WELLINGTON LABORATORIES

Standards for Environmental Testing and Research

This document contains brochures of Wellington Reporters from the year **2012**. We have created a combined file that includes them all for the specified year:

- January 2012 – Mass-labelled Telomer Alcohols
- February 2012 – M2PFBA New Product
- April 2019 – New Polyaromatic Hydrocarbon (PAH) Calibration Set and Support Solutions
- July 2012 – New Native Pefluoroalkanesulfonates
- December 2012 – Halogenated Flame Retardants (EFRs)
- December 2012 – M2PFTeDA & M2PFHxDA New Products

Distributed By

Greyhound CHROMATOGRAPHY

Greyhound Chromatography and Allied Chemicals
6 Kelvin Park
Birkenhead
Merseyside, CH41 1LT

Tel: 0151 649 4000 Fax: 0151 649 4001
Email: info@greyhoundchrom.com
Web: https://www.greyhoundchrom.com

WELLINGTON Reporter
PRODUCT UPDATES FROM WELLINGTON LABORATORIES

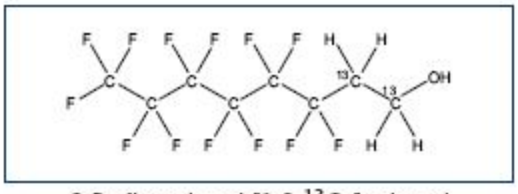
January 31, 2012

NEW PRODUCTS

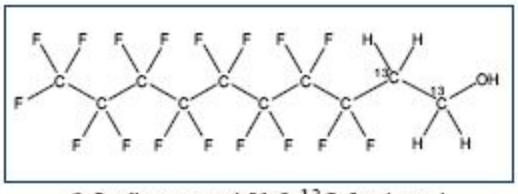
Mass-Labelled Telomer Alcohols

Telomer alcohols have been utilized as versatile precursors to a multitude of polyfluorinated compounds. In fact, they are reported as the major raw materials for surfactant and surface protection products and are most commonly used in the production of esters of acrylic, methacrylic, and phosphoric acids. As such, their presence in environmental samples can arise from the leaching of unreacted alcohols residually present in finished products or the degradation of these finished products in the environment or in the laboratory. The incorporation of strong acids or bases during the development of matrix specific extraction methods may lead to elevated levels of telomer alcohols in some samples if phosphate or carboxylic ester bonds present in a telomer alcohol derivative are being hydrolyzed.

In order to aid researchers in the analysis of these compounds, **Wellington** has synthesized two additional mass-labelled telomer alcohols, **M2FHET** and **M2FOET**, to complement our inventory of existing reference standards.



2-Perfluorohexyl-[1,2-$^{13}C_2$]-ethanol



2-Perfluorooctyl-[1,2-$^{13}C_2$]-ethanol

	Catalogue Number	Product (methanol)	Qty/Conc
	MFBET	2-Perfluorobutyl-[1,1,2,2-$^{2}H_4$]-ethanol	1.2 ml 50 µg/ml
	MFHET	2-Perfluorohexyl-[1,1-$^{2}H_2$]-[1,2-$^{13}C_2$]-ethanol	1.2 ml 50 µg/ml
NEW	M2FHET	2-Perfluorohexyl-[1,2-$^{13}C_2$]-ethanol	1.2 ml 50 µg/ml
	MFOET	2-Perfluorooctyl-[1,1-$^{2}H_2$]-[1,2-$^{13}C_2$]-ethanol	1.2 ml 50 µg/ml
NEW	M2FOET	2-Perfluorooctyl-[1,2-$^{13}C_2$]-ethanol	1.2 ml 50 µg/ml
	MFDET	2-Perfluorodecyl-[1,1-$^{2}H_2$]-[1,2-$^{13}C_2$]-ethanol	1.2 ml 50 µg/ml

The following list states the native telomer alcohols that are currently available from Wellington.

Native Telomer Alcohols

Catalogue Number	Product (methanol)	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

Please contact your local distributor or info@well-labs.com for pricing and delivery.

Visit our website (www.well-labs.com) for a complete listing of our new products.

