	**100**	283.9965	285.9355	**100**	297.9758
	333.9897	99.2	352.0501	257.9584	98.0	269.9986	273.9533	98.2	285.9936	287.9326	98.5	299.9728
	335.9867	33.4	354.0471	259.9554	32.3	271.9957	275.9503	32.5	287.9906	289.9296	32.7	301.9699
	337.9838	4.0	356.0442	261.9525	3.7	273.9927	277.9474	3.7	289.9877	291.9267	3.8	303.9669
4	365.9537	76.0	384.0141	289.9224	76.7	301.9626	305.9173	76.5	317.9575	319.8965	76.4	331.9368
	367.9507	**100**	386.0111	291.9194	**100**	303.9597	307.9143	**100**	319.9546	321.8936	**100**	333.9339
	369.9478	49.8	388.0082	293.9165	49.1	305.9567	309.9114	49.3	321.9516	323.8906	49.4	335.9309
	371.9448	11.3	390.0052	295.9135	10.8	307.9538	311.9084	10.9	323.9487	325.8877	11.0	337.9280
5	399.9147	61.0	417.9751	323.8834	61.4	335.9237	339.8783	61.3	351.9186	353.8576	61.3	365.8978
	401.9117	**100**	419.9721	325.8804	**100**	337.9207	341.8754	**100**	353.9156	355.8546	**100**	367.8949
	403.9088	66.0	421.9692	327.8775	65.3	339.9178	343.8724	65.4	355.9127	357.8517	65.5	369.8919
	405.9058	22.0	423.9662	329.8745	21.4	341.9148	345.8695	21.5	357.9097	359.8487	21.6	371.8890
6	433.8757	50.9	451.9361	357.8444	51.2	369.8847	373.8393	51.2	385.8796	387.8186	51.1	399.8589
	435.8728	**100**	453.9332	359.8415	**100**	371.8817	375.8364	**100**	387.8766	389.8156	**100**	401.8559
	437.8698	82.1	455.9302	361.8385	81.5	373.8788	377.8334	81.6	389.8737	391.8127	81.7	403.8530
	439.8669	36.2	457.9273	363.8356	35.5	375.8758	379.8305	35.6	391.8707	393.8097	35.8	405.8500
7	467.8367	43.7	485.8971	391.8054	43.9	403.8457	407.8004	43.9	419.8406	421.7796	43.9	433.8199
	469.8338	**100**	487.8942	393.8025	**100**	405.8428	409.7974	**100**	421.8377	423.7767	**100**	435.8169
	471.8308	98.3	489.8912	395.7995	97.7	407.8398	411.7945	97.8	423.8347	425.7737	97.9	437.8140
	473.8279	53.9	491.8883	397.7966	53.1	409.8369	413.7915	53.3	425.8318	427.7708	53.4	439.8110
	475.8249	17.9	493.8853	399.7936	17.4	411.8339	415.7886	17.5	427.8288	429.7678	17.6	441.8081
8	501.7978	33.5	519.8582	425.7665	33.8	437.8067	441.7614	33.7	453.8016	455.7407	33.7	467.7809
	503.7948	87.4	521.8552	427.7635	87.8	439.8038	443.7584	87.7	455.7987	457.7377	87.6	469.7780
	505.7919	**100**	523.8523	429.7606	**100**	441.8008	445.7555	**100**	457.7957	459.7348	**100**	471.7750
	507.7889	65.6	525.8493	431.7576	65.2	443.7979	447.7525	65.2	459.7928	461.7318	65.3	473.7721
	509.7860	27.0	527.8464	433.7547	26.6	445.7949	449.7496	26.7	461.7898	463.7289	26.8	475.7691
9	535.7588	26.1	553.8192	459.7275	26.3	471.7678	475.7224	26.3	487.7627			
	537.7559	76.5	555.8162	461.7246	76.9	473.7648	477.7195	76.8	489.7597			
	539.7529	**100**	557.8133	463.7216	**100**	475.7619	479.7165	**100**	491.7568			
	541.7500	76.4	559.8103	465.7187	75.9	477.7589	481.7136	76.0	493.7538			
	543.7470	37.6	561.8074	467.7157	37.1	479.7560	483.7106	37.2	495.7509			
10	569.7198	20.9	587.7802	493.6885	21.1	505.7288						
	571.7169	68.1	589.7773	495.6856	68.4	507.7258						
	573.7139	**100**	591.7743	497.6826	**100**	509.7229						
	575.7110	87.2	593.7714	499.6797	86.7	511.7199						
	577.7080	50.0	595.7684	501.6767	49.4	513.7170						
11	603.6809	17.1	621.7412									
	605.6779	61.3	623.7383									
	607.6750	**100**	625.7353									
	609.6720	98.0	627.7324									
	611.6691	64.1	629.7294									
	613.6661	29.4	631.7265									
12	637.6419	13.1	655.7023									
	639.6389	51.3	657.6993									
	641.6360	92.0	659.6964									
	643.6330	**100**	661.6934									
	645.6301	73.5	663.6905									
	647.6271	38.5	665.6875									
13	671.6029	10.1	689.6633									
	673.6000	42.8	691.6604									
	675.5970	83.7	693.6574									
	677.5941	**100**	695.6545									
	679.5911	81.6	697.6515									
	681.5882	48.0	699.6486									
14	705.5639	8.0	723.6243									
	707.5610	36.3	725.6214									
	709.5580	76.7	727.6184									
	711.5551	**100**	729.6155									
	713.5521	89.7	731.6125									
	715.5492	58.6	733.6096									

EXACT MASS & RELATIVE ION ABUNDANCE OF SELECTED CHLORINATED AROMATIC HYDROCARBONS

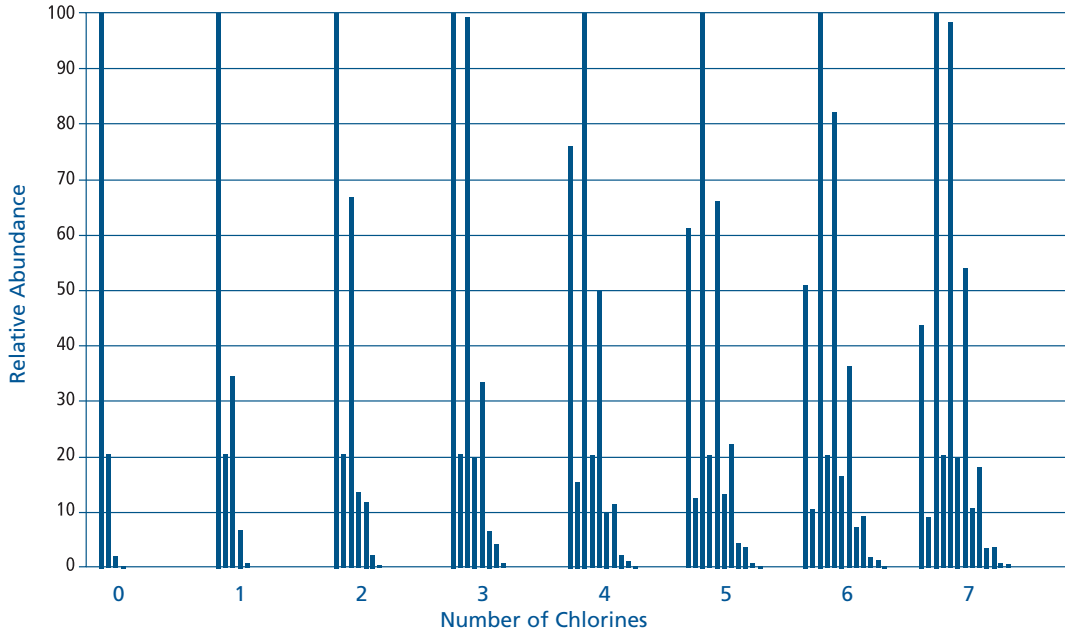
	PCDFs			PCNs			CBs			CPs		
	$^{12}C_{12}$	$C_{12}H_{8-n}Cl_nO$	$^{13}C_{12}$	$^{12}C_{10}$	$C_{10}H_{8-n}Cl_n$	$^{13}C_{10}$	$^{12}C_6$	$C_6H_{6-n}Cl_n$	$^{13}C_6$	$^{12}C_6$	$C_6H_{5-n}Cl_nOH$	$^{13}C_6$
# of Cl	Exact Mass	Relative Abundance	Exact Mass	Exact Mass	Relative Abundance	Exact Mass	Exact Mass	Relative Abundance	Exact Mass	Exact Mass	Relative Abundance	Exact Mass
0	168.0575	**100**	180.0978	128.0626	**100**	138.0962	78.0470	**100**	84.0671	94.0419	**100**	100.0620
1	202.0185	**100**	214.0588	162.0236	**100**	172.0572	112.0080	**100**	118.0281	128.0029	**100**	134.0230
	204.0156	33.5	216.0559	164.0207	33.0	174.0542	114.0050	32.6	120.0252	129.9999	32.8	136.0201
2	235.9796	**100**	248.0198	195.9847	**100**	206.0182	145.9690	**100**	151.9891	161.9639	**100**	167.9841
	237.9766	65.8	250.0169	197.9817	65.4	208.0153	147.9661	65.0	153.9862	163.9610	65.2	169.9811
	239.9737	11.2	252.0139	199.9788	10.9	210.0123	149.9631	10.6	155.9832	165.9580	10.8	171.9782
3	269.9406	**100**	281.9809	229.9457	**100**	239.9792	179.9300	**100**	185.9502	195.9249	**100**	201.9451
	271.9376	98.2	283.9779	231.9427	97.8	241.9763	181.9271	97.4	187.9472	197.9220	97.6	203.9421
	273.9347	32.5	285.9750	233.9398	32.0	243.9733	183.9241	31.7	189.9443	199.9190	31.9	205.9392
	275.9317	3.7	287.9720	235.9368	3.6	245.9704	185.9212	3.5	191.9413	201.9161	3.5	207.9362
4	303.9016	76.5	315.9419	263.9067	76.8	273.9403	213.8911	77.1	219.9112	229.8860	76.9	235.9061
	305.8987	**100**	317.9389	265.9038	**100**	275.9373	215.8881	**100**	221.9082	231.8830	**100**	237.9032
	307.8957	49.2	319.9360	267.9008	49.0	277.9344	217.8852	48.7	223.9053	233.8801	48.8	239.9002
	309.8928	10.9	321.9330	269.8979	10.7	279.9314	219.8822	10.6	225.9023	235.8771	10.7	241.8973
5	337.8627	61.3	349.9029	297.8677	61.5	307.9013	247.8521	61.7	253.8722	263.8470	61.6	269.8671
	339.8597	**100**	351.9000	299.8648	**100**	309.8983	249.8491	**100**	255.8693	265.8441	**100**	271.8642
	341.8568	65.4	353.8970	301.8618	65.1	311.8954	251.8462	64.9	257.8663	267.8411	65.0	273.8612
	343.8538	21.5	355.8941	303.8589	21.3	313.8924	253.8432	21.1	259.8634	269.8382	21.2	275.8583
6	371.8237	51.2	383.8639	331.8288	51.3	341.8623	281.8131	51.4	287.8332			
	373.8207	**100**	385.8610	333.8258	**100**	343.8594	283.8102	**100**	289.8303			
	375.8178	81.6	387.8580	335.8229	81.3	345.8564	285.8072	81.1	291.8273			
	377.8148	35.6	389.8551	337.8199	35.3	347.8535	287.8043	35.1	293.8244			
7	405.7847	43.9	417.8250	365.7898	44.0	375.8233						
	407.7818	**100**	419.8220	367.7868	**100**	377.8204						
	409.7788	97.8	421.8191	369.7839	97.5	379.8174						
	411.7759	53.3	423.8161	371.7809	52.9	381.8145						
	413.7729	17.5	425.8132	373.7780	17.3	383.8115						
8	439.7457	33.7	451.7860	399.7508	33.9	409.7844						
	441.7428	87.7	453.7830	401.7479	87.9	411.7814						
	443.7398	**100**	455.7801	403.7449	**100**	413.7785						
	445.7369	65.2	457.7771	405.7420	65.0	415.7755						
	447.7339	26.7	459.7742	407.7390	26.5	417.7726						

