Biomarker Focus

F-PCBs® / Internal standards for PCB analysis

Polychlorinated biphenyls (PCBs) have been subject to a broad range of studies and investigations, because they are **organic persistant pollutants (POPs) and bioaccumulates**. Their abundance as pollutants stem from their application as industrial chemicals.

PCB congeners can be **classified according to their presence in technical mixtures**, and more relevant, **to their toxicity**. The most toxic are the coplanar ones, with no and monosubstitution in the ortho-positions.

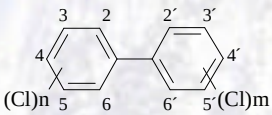


Fig.: Chemical structure, and numbering of PCBs.

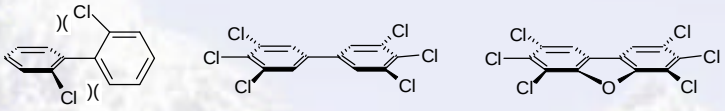


Fig.: Non-planar and coplanar PCBs, The latter of coplanar ones is similar to the conformation of dibenzofurans and dibenzodioxins.

Monofluorinated PCBs (**F-PCBs®**) are closely **similar to the parent PCBs in terms of physico-chemical properties**. The **close similarities** between the F-PCBs® and the parent PCBs makes them potentially new **internal standards** in analytical applications, including GC-MS and GC-FID and GC-ECD.

Deuterated PCBs are not available and the ^{13}C isotopes are extremely expensive. Therefore the new **monofluorinated F-PCBs® internal standards are considered to be valuable and cost-efficient** tools at hand.

Chiron offers

Chiron now offers F-PCBs® with different chlorination levels. Both **single and multicomponent standard solutions of F-PCBs** as 50 µg/mL in iso-octane are available to assist researchers in their analysis. More F-PCBs are under construction, and we will update you accordingly.
Please, inquire for special needs, questions and/or collaborations.

"The Dutch Seven PCBs"

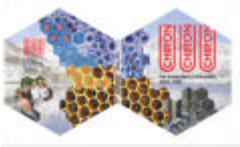
no.	name
28	2,4,4'-Trichlorobiphenyl
52	2,2',4',5-Tetrachlorobiphenyl
101	2,2',4,5,5'-Pentachlorobiphenyl
118	2,3',4,4',5'-Pentachlorobiphenyl
138	2,2',3,4,4',5-Hexachlorobiphenyl
153	2,2',4,4',5,5'-Hexachlorobiphenyl
180	2,2',3,4,4',5,5'-Heptachlorobiphenyl

7 analytes – each 10µg/mL in iso-octane

F-PCBs®

no.	name
F-18	3-Fluoro-2,2',5-trichlorobiphenyl
F-28	3'-Fluoro-2,4,4'-trichlorobiphenyl
F-29	3'-Fluoro-2,4,5-trichlorobiphenyl
F-30	2'-Fluoro-2,4,6-trichlorobiphenyl
F-30	3'-Fluoro-2,4,6-trichlorobiphenyl
F-30	4'-Fluoro-2,4,6-trichlorobiphenyl
F-31	3-Fluoro-2,4',5-trichlorobiphenyl
F-44	3-Fluoro-2,2',3',5-tetrachlorobiphenyl
F-49	3-Fluoro-2,2',4',5-tetrachlorobiphenyl
F-52	3-Fluoro-2,2',5,5'-tetrachlorobiphenyl
F-67	4'-Fluoro-2,3',4,5-tetrachlorobiphenyl

Inquire for a free catalogue



Supplementary

Literature

- Luthe, G., Leonards, P., Liu, H. and Johansen, J.E., Investigations on the retention behaviour of F-PCBs in GC and their MS spectra, *DIOXIN2004 conference*, Berlin, Germany. (http://dioxin2004.abstract-management.de/pdf/p198.pdf)
- Mullin, M.D., and Pochini, C.M., High-resolution PCB analysis: Synthesis and chromatographic properties of all 209 congeners, *Environ. Sci. Technolo,*. 18 (1984) 468.
- Lindsey, A.S. and Wagstaffe, P.J., Production and certification of ten high-purity polychlorinated biphenyls as reference materials, *Analyst*, 114 (1989) 553.

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