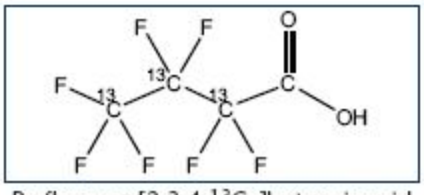
WELLINGTON Reporter
PRODUCT UPDATES FROM WELLINGTON LABORATORIES

February 27, 2012

NEW PRODUCT

M3PFBA

The presence of lower homologues of perfluorinated carboxylic acids in environmental samples may be the result of contamination from point sources or degradation of related perfluorinated compounds. Although it has been reported that perfluorobutanoic acid is not likely to bioaccumulate, its ubiquitous detection in the environment, as well as its persistent nature, may lead to a continuous exposure that results in adverse health effects. The monitoring of environmental levels of perfluorinated compounds can be challenging due to the wide range of complex matrices in which they are detected. The impact of using mass-labelled surrogates on the precision and accuracy of data is significant and applicable to any analytical method. With this in mind, **Wellington** has synthesized a new perfluorinated reference standard, **M3PFBA**, to supplement our existing MPFBA and PFBA standards.



Perfluoro-n-[2,3,4-$^{13}C_3$]butanoic acid

	Catalogue Number	Product (methanol)	Qty/Conc
	PFBA	Perfluoro-n-butanoic acid	1.2 ml 50 µg/ml
NEW	M3PFBA	Perfluoro-n-[2,3,4-$^{13}C_3$]butanoic acid	1.2 ml 50 µg/ml
	MPFBA	Perfluoro-n-[$^{13}C_4$]butanoic acid	1.2 ml 50 µg/ml

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WELLINGTON Reporter
PRODUCT UPDATES FROM WELLINGTON LABORATORIES

April 20, 2012

NEW CALIBRATION SET: PAH-CVS-B

New Polyaromatic Hydrocarbon (PAH) Calibration Set and Support Solutions

Wellington currently offers **PAH-CVS-A** and **L429-CVS** as ready to use calibration sets for the HRGC/HRMS analysis of polyaromatic hydrocarbons (PAHs). **PAH-CVS-B** is being introduced to complement our existing PAH calibration sets and, in order to better suit the needs of our customers, this calibration set contains an increased number and selection of native PAHs (including benzo[*c*]fluorene).

Summarized in the table below are the individual PAHs to be analyzed according to the European Union (15+1 priority PAHs), the US EPA (various methods; 16 PAHs), and the California EPA Air Resources Board (CARB Method 429). **PAH-CVS-B** contains all of these PAHs and thus satisfies the requirements of a number of jurisdictions and their related agencies.

PAH	15+1 EU PAHs	US EPA; 16 PAHs	CARB 429
Naphthalene		‡	×
2-Methylnaphthalene			×
Acenaphthylene		‡	×
Acenaphthene		‡	×
Fluorene		‡	×
Phenanthrene		‡	×
Anthracene		‡	×
Fluoranthene		‡	×
Pyrene		‡	×
Benzo[*c*]fluorene	†		
Cyclopenta[*c,d*]pyrene	†		
Benz[*a*]anthracene	†	‡	×
Chrysene	†	‡	×
5-Methylchrysene	†		
Benzo[*b*]fluoranthrene	†	‡	×
Benzo[*j*]fluoranthrene	†		
Benzo[*k*]fluoranthrene	†	‡	×
Benzo[*e*]pyrene			×
Benzo[*a*]pyrene	†	‡	×
Perylene			×
Indeno[*1,2,3-c,d*]pyrene	†	‡	×
Benzo[*g,h,i*]perylene	†	‡	×
Dibenz[*a,h*]anthracene	†	‡	×
Dibenzo[*a,l*]pyrene	†		
Dibenz[*a,e*]pyrene	†		
Dibenz[*a,i*]pyrene	†		
Dibenzo[*a,h*]pyrene	†		

PAH-CVS-B includes five calibration solutions ranging in concentration from 2 ng/ml to 1000 ng/ml (see Table A) and can be used with the following support solutions:

PAH-STK-B: PAH Native Stock Solution (27 components - see Table B)

PAH-LCS-B: PAH Labelled Compound Solution (16 components - see Table C)

PAH-ISS-B: PAH Internal Standard Spiking Solution (3 components - see Table D)

PAH-SS-B: PAH Sampling Standard Solution (2 components - see Table E)

Table A: PAH-CVS-B; Components and Concentrations (ng/ml; isooctane/toluene)

Native Compounds	CAS #	PAH-B-CS1	PAH-B-CS2	PAH-B-CS3	PAH-B-CS4	PAH-B-CS5
Naphthalene	91-20-3	2	10	50	250	1000
2-Methylnaphthalene	91-57-6	2	10	50	250	1000
Acenaphthylene	208-96-8	2	10	50	250	1000
Acenaphthene	83-32-9	2	10	50	250	1000
Fluorene	86-73-7	2	10	50	250	1000
Phenanthrene	85-01-8	2	10	50	250	1000
Anthracene	120-12-7	2	10	50	250	1000
Fluoranthene	206-44-0	2	10	50	250	1000
Pyrene	129-00-0	2	10	50	250	1000
Benzo[c]fluorene	205-12-9	2	10	50	250	1000
Cyclopenta[c,d]pyrene	27208-37-3	2	10	50	250	1000
Benz[a]anthracene	56-55-3	2	10	50	250	1000
Chrysene	218-01-9	2	10	50	250	1000
5-Methylchrysene	3697-24-3	2	10	50	250	1000
Benzo[b]fluoranthene	205-99-2	2	10	50	250	1000
Benzo[k]fluoranthene	207-08-9	2	10	50	250	1000
Benzo[j]fluoranthene	205-82-3	2	10	50	250	1000
Benzo[e]pyrene	192-97-2	2	10	50	250	1000
Benzo[a]pyrene	50-32-8	2	10	50	250	1000
Perylene	77392-71-3	2	10	50	250	1000
Indeno[1,2,3-c,d]pyrene	193-39-5	2	10	50	250	1000
Benzo[g,h,i]perylene	191-24-2	2	10	50	250	1000
Dibenz[a,h]anthracene	53-70-3	2	10	50	250	1000
Dibenzo[a,l]pyrene	191-30-0	2	10	50	250	1000
Dibenzo[a,e]pyrene	192-65-4	2	10	50	250	1000
Dibenzo[a,i]pyrene	189-55-9	2	10	50	250	1000
Dibenzo[a,h]pyrene	189-64-0	2	10	50	250	1000
PAH-LCS-B (Extraction Standards)						
Naphthalene-d_8	1146-65-2	100	100	100	100	100
2-Methylnaphthalene-d_{10}	7297-45-2	100	100	100	100	100
Acenaphthylene-d_8	93951-97-4	100	100	100	100	100
Phenanthrene-d_{10}	1517-22-2	100	100	100	100	100
Anthracene-d_{10}	1719-06-8	100	100	100	100	100
Fluoranthene-d_{10}	93951-69-0	100	100	100	100	100
Benz[a]anthracene-d_{12}	1718-53-2	100	100	100	100	100
Chrysene-d_{12}	1719-03-5	100	100	100	100	100
Benzo[b]fluoranthene-d_{12}	93951-98-5	100	100	100	100	100
Benzo[k]fluoranthene-d_{12}	93952-01-3	100	100	100	100	100
Benzo[a]pyrene-d_{12}	63466-71-7	100	100	100	100	100
Perylene-d_{12}	1520-96-3	100	100	100	100	100
Indeno[1,2,3-c,d]pyrene-d_{12}	203578-33-0	100	100	100	100	100
Benzo[g,h,i]perylene-d_{12}	93951-66-7	100	100	100	100	100
Dibenz[a,h]anthracene-d_{14}	13250-98-1	100	100	100	100	100
Dibenzo[a,i]pyrene-d_{14}	158776-07-9	100	100	100	100	100
PAH-ISS-B (Recovery Standards)						
Acenaphthene-d_{10}	15067-26-2	100	100	100	100	100
Pyrene-d_{10}	1718-52-1	100	100	100	100	100
Benzo[e]pyrene-d_{12}	205440-82-0	100	100	100	100	100
PAH-SS-B (Sampling Standards)						
Fluorene-d_{10}	81103-79-9	100	100	100	100	100
p-Terphenyl-d_{14}	1718-51-0	100	100	100	100	100