PCTs = polychlorinated terphenyls
PCBs = polychlorinated biphenyls
PCHBs = polychlorinated hydroxybiphenyls
PCDDs = polychlorinated dibenzo-p-dioxins
PCDFs = polychlorinated dibenzofurans
PCNs = polychlorinated naphthalenes
CBs = chlorobenzenes
CPs = chlorophenols

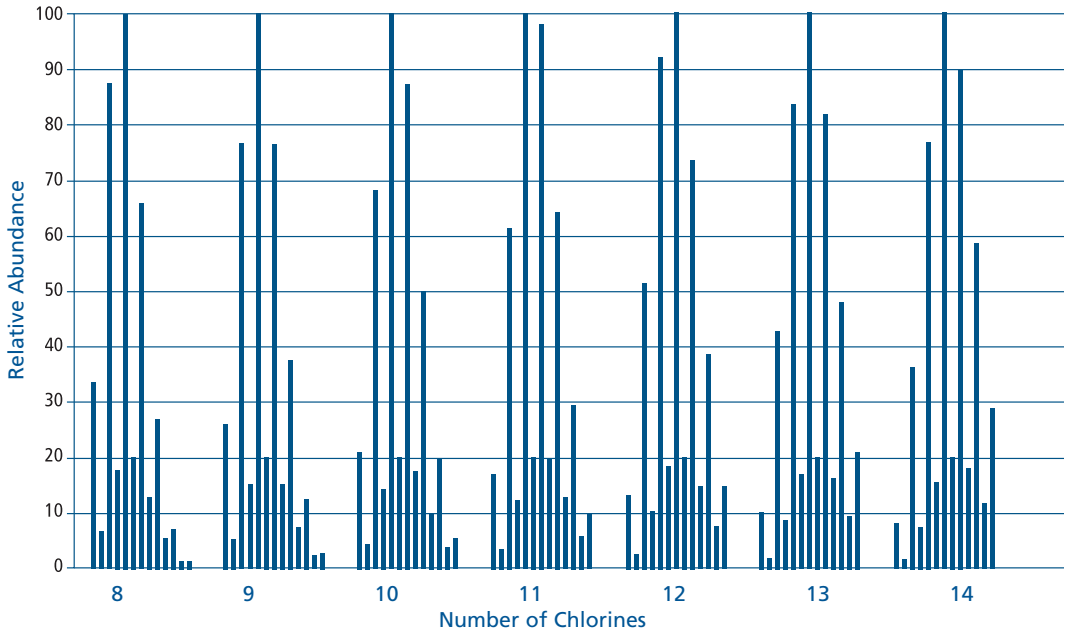
Accurate masses: ^{12}C=12.000000, ^{13}C=13.003355, ^{1}H=1.007825, ^{35}Cl= 34.968853, ^{37}Cl=36.965903, ^{16}O=15.994915

Relative abundances of isotopes were determined using the method described in: Pretsch,Clerc,Seibl,Simon,
Tables of Spectral Data for Structure Determination of Organic Compounds, Springer-Verlag, 1983.
The following natural isotopic abundances were used in all calculations: ^{12}C=98.89%, ^{13}C=1.11%, ^{1}H=99.985%, ^{2}H=0.015%, ^{35}Cl=75.53%, ^{37}Cl=24.47%, ^{16}O=99.759%, ^{17}O=0.037%, ^{18}O=0.204%.

