

FAQs for PFAS Analysis

To learn more about PFAS analysis, method development, and applications go to:

www.phenomenex.com/pfas



 phenomenex™

In PFAS (Per- and Polyfluoroalkyl Substances) analysis, site characterization, sampling, transportation, and laboratory analytical methods constitute sources for the potential of cross-contamination. Special considerations in sample collection and extraction, analytical methods, and decontamination procedures are necessary to ensure PFAS quality analysis.

This Q&A provides insight for PFAS analytical challenges and method development to prevent cross-contamination.

I've heard that the LC has to be modified for PFAS analysis. What is done to make the LC "PFAS free" and will this impact my ability to use the LC for other assays?

LCs use plastic tubing that is made of fluoropolymers which will slowly leach and cause high background levels. Ultimately this results in higher LOQs. To mitigate this PFAS leaching we replace the tubing with PEEK, wherever possible. Another source of PFAS contamination can be the solvent mobile phase filters. However, there can still be some fluoropolymer remaining in the LC which cannot be replaced. Therefore, a "delay" column is added between the pump mixer and the autosampler to chromatographically separate the LC PFAS contamination from the analytical peak. The good news is that this does NOT impact your ability to analyze other chemicals and is fully compatible with your other assays. The delay column can be quickly removed or left in place. In fact, it may even be beneficial for reducing background for other compounds such as plasticizers commonly found in the LC.

I have never used graphitized carbon for PFAS, why is it used in Draft Method EPA 1633 and why the caution to not leave this material in contact with the sample for very long?

Graphitized Carbon Black (GCB) has been known to bind long chain PFAS and is used by some laboratories as a SPE sorbent. Some problems can occur where low recoveries are achieved due to irreversible binding of certain PFAS compounds, most likely the longer chain PFAS. Therefore, the method has comments to exercise caution when using GCB cleanup and to minimize the contact time between the PFAS and GCB.

Many labs have problems with PFAS background contamination. Why is this and what steps should be taken to minimize this?

This is quite a challenge as many of the products that we use, including our solvents, reagents, glassware, sample prep, and LC instrumentation can have PFAS background. Some general tips are to clean all equipment prior to, and after each use, make sure your reagent water, solvents such as methanol and ammonium hydroxide, are as PFAS free as possible. You may have to inquire from your vendor for details or if they can have some guarantee on background levels. There can also be PFAS in disposable plastics such as pipette tips and filters. Some methods recommend baking glassware, detergent washing and rinsing with clean water, and proper storage for air drying. You can also implement a pre-rinse procedure using methanol with 0.1% ammonium hydroxide, toluene, and methanol. If you are using automated sample preparation, rinse the system with the same solvents. The LC pump should have a delay column between the pump and the autosampler as Teflon seals are common in LC systems. It's advisable to review validated method guidance which often provide more detail on dealing with interferences within your lab, your system, and also within samples.



Have questions or want more details? We would love to help!
Visit www.phenomenex.com/Chat to get in touch with one of our Technical Specialists

You have several formats for C18 columns for PFAS. Are there any one you recommend over another?

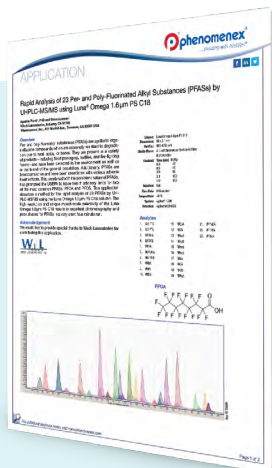
There are several C18 columns that we have shown work very well for PFAS analysis and provide adequate resolution for LC-MS/MS. The Luna™ Omega column is 100 % aqueous stable with a positive surface modification that demonstrates a unique selectivity and increased retention of acidic compounds such as PFAS. Of course, the ligand provides excellent retention for hydrophobic interactions as well. Similar to the structure of PFAS compounds. As an alternative, the Kinetex™ EVO is a core-shell developed for UHPLC separations. Core-shell particles show less band broadening, compared to fully porous particles, giving greater efficiency. We also carry the Gemini™ column portfolio developed for extended lifetime and extreme pH conditions. All have been shown to work well for PFAS separations which you can find on our website.

We have the PFAS LC kit and delay column installed but are still seeing PFAS contamination, where could it be coming from?

The two culprits are often the methanol and the lab consumables. Be sure to use high grade methanol from a reputable source, as well as high grade ammonium acetate. Some vendors have cleaner methanol than others, it is recommended that you test each lot before using. Also, the gases used for the LC-MS/MS can be another source of contamination. With respect to consumables, we wary of any consumables that are advertised as “low binding” or “low retention” as these often contain PFAS.



Complete PFAS Testing Guide



PFAS Rapid Analysis by HPLC/UHPLC



PFAS Resources

This Q&A is done by Phenomenex in collaboration with SCIEX. Have questions about PFAS chromatography analysis? Chat with us www.phenomenex.com/chat