Table B: PAH-STK-B; Components and Concentrations (ng/ml; isooctane/toluene/nonane)

Native PAH Compounds	CAS #	Concentration (ng/ml)
Naphthalene	91-20-3	2500
2-Methylnaphthalene	91-57-6	2500
Acenaphthylene	208-96-8	2500
Acenaphthene	83-32-9	2500
Fluorene	86-73-7	2500
Phenanthrene	85-01-8	2500
Anthracene	120-12-7	2500
Fluoranthene	206-44-0	2500
Pyrene	129-00-0	2500
Benzo[*c*]fluorene	205-12-9	2500
Cyclopenta[*c,d*]pyrene	27208-37-3	2500
Benz[*a*]anthracene	56-55-3	2500
Chrysene	218-01-9	2500
5-Methylchrysene	3697-24-3	2500
Benzo[*b*]fluoranthene	205-99-2	2500
Benzo[*k*]fluoranthene	207-08-9	2500
Benzo[*j*]fluoranthene	205-82-3	2500
Benzo[*e*]pyrene	192-97-2	2500
Benzo[*a*]pyrene	50-32-8	2500
Perylene	77392-71-3	2500
Indeno[*1,2,3-c,d*]pyrene	193-39-5	2500
Benzo[*g,h,i*]perylene	191-24-2	2500
Dibenz[*a,h*]anthracene	53-70-3	2500
Dibenzo[*a,l*]pyrene	191-30-0	2500
Dibenzo[*a,e*]pyrene	192-65-4	2500
Dibenzo[*a,i*]pyrene	189-55-9	2500
Dibenzo[*a,h*]pyrene	189-64-0	2500

Table C: PAH-LCS-B; Components and Concentrations (ng/ml; isooctane/toluene)

PAH	CAS #	Concentration (ng/ml)
Naphthalene-d_8	1146-65-2	5000
2-Methylnaphthalene-d_{10}	7297-45-2	5000
Acenaphthylene-d_8	93951-97-4	5000
Phenanthrene-d_{10}	1517-22-2	5000
Anthracene-d_{10}	1719-06-8	5000
Fluoranthene-d_{10}	93951-69-0	5000
Benz[*a*]anthracene-d_{12}	1718-53-2	5000
Chrysene-d_{12}	1719-03-5	5000
Benzo[*b*]fluoranthene-d_{12}	93951-98-5	5000
Benzo[*k*]fluoranthene-d_{12}	93952-01-3	5000
Benzo[*a*]pyrene-d_{12}	63466-71-7	5000
Perylene-d_{12}	1520-96-3	5000
Indeno[*1,2,3-c,d*]pyrene-d_{12}	203578-33-0	5000
Benzo[*g,h,i*]perylene-d_{12}	93951-66-7	5000
Dibenz[*a,h*]anthracene-d_{14}	13250-98-1	5000
Dibenzo[*a,i*]pyrene-d_{14}	158776-07-9	5000

Table D: PAH-ISS-B; Components and Concentrations (ng/ml; isooctane/toluene)

PAH	CAS #	Concentration (ng/ml)
Acenaphthene-d_{10}	15067-26-2	5000
Pyrene-d_{10}	1718-52-1	5000
Benzo[*e*]pyrene-d_{12}	205440-82-0	5000

Table E: PAH-SS-B; Components and Concentrations (ng/ml; isooctane/toluene)

PAH	CAS #	Concentration (ng/ml)
Fluorene-d_{10}	81103-79-9	5000
p-Terphenyl-d_{14}	1718-51-0	5000