MOLECULAR ION CLUSTERS FOR CHLORINATED AROMATIC HYDROCARBONS

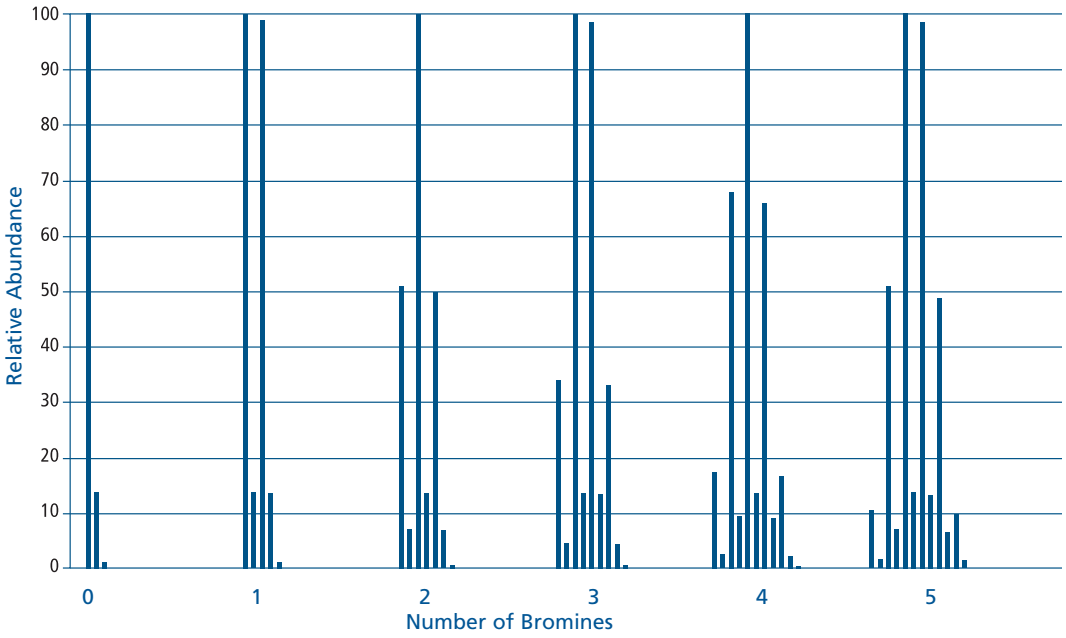


MOLECULAR ION CLUSTERS FOR CHLORINATED AROMATIC HYDROCARBONS

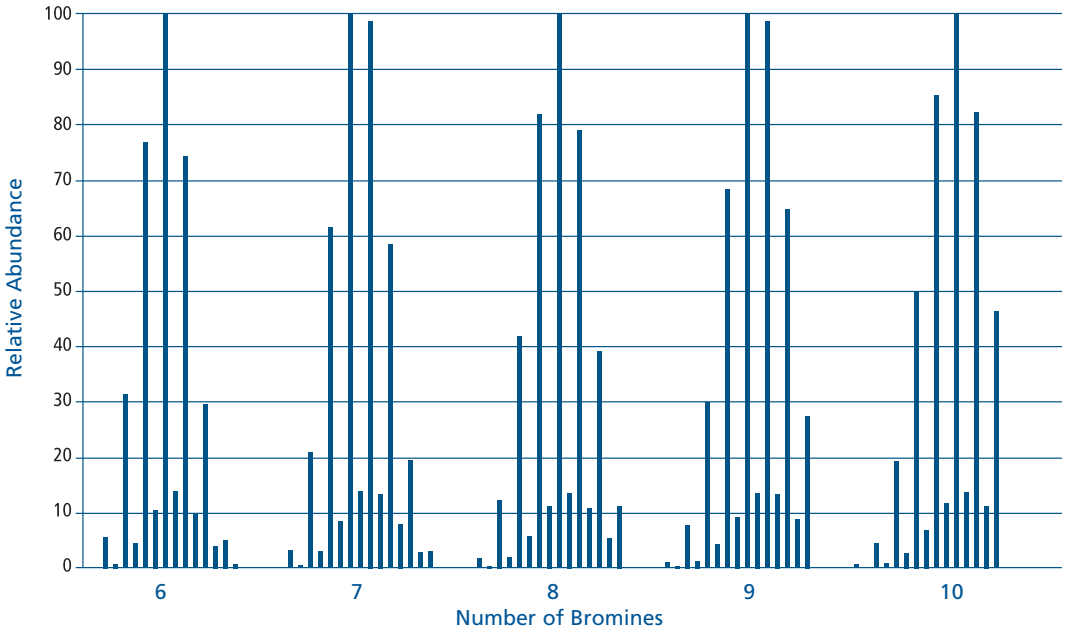


Ions shown are M, M+1, M+2, M+3, M+4, M+5, M+6, M+7, M+8, M+9, M+10, M+11, M+12, and are representative of chlorinated terphenyls ($C_{18}H_{14-n}Cl_n$)

MOLECULAR ION CLUSTERS FOR BROMINATED AROMATIC HYDROCARBONS



MOLECULAR ION CLUSTERS FOR BROMINATED AROMATIC HYDROCARBONS



Ions shown are M, M+1, M+2, M+3, M+4, M+5, M+6, M+7, M+8, M+9, M+10, M+11, M+12, M+13, M+14 and are representative of brominated diphenyl ethers ($C_{12}H_{10-n}Br_nO$)

EXACT MASS & RELATIVE ION ABUNDANCE OF SELECTED BROMINATED AROMATIC HYDROCARBONS

	PBBs			PBDEs			PBDDs			PBDFs		
	$^{12}C_{12}$	$C_{12}H_{10-n}Br_n$	$^{13}C_{12}$	$^{12}C_{12}$	$C_{12}H_{10-n}Br_nO$	$^{13}C_{12}$	$^{12}C_{12}$	$C_{12}H_{8-n}Br_nO_2$	$^{13}C_{12}$	$^{12}C_{12}$	$C_{12}H_{8-n}Br_nO$	$^{13}C_{12}$
# of Br	Exact Mass	Relative Abundance	Exact Mass	Exact Mass	Relative Abundance	Exact Mass	Exact Mass	Relative Abundance	Exact Mass	Exact Mass	Relative Abundance	Exact Mass
0	154.0783	**100**	166.1185	170.0732	**100**	182.1134	184.0524	**100**	196.0927	168.0575	**100**	180.0978
1	231.9887	**100**	244.0290	247.9836	**100**	260.0239	261.9629	**100**	274.0032	245.9680	**100**	258.0083
	233.9867	98.7	246.0270	249.9816	98.9	262.0219	263.9609	99.1	276.0012	247.9660	98.9	260.0063
2	309.8992	50.9	321.9395	325.8941	50.8	337.9344	339.8734	50.8	351.9136	323.8785	50.8	335.9187
	311.8972	**100**	323.9375	327.8921	**100**	339.9324	341.8714	**100**	353.9116	325.8765	**100**	337.9167
	313.8952	49.6	325.9355	329.8901	49.7	341.9304	343.8694	49.9	355.9096	327.8745	49.7	339.9147
3	387.8097	34.0	399.8499	403.8046	33.9	415.8449	417.7839	33.9	429.8241	401.7889	33.9	413.8292
	389.8077	**100**	401.8479	405.8026	**100**	417.8429	419.7819	**100**	431.8221	403.7869	**100**	415.8272
	391.8057	98.4	403.8459	407.8006	98.6	419.8409	421.7799	98.7	433.8201	405.7849	98.6	417.8252
	393.8037	32.7	405.8439	409.7986	32.8	421.8389	423.7779	33.0	435.8181	407.7829	32.8	419.8232
4	465.7202	17.3	477.7604	481.7151	17.3	493.7553	495.6943	17.3	507.7346	479.6994	17.3	491.7397
	467.7182	67.9	479.7584	483.7131	67.8	495.7533	497.6923	67.8	509.7326	481.6974	67.8	493.7377
	469.7162	**100**	481.7564	485.7111	**100**	497.7513	499.6903	**100**	511.7306	483.6954	**100**	495.7357
	471.7142	65.7	483.7544	487.7091	65.8	499.7493	501.6883	65.9	513.7286	485.6934	65.8	497.7337
	473.7122	16.4	485.7524	489.7071	16.5	501.7473	503.6863	16.6	515.7266	487.6914	16.5	499.7317
5	543.6306	10.4	555.6709	559.6255	10.4	571.6658	573.6048	10.4	585.6451	557.6099	10.4	569.6502
	545.6286	51.0	557.6689	561.6235	50.9	573.6638	575.6028	50.9	587.6431	559.6079	50.9	571.6482
	547.6266	**100**	559.6669	563.6215	**100**	575.6618	577.6008	**100**	589.6411	561.6059	**100**	573.6462
	549.6246	98.3	561.6649	565.6195	98.4	577.6598	579.5988	98.5	591.6391	563.6039	98.4	575.6442
	551.6226	48.5	563.6629	567.6175	48.7	579.6578	581.5968	48.8	593.6371	565.6019	48.7	577.6422
	553.6206	9.7	565.6609	569.6155	9.8	581.6558	583.5948	9.9	595.6351	567.5999	9.8	579.6402
6	621.5411	5.3	633.5814	637.5360	5.3	649.5763	651.5153	5.3	663.5555	635.5204	5.3	647.5606
	623.5391	31.2	635.5794	639.5340	31.1	651.5743	653.5133	31.1	665.5535	637.5184	31.1	649.5586
	625.5371	76.4	637.5774	641.5320	76.4	653.5723	655.5113	76.3	667.5515	639.5164	76.4	651.5566
	627.5351	**100**	639.5754	643.5300	**100**	655.5703	657.5093	**100**	669.5495	641.5144	**100**	653.5546
	629.5331	73.8	641.5734	645.5280	73.9	657.5683	659.5073	73.9	671.5475	643.5124	73.9	655.5526
	631.5311	29.2	643.5714	647.5260	29.3	659.5663	661.5053	29.4	673.5455	645.5104	29.3	657.5506
7	699.4516	3.0	711.4918	715.4465	3.0	727.4868	729.4258	3.0	741.4660	713.4308	3.0	725.4711
	701.4496	20.8	713.4898	717.4445	20.8	729.4848	731.4238	20.8	743.4640	715.4288	20.8	727.4691
	703.4476	61.2	715.4878	719.4425	61.1	731.4828	733.4218	61.1	745.4620	717.4268	61.1	729.4671
	705.4456	**100**	717.4858	721.4405	**100**	733.4808	735.4198	**100**	747.4600	719.4248	**100**	731.4651
	707.4436	98.2	719.4838	723.4385	98.3	735.4788	737.4178	98.4	749.4580	721.4228	98.3	733.4631
	709.4416	58.0	721.4818	725.4365	58.1	737.4768	739.4158	58.2	751.4560	723.4208	58.1	735.4611
8	777.3621	1.5	789.4023	793.3570	1.5	805.3972	807.3362	1.5	819.3765	791.3413	1.5	803.3816
	779.3601	12.1	791.4003	795.3550	12.1	807.3952	809.3342	12.1	821.3745	793.3393	12.1	805.3796
	781.3581	41.6	793.3983	797.3530	41.5	809.3932	811.3322	41.5	823.3725	795.3373	41.5	807.3776
	783.3561	81.5	795.3963	799.3510	81.5	811.3912	813.3302	81.4	825.3705	797.3353	81.5	809.3756
	785.3541	**100**	797.3943	801.3490	**100**	813.3892	815.3282	**100**	827.3685	799.3333	**100**	811.3736
	787.3521	78.6	799.3923	803.3470	78.7	815.3872	817.3262	78.7	829.3665	801.3313	78.7	813.3716
	789.3501	38.7	801.3903	805.3450	38.8	817.3852	819.3242	38.9	831.3645	803.3293	38.8	815.3696
9	855.2725	0.9	867.3128	871.2674	0.9	883.3077						
	857.2705	7.6	869.3108	873.2654	7.6	885.3057						
	859.2685	29.7	871.3088	875.2634	29.7	887.3037						
	861.2665	68.0	873.3068	877.2614	68.0	889.3017						
	863.2645	**100**	875.3048	879.2594	**100**	891.2997						
	865.2625	98.1	877.3028	881.2574	98.2	893.2977						
	867.2605	64.3	879.3008	883.2554	64.4	895.2957						
	869.2585	27.2	881.2988	885.2534	27.3	897.2937						
10	933.1830	0.4	945.2233	949.1779	0.4	961.2182						
	935.1810	4.3	947.2213	951.1759	4.3	963.2162						
	937.1790	19.0	949.2193	953.1739	18.9	965.2142						
	939.1770	49.5	951.2173	955.1719	49.5	967.2122						
	941.1750	85.0	953.2153	957.1699	84.9	969.2102						
	943.1730	**100**	955.2133	959.1679	**100**	971.2082						
	945.1710	81.8	957.2113	961.1659	81.9	973.2062						
	947.1690	46.0	959.2093	963.1639	46.0	975.2042						
	949.1670	17.0	961.2073	965.1619	17.1	977.2022						

PBBs = polybrominated biphenyls
PBDEs = polybrominated diphenyl ethers
PBDDs = polybrominated dibenzo-p-dioxins
PBDFs = polybrominated dibenzofurans

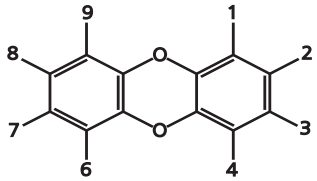
Accurate masses: ^{12}C=12.000000, ^{13}C=13.003355, ^{1}H=1.007825, ^{79}Br= 78.918300, ^{81}Br=80.916300, ^{16}O=15.994915

Relative abundances of isotopes were determined using the method described in: Pretsch,Clerc,Seibl,Simon, Tables of Spectral Data for Structure Determination of Organic Compounds, Springer-Verlag, 1983.
The following natural isotopic abundances were used in all calculations: ^{12}C=98.89%, ^{13}C=1.11%, ^{1}H=99.985%, ^{2}H=0.015%, ^{79}Br=50.54%, ^{81}Br=49.46%, ^{16}O=99.759%, ^{17}O=0.037%, ^{18}O=0.204%.

SYSTEMATIC NUMBERING OF CHLORINATED DIBENZO-p-DIOXINS

ID Number*	Congener	CAS Number
1	1-Chlorodibenzo-p-dioxin	39227-53-7
2	2-Chlorodibenzo-p-dioxin	39227-54-8
3	1,2-Dichlorodibenzo-p-dioxin	54536-18-4
4	1,3-Dichlorodibenzo-p-dioxin	50585-39-2
5	1,4-Dichlorodibenzo-p-dioxin	54536-19-5
6	1,6-Dichlorodibenzo-p-dioxin	58178-38-0
7	1,7-Dichlorodibenzo-p-dioxin	82291-26-7
8	1,8-Dichlorodibenzo-p-dioxin	82291-27-8
9	1,9-Dichlorodibenzo-p-dioxin	82291-28-9
10	2,3-Dichlorodibenzo-p-dioxin	29446-15-9
11	2,7-Dichlorodibenzo-p-dioxin	33857-26-0
12	2,8-Dichlorodibenzo-p-dioxin	38964-22-6
13	1,2,3-Trichlorodibenzo-p-dioxin	54536-17-3
14	1,2,4-Trichlorodibenzo-p-dioxin	39227-58-2
15	1,2,6-Trichlorodibenzo-p-dioxin	82291-29-0
16	1,2,7-Trichlorodibenzo-p-dioxin	82291-30-3
17	1,2,8-Trichlorodibenzo-p-dioxin	82291-31-4
18	1,2,9-Trichlorodibenzo-p-dioxin	82291-32-5
19	1,3,6-Trichlorodibenzo-p-dioxin	82291-33-6
20	1,3,7-Trichlorodibenzo-p-dioxin	67028-17-5
21	1,3,8-Trichlorodibenzo-p-dioxin	82306-61-4
22	1,3,9-Trichlorodibenzo-p-dioxin	82306-62-5
23	1,4,6-Trichlorodibenzo-p-dioxin	82306-63-6
24	1,4,7-Trichlorodibenzo-p-dioxin	82306-64-7
25	1,7,8-Trichlorodibenzo-p-dioxin *(or 2,3,9-Tri)	82306-65-8
26	2,3,7-Trichlorodibenzo-p-dioxin	33857-28-2
27	1,2,3,4-Tetrachlorodibenzo-p-dioxin	30746-58-8
28	1,2,3,6-Tetrachlorodibenzo-p-dioxin	71669-25-5
29	1,2,3,7-Tetrachlorodibenzo-p-dioxin	67028-18-6
30	1,2,3,8-Tetrachlorodibenzo-p-dioxin	53555-02-5
31	1,2,3,9-Tetrachlorodibenzo-p-dioxin	71669-26-6
32	1,2,4,6-Tetrachlorodibenzo-p-dioxin	71669-27-7

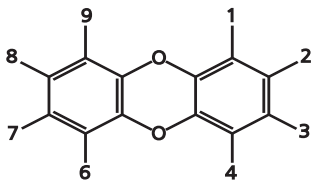
* Ballschmitter et. al.



SYSTEMATIC NUMBERING OF CHLORINATED DIBENZO-p-DIOXINS

ID Number*	Congener	CAS Number
33	1,2,4,7-Tetrachlorodibenzo-p-dioxin	71669-28-8
34	1,2,4,8-Tetrachlorodibenzo-p-dioxin	71669-29-9
35	1,2,4,9-Tetrachlorodibenzo-p-dioxin	71665-99-1
36	1,2,6,7-Tetrachlorodibenzo-p-dioxin	40581-90-6
37	1,2,6,8-Tetrachlorodibenzo-p-dioxin	67323-56-2
38	1,2,6,9-Tetrachlorodibenzo-p-dioxin	40581-91-7
39	1,2,7,8-Tetrachlorodibenzo-p-dioxin	34816-53-0
40	1,2,7,9-Tetrachlorodibenzo-p-dioxin	71669-23-3
41	1,2,8,9-Tetrachlorodibenzo-p-dioxin	62470-54-6
42	1,3,6,8-Tetrachlorodibenzo-p-dioxin	33423-92-6
43	1,3,6,9-Tetrachlorodibenzo-p-dioxin	71669-24-4
44	1,3,7,8-Tetrachlorodibenzo-p-dioxin	50585-46-1
45	1,3,7,9-Tetrachlorodibenzo-p-dioxin	62470-53-5
46	1,4,6,9-Tetrachlorodibenzo-p-dioxin	40581-93-9
47	1,4,7,8-Tetrachlorodibenzo-p-dioxin	40581-94-0
48	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6
49	1,2,3,4,6-Pentachlorodibenzo-p-dioxin	67028-19-7
50	1,2,3,4,7-Pentachlorodibenzo-p-dioxin	39227-61-7
51	1,2,3,6,7-Pentachlorodibenzo-p-dioxin	71925-15-0
52	1,2,3,6,8-Pentachlorodibenzo-p-dioxin	71925-16-1
53	1,2,3,6,9-Pentachlorodibenzo-p-dioxin	82291-34-7
54	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4
55	1,2,3,7,9-Pentachlorodibenzo-p-dioxin	71925-17-2
56	1,2,3,8,9-Pentachlorodibenzo-p-dioxin	71925-18-3
57	1,2,4,6,7-Pentachlorodibenzo-p-dioxin	82291-35-8
58	1,2,4,6,8-Pentachlorodibenzo-p-dioxin	71998-76-0
59	1,2,4,6,9-Pentachlorodibenzo-p-dioxin	82291-36-9
60	1,2,4,7,8-Pentachlorodibenzo-p-dioxin	58802-08-7
61	1,2,4,7,9-Pentachlorodibenzo-p-dioxin	82291-37-0
62	1,2,4,8,9-Pentachlorodibenzo-p-dioxin	82291-38-1
63	1,2,3,4,6,7-Hexachlorodibenzo-p-dioxin	58200-66-1
64	1,2,3,4,6,8-Hexachlorodibenzo-p-dioxin	58200-67-2
65	1,2,3,4,6,9-Hexachlorodibenzo-p-dioxin	58200-68-3

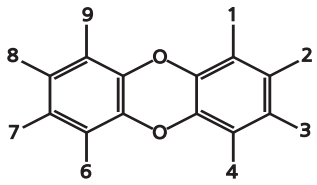
* Ballschmitter et. al.



SYSTEMATIC NUMBERING OF CHLORINATED DIBENZO-p-DIOXINS

ID Number*	Congener	CAS Number
66	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6
67	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7
68	1,2,3,6,7,9-Hexachlorodibenzo-p-dioxin	64461-98-9
69	1,2,3,6,8,9-Hexachlorodibenzo-p-dioxin	58200-69-4
70	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3
71	1,2,4,6,7,9-Hexachlorodibenzo-p-dioxin	39227-62-8
72	1,2,4,6,8,9-Hexachlorodibenzo-p-dioxin	58802-09-8
73	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9
74	1,2,3,4,6,7,9-Heptachlorodibenzo-p-dioxin	58200-70-7
75	Octachlorodibenzo-p-dioxin	3268-87-9

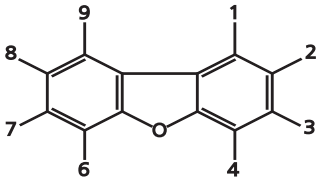
* Ballschmitter et. al.