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Greyhound Chromatography & Allied Chemicals
6 Kelvin Park, Birkenhead,
Merseyside, CH41 1LT, U.K.
Tel: (+44)-0-151-649-4000 Fax: (+44)-0-151-649-4001
E-mail: info@ greyhoundchrom.com
Web: www.greyhoundchrom.com

www.well-labs.com

WELLINGTON Reporter
PRODUCT UPDATES FROM WELLINGTON LABORATORIES

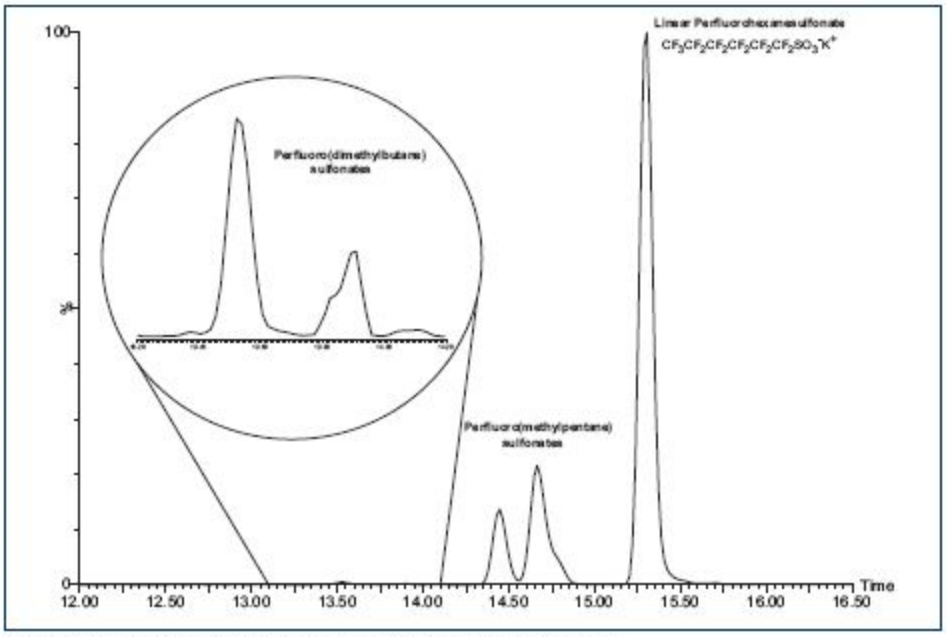
July 9, 2012

NEW PRODUCTS

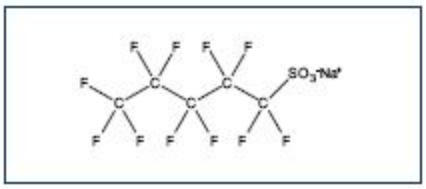
New Native Pefluoroalkanesulfonates

The number of certified reference standard solutions that are commercially available for use in the analysis of perfluorinated substances has grown substantially over the past 10 years, however the need for native standards still exists for one of the most prominent classes of perfluoroalkyl compounds: perfluoroalkanesulfonates. This is exemplified by the standard requirements of US EPA Method 537: Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). This method requires a perfluorohexanesulfonate (PFHxS) standard that contains both the branched and linear isomers and has a purity of greater than 96%. Until now, a fully characterized certified reference standard solution of PFHxS that meets these criteria has not been available.

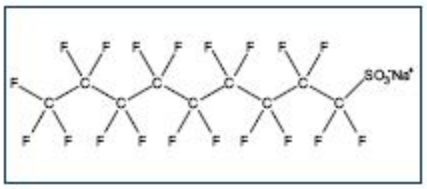
For this reason, **Wellington** has produced a perfluorohexanesulfonate standard (**br-PFHxSK**) with an isomeric composition that is representative of technical material (81% linear isomer and 19% branched isomers). This standard has a purity of ≥ 98% and its isomeric composition has been fully characterized by ^{19}F NMR. In addition, **Wellington** has also produced certified standard solutions of perfluoropentanesulfonate (**L-PFPeS**) and perfluorononanesulfonate (**L-PFNS**) to further expand our existing inventory of native perfluoroalkanesulfonates.



LCMS chromatogram of br-PFHxSK illustrating isomeric composition.