SYSTEMATIC NUMBERING OF CHLORINATED DIBENZOFURANS

ID Number*	Congener	CAS Number
1	1-Chlorodibenzofuran	84761-86-4
2	2-Chlorodibenzofuran	51230-49-0
3	3-Chlorodibenzofuran	25074-67-3
4	4-Chlorodibenzofuran	74992-96-4
5	1,2-Dichlorodibenzofuran	64126-85-8
6	1,3-Dichlorodibenzofuran	94538-00-8
7	1,4-Dichlorodibenzofuran	94538-01-9
8	1,6-Dichlorodibenzofuran	74992-97-5
9	1,7-Dichlorodibenzofuran	94538-02-0
10	1,8-Dichlorodibenzofuran	81638-37-1
11	1,9-Dichlorodibenzofuran	70648-14-5

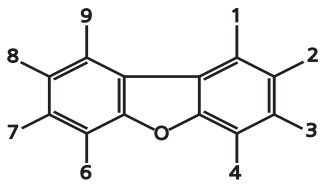
* Ballschmitter et. al.



SYSTEMATIC NUMBERING OF CHLORINATED DIBENZOFURANS

ID Number*	Congener	CAS Number
12	2,3-Dichlorodibenzofuran	64126-86-9
13	2,4-Dichlorodibenzofuran	
14	2,6-Dichlorodibenzofuran	60390-27-4
15	2,7-Dichlorodibenzofuran	74992-98-6
16	2,8-Dichlorodibenzofuran	5409-83-6
17	3,4-Dichlorodibenzofuran	94570-83-9
18	3,6-Dichlorodibenzofuran	74918-40-4
19	3,7-Dichlorodibenzofuran	58802-21-4
20	4,6-Dichlorodibenzofuran	
21	1,2,3-Trichlorodibenzofuran	83636-47-9
22	1,2,4-Trichlorodibenzofuran	24478-73-7
23	1,2,6-Trichlorodibenzofuran	64560-15-2
24	1,2,7-Trichlorodibenzofuran	83704-37-4
25	1,2,8-Trichlorodibenzofuran	83704-34-1
26	1,2,9-Trichlorodibenzofuran	83704-38-5
27	1,3,4-Trichlorodibenzofuran	82911-61-3
28	1,3,6-Trichlorodibenzofuran	83704-39-6
29	1,3,7-Trichlorodibenzofuran	64560-16-3
30	1,3,8-Trichlorodibenzofuran	76621-12-0
31	1,3,9-Trichlorodibenzofuran	83704-40-9
32	1,4,6-Trichlorodibenzofuran	82911-60-2
33	1,4,7-Trichlorodibenzofuran	83704-41-0
34	1,4,8-Trichlorodibenzofuran	64560-14-1
35	1,4,9-Trichlorodibenzofuran	70648-13-4
36	1,6,7-Trichlorodibenzofuran	83704-46-5
37	1,6,8-Trichlorodibenzofuran	82911-59-9
38	1,7,8-Trichlorodibenzofuran	58802-18-9
39	2,3,4-Trichlorodibenzofuran	57117-34-7
40	2,3,6-Trichlorodibenzofuran	57117-33-6
41	2,3,7-Trichlorodibenzofuran	58802-17-8
42	2,3,8-Trichlorodibenzofuran	57117-32-5
43	2,4,6-Trichlorodibenzofuran	58802-14-5
44	2,4,7-Trichlorodibenzofuran	83704-42-1
45	2,4,8-Trichlorodibenzofuran	54589-71-8

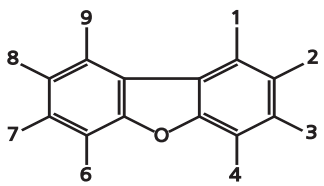
* Ballschmitter et. al.



SYSTEMATIC NUMBERING OF CHLORINATED DIBENZOFURANS

ID Number*	Congener	CAS Number
46	2,6,7-Trichlorodibenzofuran	83704-45-4
47	3,4,6-Trichlorodibenzofuran	83704-43-2
48	3,4,7-Trichlorodibenzofuran	83704-44-3
49	1,2,3,4-Tetrachlorodibenzofuran	24478-72-6
50	1,2,3,6-Tetrachlorodibenzofuran	83704-21-6
51	1,2,3,7-Tetrachlorodibenzofuran	83704-22-7
52	1,2,3,8-Tetrachlorodibenzofuran	62615-08-1
53	1,2,3,9-Tetrachlorodibenzofuran	83704-23-8
54	1,2,4,6-Tetrachlorodibenzofuran	71998-73-7
55	1,2,4,7-Tetrachlorodibenzofuran	83719-40-8
56	1,2,4,8-Tetrachlorodibenzofuran	64126-87-0
57	1,2,4,9-Tetrachlorodibenzofuran	83704-24-9
58	1,2,6,7-Tetrachlorodibenzofuran	83704-25-0
59	1,2,6,8-Tetrachlorodibenzofuran	83710-07-0
60	1,2,6,9-Tetrachlorodibenzofuran	70648-18-9
61	1,2,7,8-Tetrachlorodibenzofuran	58802-20-3
62	1,2,7,9-Tetrachlorodibenzofuran	83704-26-1
63	1,2,8,9-Tetrachlorodibenzofuran	70648-22-5
64	1,3,4,6-Tetrachlorodibenzofuran	83704-27-2
65	1,3,4,7-Tetrachlorodibenzofuran	70648-16-7
66	1,3,4,8-Tetrachlorodibenzofuran	92341-04-3
67	1,3,4,9-Tetrachlorodibenzofuran	83704-28-3
68	1,3,6,7-Tetrachlorodibenzofuran	57117-36-9
69	1,3,6,8-Tetrachlorodibenzofuran	71998-72-6
70	1,3,6,9-Tetrachlorodibenzofuran	83690-98-6
71	1,3,7,8-Tetrachlorodibenzofuran	57117-35-8
72	1,3,7,9-Tetrachlorodibenzofuran	64560-17-4
73	1,4,6,7-Tetrachlorodibenzofuran	66794-59-0
74	1,4,6,8-Tetrachlorodibenzofuran	82911-58-8
75	1,4,6,9-Tetrachlorodibenzofuran	70648-19-0
76	1,4,7,8-Tetrachlorodibenzofuran	83704-29-4
77	1,6,7,8-Tetrachlorodibenzofuran	83704-33-0
78	2,3,4,6-Tetrachlorodibenzofuran	83704-30-7
79	2,3,4,7-Tetrachlorodibenzofuran	83704-31-8

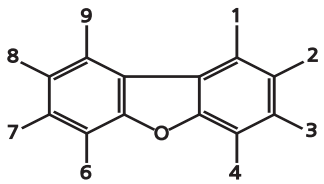
* Ballschmitter et. al.



SYSTEMATIC NUMBERING OF CHLORINATED DIBENZOFURANS

ID Number*	Congener	CAS Number
80	2,3,4,8-Tetrachlorodibenzofuran	83704-32-9
81	2,3,6,7-Tetrachlorodibenzofuran	57117-39-2
82	2,3,6,8-Tetrachlorodibenzofuran	57117-37-0
83	2,3,7,8-Tetrachlorodibenzofuran	51207-31-9
84	2,4,6,7-Tetrachlorodibenzofuran	57117-38-1
85	2,4,6,8-Tetrachlorodibenzofuran	58802-19-0
86	3,4,6,7-Tetrachlorodibenzofuran	57117-40-6
87	1,2,3,4,6-Pentachlorodibenzofuran	83704-47-6
88	1,2,3,4,7-Pentachlorodibenzofuran	83704-48-7
89	1,2,3,4,8-Pentachlorodibenzofuran	67517-48-0
90	1,2,3,4,9-Pentachlorodibenzofuran	83704-49-8
91	1,2,3,6,7-Pentachlorodibenzofuran	57117-42-7
92	1,2,3,6,8-Pentachlorodibenzofuran	83704-51-2
93	1,2,3,6,9-Pentachlorodibenzofuran	83704-52-3
94	1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6
95	1,2,3,7,9-Pentachlorodibenzofuran	83704-53-4
96	1,2,3,8,9-Pentachlorodibenzofuran	83704-54-5
97	1,2,4,6,7-Pentachlorodibenzofuran	83704-50-1
98	1,2,4,6,8-Pentachlorodibenzofuran	69698-57-3
99	1,2,4,6,9-Pentachlorodibenzofuran	70648-24-7
100	1,2,4,7,8-Pentachlorodibenzofuran	58802-15-6
101	1,2,4,7,9-Pentachlorodibenzofuran	71998-74-8
102	1,2,4,8,9-Pentachlorodibenzofuran	70648-23-6
103	1,2,6,7,8-Pentachlorodibenzofuran	69433-00-7
104	1,2,6,7,9-Pentachlorodibenzofuran	70872-82-1
105	1,3,4,6,7-Pentachlorodibenzofuran	83704-36-3
106	1,3,4,6,8-Pentachlorodibenzofuran	83704-55-6
107	1,3,4,6,9-Pentachlorodibenzofuran	70648-15-6
108	1,3,4,7,8-Pentachlorodibenzofuran	58802-16-7
109	1,3,4,7,9-Pentachlorodibenzofuran	70648-20-3
110	1,3,6,7,8-Pentachlorodibenzofuran	70648-21-4
111	1,4,6,7,8-Pentachlorodibenzofuran	83704-35-2
112	2,3,4,6,7-Pentachlorodibenzofuran	57117-43-8
113	2,3,4,6,8-Pentachlorodibenzofuran	67481-22-5

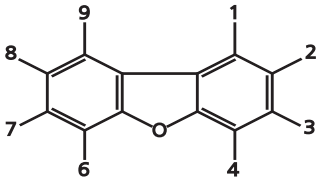
* Ballschmitter et. al.



SYSTEMATIC NUMBERING OF CHLORINATED DIBENZOFURANS

ID Number*	Congener	CAS Number
114	2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4
115	1,2,3,4,6,7-Hexachlorodibenzofuran	79060-60-9
116	1,2,3,4,6,8-Hexachlorodibenzofuran	69698-60-8
117	1,2,3,4,6,9-Hexachlorodibenzofuran	91538-83-9
118	1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9
119	1,2,3,4,7,9-Hexachlorodibenzofuran	91538-84-0
120	1,2,3,4,8,9-Hexachlorodibenzofuran	92341-07-6
121	1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9
122	1,2,3,6,7,9-Hexachlorodibenzofuran	92341-06-5
123	1,2,3,6,8,9-Hexachlorodibenzofuran	
124	1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9
125	1,2,4,6,7,8-Hexachlorodibenzofuran	67562-40-7
126	1,2,4,6,7,9-Hexachlorodibenzofuran	75627-02-0
127	1,2,4,6,8,9-Hexachlorodibenzofuran	69698-59-5
128	1,3,4,6,7,8-Hexachlorodibenzofuran	71998-75-9
129	1,3,4,6,7,9-Hexachlorodibenzofuran	92341-05-4
130	2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5
131	1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4
132	1,2,3,4,6,7,9-Heptachlorodibenzofuran	70648-25-8
133	1,2,3,4,6,8,9-Heptachlorodibenzofuran	69698-58-4
134	1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7
135	Octachlorodibenzofuran	39001-02-0

* Ballschmitter et. al.



SYSTEMATIC NUMBERING OF CHLORINATED BIPHENYLS

ID Number*	Congener	CAS Number
1	2-Chlorobiphenyl	2051-60-7
2	3-Chlorobiphenyl	2051-61-8
3	4-Chlorobiphenyl	2051-62-9
4	2,2'-Dichlorobiphenyl	13029-08-8
5	2,3-Dichlorobiphenyl	16605-91-7
6	2,3'-Dichlorobiphenyl	25569-80-6
7	2,4-Dichlorobiphenyl	33284-50-3
8	2,4'-Dichlorobiphenyl	34883-43-7
9	2,5-Dichlorobiphenyl	34883-39-1
10	2,6-Dichlorobiphenyl	33146-45-1
11	3,3'-Dichlorobiphenyl	2050-67-1
12	3,4-Dichlorobiphenyl	2974-92-7
13	3,4'-Dichlorobiphenyl	2974-90-5
14	3,5-Dichlorobiphenyl	34883-41-5
15	4,4'-Dichlorobiphenyl	2050-68-2
16	2,2',3-Trichlorobiphenyl	38444-78-9
17	2,2',4-Trichlorobiphenyl	37680-66-3
18	2,2',5-Trichlorobiphenyl	37680-65-2
19	2,2',6-Trichlorobiphenyl	38444-73-4
20	2,3,3'-Trichlorobiphenyl	38444-84-7
21	2,3,4-Trichlorobiphenyl	55702-46-0
22	2,3,4'-Trichlorobiphenyl	38444-85-8
23	2,3,5-Trichlorobiphenyl	55720-44-0
24	2,3,6-Trichlorobiphenyl	55702-45-9
25	2,3',4-Trichlorobiphenyl	55712-37-3
26	2,3',5-Trichlorobiphenyl	38444-81-4
27	2,3',6-Trichlorobiphenyl	38444-76-7
28	2,4,4'-Trichlorobiphenyl	7012-37-5
29	2,4,5-Trichlorobiphenyl	15862-07-4
30	2,4,6-Trichlorobiphenyl	35693-92-6
31	2,4',5-Trichlorobiphenyl	16606-02-3
32	2,4',6-Trichlorobiphenyl	38444-77-8
33	2',3,4-Trichlorobiphenyl	38444-86-9

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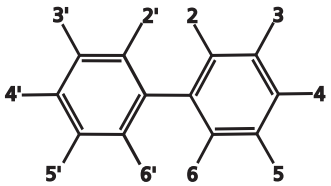
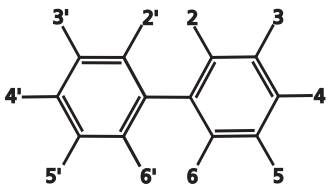


SYSTEMATIC NUMBERING OF CHLORINATED BIPHENYLS

ID Number*	Congener	CAS Number
34	2',3,5-Trichlorobiphenyl	37680-68-5
35	3,3',4-Trichlorobiphenyl	37680-69-6
36	3,3',5-Trichlorobiphenyl	38444-87-0
37	3,4,4'-Trichlorobiphenyl	38444-90-5
38	3,4,5-Trichlorobiphenyl	53555-66-1
39	3,4',5-Trichlorobiphenyl	38444-88-1
40	2,2',3,3'-Tetrachlorobiphenyl	38444-93-8
41	2,2',3,4-Tetrachlorobiphenyl	52663-59-9
42	2,2',3,4'-Tetrachlorobiphenyl	36559-22-5
43	2,2',3,5-Tetrachlorobiphenyl	70362-46-8
44	2,2',3,5'-Tetrachlorobiphenyl	41464-39-5
45	2,2',3,6-Tetrachlorobiphenyl	70362-45-7
46	2,2',3,6'-Tetrachlorobiphenyl	41464-47-5
47	2,2',4,4'-Tetrachlorobiphenyl	2437-79-8
48	2,2',4,5-Tetrachlorobiphenyl	70362-47-9
49	2,2',4,5'-Tetrachlorobiphenyl	41464-40-8
50	2,2',4,6-Tetrachlorobiphenyl	62796-65-0
51	2,2',4,6'-Tetrachlorobiphenyl	68194-04-7
52	2,2',5,5'-Tetrachlorobiphenyl	35693-99-3
53	2,2',5,6'-Tetrachlorobiphenyl	41464-41-9
54	2,2',6,6'-Tetrachlorobiphenyl	15968-05-5
55	2,3,3',4-Tetrachlorobiphenyl	74338-24-2
56	2,3,3',4'-Tetrachlorobiphenyl	41464-43-1
57	2,3,3',5-Tetrachlorobiphenyl	70424-67-8
58	2,3,3',5'-Tetrachlorobiphenyl	41464-49-7
59	2,3,3',6-Tetrachlorobiphenyl	74472-33-6
60	2,3,4,4'-Tetrachlorobiphenyl	33025-41-1
61	2,3,4,5-Tetrachlorobiphenyl	33284-53-6
62	2,3,4,6-Tetrachlorobiphenyl	54230-22-7
63	2,3,4',5-Tetrachlorobiphenyl	74472-34-7
64	2,3,4',6-Tetrachlorobiphenyl	52663-58-8
65	2,3,5,6-Tetrachlorobiphenyl	33284-54-7
66	2,3',4,4'-Tetrachlorobiphenyl	32598-10-0
67	2,3',4,5-Tetrachlorobiphenyl	73575-53-8