Sodium perfluoro-1-pentanesulfonate



Sodium perfluoro-1-nonanesulfonate

NATIVE PERFLUOROALKANESULFONATES (PFASs)

	Catalogue Number	Product (methanol)	Qty/Conc	
	L-PFBS	Potassium perfluoro-1-butanesulfonate	1.2 ml	50 µg/ml
NEW	L-PFPeS	Sodium perfluoro-1-pentanesulfonate	1.2 ml	50 µg/ml
	L-PFHxS	Sodium perfluoro-1-hexanesulfonate	1.2 ml	50 µg/ml
NEW	br-PFHxSK	L-PFHxS with branched isomers (Potassium Salt)	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
	br-PFOSK	L-PFOSK with branched isomers	1.2 ml	50 µg/ml
	T-PFOS	Potassium perfluorooctanesulfonate (Technical Grade)	1.2 ml	50 µg/ml
NEW	L-PFNS	Sodium perfluoro-1-nonanesulfonate	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
	L-PFDoS	Sodium perfluoro-1-dodecanesulfonate	1.2 ml	50 µg/ml

Note: Listed concentrations are reported as the salt.

MASS-LABELLED PERFLUOROALKANESULFONATES

Catalogue Number	Product (methanol)	Qty/Conc	
MPFHxS	Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate	1.2 ml	50 µg/ml
M3PFHxS	Sodium perfluoro-1-[1,2,3-$^{13}C_3$]-hexanesulfonate	1.2 ml	50 µg/ml
MPFOS	Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]-octanesulfonate	1.2 ml	50 µg/ml
M8PFOS	Sodium perfluoro-1-[$^{13}C_8$]-octanesulfonate	1.2 ml	50 µg/ml

Note: Listed concentrations are reported as the salt.

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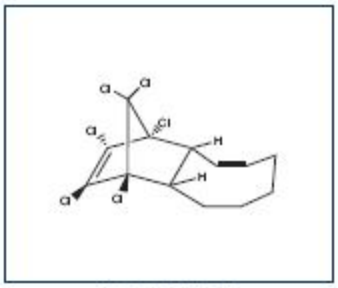
6 Kelvin Park, Birkenhead,
Merseyside, CH41 1LT, U.K.
Tel: (+44)-0-151-649-4000 Fax: (+44)-0-151-649-4001
E-mail: info@ greyhoundchrom.com
Web: www.greyhoundchrom.com

WELLINGTON Reporter
PRODUCT UPDATES FROM WELLINGTON LABORATORIES
December 20, 2012

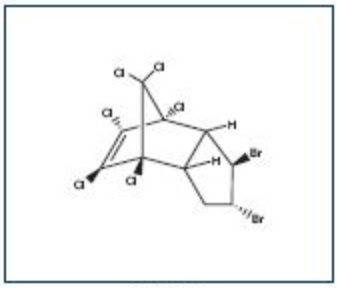
NEW HALOGENATED FLAME RETARDANTS

EFRs (Experimental Flame Retardants)

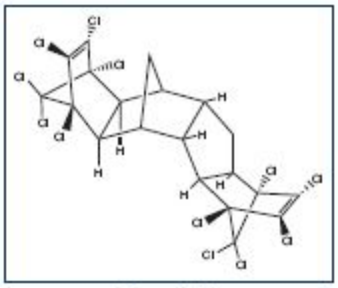
Halogenated flame retardants are most often associated with high profile brominated compounds such as polybrominated diphenyl ethers (PBDEs). However, the production, use, and fate of chlorinated and mixed chlorinated/brominated flame retardants has started to garner more attention recently due to reports of their presence in various environmental samples. For instance, it is believed that a family of flame retardants arising from Diels-Alder reactions of hexachlorocyclopentadiene has been in use for many years (e.g. Dechlorane Plus, Dec-604, etc.) albeit, in some cases, at an experimental level. In response to this, Wellington has synthesized the following series of compounds:



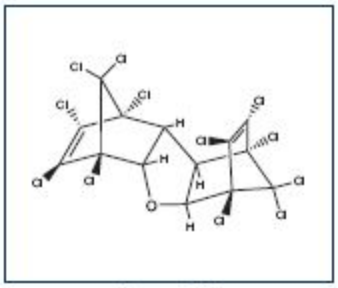
1,3-DPMA



DBCD



Dec-601



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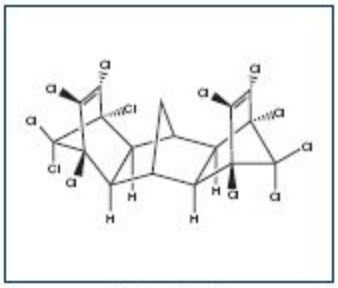

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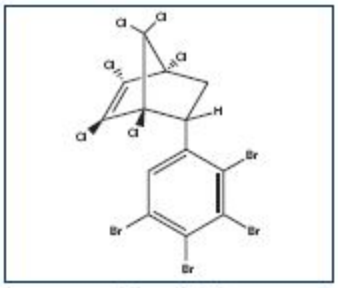
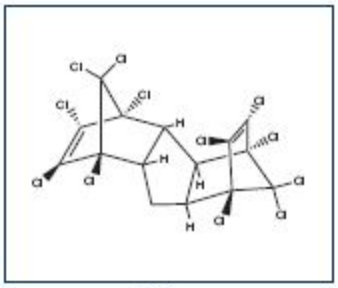
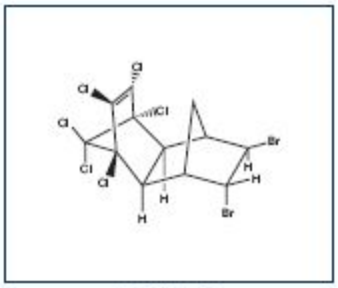


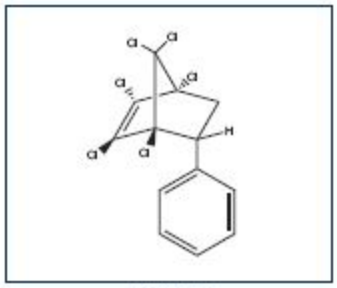
Dec-604



CPlus



DBALD



HCPN

Catalogue Number	Product (toluene)	Qty	Conc
1,3-DPMA	1,3-Dechlorane Plus® Mono Adduct	1.2 ml	50 µg/ml
DBCD	Dibromochlordene	1.2 ml	50 µg/ml
Dec-601	Dechlorane 601	1.2 ml	50 µg/ml
Dec-602	Dechlorane 602	1.2 ml	50 µg/ml
Dec-603	Dechlorane 603	1.2 ml	50 µg/ml
Dec-604	Dechlorane 604	1.2 ml	50 µg/ml
CPlus	Chlordene Plus	1.2 ml	50 µg/ml
DBALD	Dibromoaldrin	1.2 ml	50 µg/ml
HCPN	Hexachloro(phenyl)norbornene	1.2 ml	50 µg/ml

Dechlorane Plus® is a registered trademark of Occidental Chemical Corporation.

IUPAC NAMES:

1,3-DPMA = *rac*-(1*R*,2*R*,9*S*,10*S*)-1,10,11,12,13,13-hexachlorotricyclo[8.2.1.$0^{2,9}$]-trideca-3,11-diene

DBCD = *rac*-(1*R*,2*R*,3a*S*,4*S*,7*R*,7a*R*)-1,2-dibromo-4,5,6,7,8,8-hexachloro-2,3,3a,4,7,7a-hexahydro-1*H*-4,7-methanoindene

Dec-601 = *rac*-(1*R*,2*S*,3*S*,4*S*,7*R*,8*R*,10*S*,11*S*,12*S*,13*S*,16*R*,17*R*)-4,5,6,7,13,14,15,16,19,19,20,20-dodecachloroheptacyclo[9.6.1.$1^{4,7}$.$1^{13,16}$.$0^{2,10}$.$0^{3,8}$.$0^{12,17}$]icosa-5,14-diene

Dec-602 = 1,2,3,4,6,7,8,9,10,10,11,11-dodecachloro-1,4,4a,5a,6,9,9a,9b-octahydro-1,4:6,9-dimethanodibenzofuran