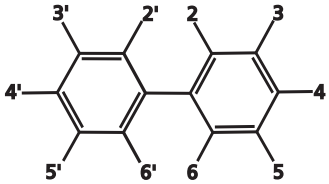
* IUPAC



SYSTEMATIC NUMBERING OF CHLORINATED BIPHENYLS

ID Number*	Congener	CAS Number
68	2,3',4,5'-Tetrachlorobiphenyl	73575-52-7
69	2,3',4,6-Tetrachlorobiphenyl	60233-24-1
70	2,3',4',5-Tetrachlorobiphenyl	32598-11-1
71	2,3',4',6-Tetrachlorobiphenyl	41464-46-4
72	2,3',5,5'-Tetrachlorobiphenyl	41464-42-0
73	2,3',5',6-Tetrachlorobiphenyl	74338-23-1
74	2,4,4',5-Tetrachlorobiphenyl	32690-93-0
75	2,4,4',6-Tetrachlorobiphenyl	32598-12-2
76	2',3,4,5-Tetrachlorobiphenyl	70362-48-0
77	3,3',4,4'-Tetrachlorobiphenyl	32598-13-3
78	3,3',4,5-Tetrachlorobiphenyl	70362-49-1
79	3,3',4,5'-Tetrachlorobiphenyl	41464-48-6
80	3,3',5,5'-Tetrachlorobiphenyl	33284-52-5
81	3,4,4',5-Tetrachlorobiphenyl	70362-50-4
82	2,2',3,3',4-Pentachlorobiphenyl	52663-62-4
83	2,2',3,3',5-Pentachlorobiphenyl	60145-20-2
84	2,2',3,3',6-Pentachlorobiphenyl	52663-60-2
85	2,2',3,4,4'-Pentachlorobiphenyl	65510-45-4
86	2,2',3,4,5-Pentachlorobiphenyl	55312-69-1
87	2,2',3,4,5'-Pentachlorobiphenyl	38380-02-8
88	2,2',3,4,6-Pentachlorobiphenyl	55215-17-3
89	2,2',3,4,6'-Pentachlorobiphenyl	73575-57-2
90	2,2',3,4',5-Pentachlorobiphenyl	68194-07-0
91	2,2',3,4',6-Pentachlorobiphenyl	68194-05-8
92	2,2',3,5,5'-Pentachlorobiphenyl	52663-61-3
93	2,2',3,5,6-Pentachlorobiphenyl	73575-56-1
94	2,2',3,5,6'-Pentachlorobiphenyl	73575-55-0
95	2,2',3,5',6-Pentachlorobiphenyl	38379-99-6
96	2,2',3,6,6'-Pentachlorobiphenyl	73575-54-9
97	2,2',3',4,5-Pentachlorobiphenyl	41464-51-1
98	2,2',3',4,6-Pentachlorobiphenyl	60233-25-2
99	2,2',4,4',5-Pentachlorobiphenyl	38380-01-7
100	2,2',4,4',6-Pentachlorobiphenyl	39485-83-1
101	2,2',4,5,5'-Pentachlorobiphenyl	37680-73-2

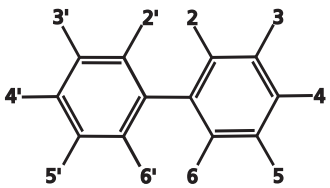
* IUPAC



SYSTEMATIC NUMBERING OF CHLORINATED BIPHENYLS

ID Number*	Congener	CAS Number
102	2,2',4,5,6'-Pentachlorobiphenyl	68194-06-9
103	2,2',4,5',6-Pentachlorobiphenyl	60145-21-3
104	2,2',4,6,6'-Pentachlorobiphenyl	56558-16-8
105	2,3,3',4,4'-Pentachlorobiphenyl	32598-14-4
106	2,3,3',4,5-Pentachlorobiphenyl	70424-69-0
107 (BZ #108)	2,3,3',4,5'-Pentachlorobiphenyl	70362-41-3
108 (BZ #109)	2,3,3',4,6-Pentachlorobiphenyl	74472-35-8
109 (BZ #107)	2,3,3',4',5-Pentachlorobiphenyl	70424-68-9
110	2,3,3',4',6-Pentachlorobiphenyl	38380-03-9
111	2,3,3',5,5'-Pentachlorobiphenyl	39635-32-0
112	2,3,3',5,6-Pentachlorobiphenyl	74472-36-9
113	2,3,3',5',6-Pentachlorobiphenyl	68194-10-5
114	2,3,4,4',5-Pentachlorobiphenyl	74472-37-0
115	2,3,4,4',6-Pentachlorobiphenyl	74472-38-1
116	2,3,4,5,6-Pentachlorobiphenyl	18259-05-7
117	2,3,4',5,6-Pentachlorobiphenyl	68194-11-6
118	2,3',4,4',5-Pentachlorobiphenyl	31508-00-6
119	2,3',4,4',6-Pentachlorobiphenyl	56558-17-9
120	2,3',4,5,5'-Pentachlorobiphenyl	68194-12-7
121	2,3',4,5',6-Pentachlorobiphenyl	56558-18-0
122	2',3,3',4,5-Pentachlorobiphenyl	76842-07-4
123	2',3,4,4',5-Pentachlorobiphenyl	65510-44-3
124	2',3,4,5,5'-Pentachlorobiphenyl	70424-70-3
125	2',3,4,5,6'-Pentachlorobiphenyl	74472-39-2
126	3,3',4,4',5-Pentachlorobiphenyl	57465-28-8
127	3,3',4,5,5'-Pentachlorobiphenyl	39635-33-1
128	2,2',3,3',4,4'-Hexachlorobiphenyl	38380-07-3
129	2,2',3,3',4,5-Hexachlorobiphenyl	55215-18-4
130	2,2',3,3',4,5'-Hexachlorobiphenyl	52663-66-8
131	2,2',3,3',4,6-Hexachlorobiphenyl	61798-70-7
132	2,2',3,3',4,6'-Hexachlorobiphenyl	38380-05-1
133	2,2',3,3',5,5'-Hexachlorobiphenyl	35694-04-3
134	2,2',3,3',5,6-Hexachlorobiphenyl	52704-70-8
135	2,2',3,3',5,6'-Hexachlorobiphenyl	52744-13-5

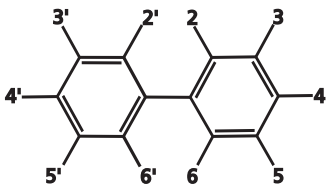
* IUPAC



SYSTEMATIC NUMBERING OF CHLORINATED BIPHENYLS

ID Number*	Congener	CAS Number
136	2,2',3,3',6,6'-Hexachlorobiphenyl	38411-22-2
137	2,2',3,4,4',5-Hexachlorobiphenyl	35694-06-5
138	2,2',3,4,4',5'-Hexachlorobiphenyl	35065-28-2
139	2,2',3,4,4',6-Hexachlorobiphenyl	56030-56-9
140	2,2',3,4,4',6'-Hexachlorobiphenyl	59291-64-4
141	2,2',3,4,5,5'-Hexachlorobiphenyl	52712-04-6
142	2,2',3,4,5,6-Hexachlorobiphenyl	41411-61-4
143	2,2',3,4,5,6'-Hexachlorobiphenyl	68194-15-0
144	2,2',3,4,5',6-Hexachlorobiphenyl	68194-14-9
145	2,2',3,4,6,6'-Hexachlorobiphenyl	74472-40-5
146	2,2',3,4',5,5'-Hexachlorobiphenyl	51908-16-8
147	2,2',3,4',5,6-Hexachlorobiphenyl	68194-13-8
148	2,2',3,4',5,6'-Hexachlorobiphenyl	74472-41-6
149	2,2',3,4',5',6-Hexachlorobiphenyl	38380-04-0
150	2,2',3,4',6,6'-Hexachlorobiphenyl	68194-08-1
151	2,2',3,5,5',6-Hexachlorobiphenyl	52663-63-5
152	2,2',3,5,6,6'-Hexachlorobiphenyl	68194-09-2
153	2,2',4,4',5,5'-Hexachlorobiphenyl	35065-27-1
154	2,2',4,4',5,6'-Hexachlorobiphenyl	60145-22-4
155	2,2',4,4',6,6'-Hexachlorobiphenyl	33979-03-2
156	2,3,3',4,4',5-Hexachlorobiphenyl	38380-08-4
157	2,3,3',4,4',5'-Hexachlorobiphenyl	69782-90-7
158	2,3,3',4,4',6-Hexachlorobiphenyl	74472-42-7
159	2,3,3',4,5,5'-Hexachlorobiphenyl	39635-35-3
160	2,3,3',4,5,6-Hexachlorobiphenyl	41411-62-5
161	2,3,3',4,5',6-Hexachlorobiphenyl	74472-43-8
162	2,3,3',4',5,5'-Hexachlorobiphenyl	39635-34-2
163	2,3,3',4',5,6-Hexachlorobiphenyl	74472-44-9
164	2,3,3',4',5',6-Hexachlorobiphenyl	74472-45-0
165	2,3,3',5,5',6-Hexachlorobiphenyl	74472-46-1
166	2,3,4,4',5,6-Hexachlorobiphenyl	41411-63-6
167	2,3',4,4',5,5'-Hexachlorobiphenyl	52663-72-6
168	2,3',4,4',5',6-Hexachlorobiphenyl	59291-65-5
169	3,3',4,4',5,5'-Hexachlorobiphenyl	32774-16-6