Dec-603 = 1,2,3,4,5,6,7,8,12,12,13,13-dodecachloro-1,4,4a,5,8,8a,9,9a,10,10a-decahydro-1,4:5,8:9,10-trimethanoanthracene

Dec-604 = *endo*-5-(2,3,4,5-tetrabromophenyl)-1,2,3,4,7,7-hexachloro-bicyclo[2.2.1]hept-2-ene

CPlus = *rac*-(1*R*,4*S*,4a*R*,4b*R*,5*S*,8*R*,8a*R*,9a*R*)-1,2,3,4,5,6,7,8,10,10,11,11-dodecachloro-4,4a,4b,5,8,8a,9,9a-octahydro-1*H*-1,4:5,8-dimethanofluorene

DBALD = *rac*-(1*R*,2*S*,3*S*,4*S*,4a*S*,5*R*,8*S*,8a*R*)-2,3-dibromo-5,6,7,8,9,9-hexachloro-1,2,3,4,4a,5,8,8a-octahydro-1,4:5,8-dimethanonaphthalene

HCPN = *endo*-5-phenyl-1,2,3,4,7,7-hexachloro-bicyclo[2.2.1]hept-2-ene

Distributed Throughout Europe and Middle East By-

Greyhound Chromatography & Allied Chemicals
6 Kelvin Park, Birkenhead,
Merseyside, CH41 1LT, U.K.
Tel: (+44)-0-151-649-4000 Fax: (+44)-0-151-649-4001
E-mail: info@ greyhoundchrom.com
Web: www.greyhoundchrom.com

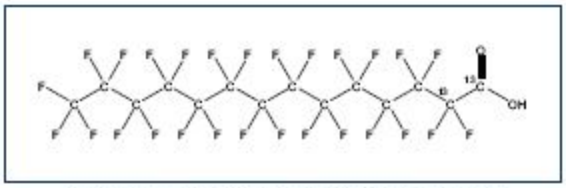
WELLINGTON Reporter
PRODUCT UPDATES FROM WELLINGTON LABORATORIES

December 5, 2012

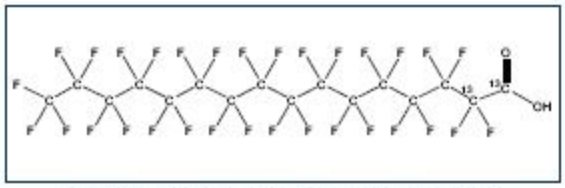
NEW PRODUCTS

M2PFTeDA & M2PFHxDA

The analytical methodology that has been developed for the quantitative determination of perfluoroalkylcarboxylic acids (PFCAs) in various matrices has been limited by a lack of long-chain, mass-labelled surrogates. Researchers have had to work under the assumption that PFCAs with chain lengths greater than 12 carbons have the same extraction efficiencies as their shorter chain counterparts. The unique physiochemical properties of perfluorinated compounds makes this scenario highly unlikely, especially in the case of PFCA analysis in water samples, but alternative methods were not possible without appropriate surrogates. For this reason, **Wellington** has synthesized two new ^{13}C mass-labelled perfluorinated reference standards with chain lengths greater than 12 carbons, **M2PFTeDA** and **M2PFHxDA**, to complement our existing line of mass-labelled perfluorinated reference standards.



Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid



Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid

	Catalogue Number	Product (methanol)	Qty/Conc
	PFTeDA	Perfluoro-n-tetradecanoic acid	1.2 ml 50 µg/ml
NEW	M2PFTeDA	Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid	1.2 ml 50 µg/ml
	PFHxDA	Perfluoro-n-hexadecanoic acid	1.2 ml 50 µg/ml
NEW	M2PFHxDA	Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid	1.2 ml 50 µg/ml

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6 Kelvin Park, Birkenhead,
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Tel: (+44)-0-151-649-4000 Fax: (+44)-0-151-649-4001
E-mail: info@ greyhoundchrom.com
Web: www.greyhoundchrom.com

Certified System ISO 9001