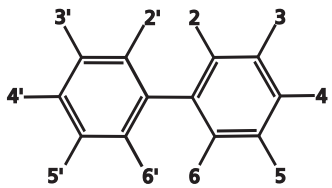
* IUPAC



SYSTEMATIC NUMBERING OF CHLORINATED BIPHENYLS

ID Number*	Congener	CAS Number
170	2,2',3,3',4,4',5-Heptachlorobiphenyl	35065-30-6
171	2,2',3,3',4,4',6-Heptachlorobiphenyl	52663-71-5
172	2,2',3,3',4,5,5'-Heptachlorobiphenyl	52663-74-8
173	2,2',3,3',4,5,6-Heptachlorobiphenyl	68194-16-1
174	2,2',3,3',4,5,6'-Heptachlorobiphenyl	38411-25-5
175	2,2',3,3',4,5',6-Heptachlorobiphenyl	40186-70-7
176	2,2',3,3',4,6,6'-Heptachlorobiphenyl	52663-65-7
177	2,2',3,3',4',5,6-Heptachlorobiphenyl	52663-70-4
178	2,2',3,3',5,5',6-Heptachlorobiphenyl	52663-67-9
179	2,2',3,3',5,6,6'-Heptachlorobiphenyl	52663-64-6
180	2,2',3,4,4',5,5'-Heptachlorobiphenyl	35065-29-3
181	2,2',3,4,4',5,6-Heptachlorobiphenyl	74472-47-2
182	2,2',3,4,4',5,6'-Heptachlorobiphenyl	60145-23-5
183	2,2',3,4,4',5',6-Heptachlorobiphenyl	52663-69-1
184	2,2',3,4,4',6,6'-Heptachlorobiphenyl	74472-48-3
185	2,2',3,4,5,5',6-Heptachlorobiphenyl	52712-05-7
186	2,2',3,4,5,6,6'-Heptachlorobiphenyl	74472-49-4
187	2,2',3,4',5,5',6-Heptachlorobiphenyl	52663-68-0
188	2,2',3,4',5,6,6'-Heptachlorobiphenyl	74487-85-7
189	2,3,3',4,4',5,5'-Heptachlorobiphenyl	39635-31-9
190	2,3,3',4,4',5,6-Heptachlorobiphenyl	41411-64-7
191	2,3,3',4,4',5',6-Heptachlorobiphenyl	74472-50-7
192	2,3,3',4,5,5',6-Heptachlorobiphenyl	74472-51-8
193	2,3,3',4',5,5',6-Heptachlorobiphenyl	69782-91-8
194	2,2',3,3',4,4',5,5'-Octachlorobiphenyl	35694-08-7
195	2,2',3,3',4,4',5,6-Octachlorobiphenyl	52663-78-2
196	2,2',3,3',4,4',5,6'-Octachlorobiphenyl	42740-50-1
197	2,2',3,3',4,4',6,6'-Octachlorobiphenyl	33091-17-7
198	2,2',3,3',4,5,5',6-Octachlorobiphenyl	68194-17-2
199 (BZ #201)	2,2',3,3',4,5,5',6'-Octachlorobiphenyl	52663-75-9
200 (BZ #199)	2,2',3,3',4,5,6,6'-Octachlorobiphenyl	52663-73-7
201 (BZ #200)	2,2',3,3',4,5',6,6'-Octachlorobiphenyl	40186-71-8
202	2,2',3,3',5,5',6,6'-Octachlorobiphenyl	2136-99-4
203	2,2',3,4,4',5,5',6-Octachlorobiphenyl	52663-76-0

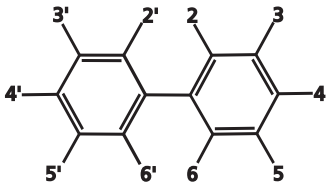
* IUPAC



SYSTEMATIC NUMBERING OF CHLORINATED BIPHENYLS

ID Number*	Congener	CAS Number
204	2,2',3,4,4',5,6,6'-Octachlorobiphenyl	74472-52-9
205	2,3,3',4,4',5,5',6-Octachlorobiphenyl	74472-53-0
206	2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	40186-72-9
207	2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	52663-79-3
208	2,2',3,3',4,5,5',6,6'-Nonachlorobiphenyl	52663-77-1
209	Decachlorobiphenyl	2051-24-3

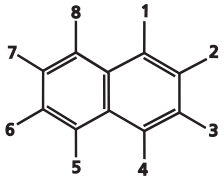
* IUPAC



SYSTEMATIC NUMBERING OF CHLORINATED NAPHTHALENES

ID Number*	Congener	CAS Number
1	1-Chloronaphthalene	90-13-1
2	2-Chloronaphthalene	91-58-7
3	1,2-Dichloronaphthalene	2050-69-3
4	1,3-Dichloronaphthalene	2198-75-6
5	1,4-Dichloronaphthalene	1825-31-6
6	1,5-Dichloronaphthalene	1825-30-5
7	1,6-Dichloronaphthalene	2050-72-8
8	1,7-Dichloronaphthalene	2050-73-9
9	1,8-Dichloronaphthalene	2050-74-0
10	2,3-Dichloronaphthalene	2050-75-1
11	2,6-Dichloronaphthalene	2065-70-5
12	2,7-Dichloronaphthalene	2198-77-8
13	1,2,3-Trichloronaphthalene	50402-52-3
14	1,2,4-Trichloronaphthalene	50402-51-2

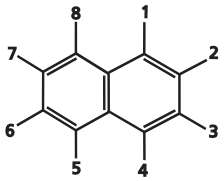
* Wiedmann and Ballschmitter



SYSTEMATIC NUMBERING OF CHLORINATED NAPHTHALENES

ID Number*	Congener	CAS Number
15	1,2,5-Trichloronaphthalene	55720-33-7
16	1,2,6-Trichloronaphthalene	51570-44-6
17	1,2,7-Trichloronaphthalene	55720-34-8
18	1,2,8-Trichloronaphthalene	55720-35-9
19	1,3,5-Trichloronaphthalene	51570-43-5
20	1,3,6-Trichloronaphthalene	55720-36-0
21	1,3,7-Trichloronaphthalene	55720-37-1
22	1,3,8-Trichloronaphthalene	55720-38-2
23	1,4,5-Trichloronaphthalene	2437-55-0
24	1,4,6-Trichloronaphthalene	2737-54-9
25	1,6,7-Trichloronaphthalene	55720-39-3
26	2,3,6-Trichloronaphthalene	55720-40-6
27	1,2,3,4-Tetrachloronaphthalene	20020-02-4
28	1,2,3,5-Tetrachloronaphthalene	53555-63-8
29	1,2,3,6-Tetrachloronaphthalene	
30	1,2,3,7-Tetrachloronaphthalene	55720-41-7
31	1,2,3,8-Tetrachloronaphthalene	149864-81-3
32	1,2,4,5-Tetrachloronaphthalene	6733-54-6
33	1,2,4,6-Tetrachloronaphthalene	51570-45-7
34	1,2,4,7-Tetrachloronaphthalene	67922-21-8
35	1,2,4,8-Tetrachloronaphthalene	6529-87-9
36	1,2,5,6-Tetrachloronaphthalene	67922-22-9
37	1,2,5,7-Tetrachloronaphthalene	67922-23-0
38	1,2,5,8-Tetrachloronaphthalene	149864-80-2
39	1,2,6,7-Tetrachloronaphthalene	149864-79-9
40	1,2,6,8-Tetrachloronaphthalene	67922-24-1
41	1,2,7,8-Tetrachloronaphthalene	149864-82-4
42	1,3,5,7-Tetrachloronaphthalene	53555-64-9
43	1,3,5,8-Tetrachloronaphthalene	31604-28-1
44	1,3,6,7-Tetrachloronaphthalene	55720-42-8
45	1,3,6,8-Tetrachloronaphthalene	150224-15-0
46	1,4,5,8-Tetrachloronaphthalene	3432-57-3
47	1,4,6,7-Tetrachloronaphthalene	55720-43-9
48	2,3,6,7-Tetrachloronaphthalene	

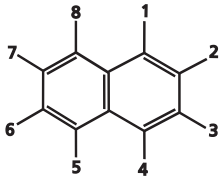
* Wiedmann and Ballschmitter



SYSTEMATIC NUMBERING OF CHLORINATED NAPHTHALENES

ID Number*	Congener	CAS Number
49	1,2,3,4,5-Pentachloronaphthalene	67922-25-2
50	1,2,3,4,6-Pentachloronaphthalene	67922-26-3
51	1,2,3,5,6-Pentachloronaphthalene	
52	1,2,3,5,7-Pentachloronaphthalene	53555-65-0
53	1,2,3,5,8-Pentachloronaphthalene	150224-24-1
54	1,2,3,6,7-Pentachloronaphthalene	150224-16-1
55	1,2,3,6,8-Pentachloronaphthalene	150224-23-0
56	1,2,3,7,8-Pentachloronaphthalene	150205-21-3
57	1,2,4,5,6-Pentachloronaphthalene	150224-20-7
58	1,2,4,5,7-Pentachloronaphthalene	150224-19-4
59	1,2,4,5,8-Pentachloronaphthalene	150224-25-2
60	1,2,4,6,7-Pentachloronaphthalene	150224-17-2
61	1,2,4,6,8-Pentachloronaphthalene	150224-22-9
62	1,2,4,7,8-Pentachloronaphthalene	
63	1,2,3,4,5,6-Hexachloronaphthalene	58877-88-6
64	1,2,3,4,5,7-Hexachloronaphthalene	67927-27-4
65	1,2,3,4,5,8-Hexachloronaphthalene	103426-93-3
66	1,2,3,4,6,7-Hexachloronaphthalene	103426-96-6
67	1,2,3,5,6,7-Hexachloronaphthalene	103426-97-7
68	1,2,3,5,6,8-Hexachloronaphthalene	103426-95-5
69	1,2,3,5,7,8-Hexachloronaphthalene	103426-94-4
70	1,2,3,6,7,8-Hexachloronaphthalene	
71	1,2,4,5,6,8-Hexachloronaphthalene	90948-28-0
72	1,2,4,5,7,8-Hexachloronaphthalene	103426-92-2
73	1,2,3,4,5,6,7-Heptachloronaphthalene	58863-14-2
74	1,2,3,4,5,6,8-Heptachloronaphthalene	58863-15-3
75	Octachloronaphthalene	2234-13-1

* Wiedmann and Ballschmitter



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