

PFAS Testing Leaders

UNDERSTANDING PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Polyfluoroalkyl and perfluoroalkyl substances (PFAS) are fluorinated organic chemicals that includes perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). PFAS chemicals are both persistent and bioaccumulate. PFAS compounds have been used in the manufacturing of carpet, clothing, shoes, cookware, packaging, oil and water repellents, furniture, food containers, and countless other applications. PFAS substances are long carbon chain acids or salts with fluorines attached to most or all the carbons. These are all man-made or breakdown products of man-made chemicals.

PFAS METHODS PERFORMED BY MERIT LABORATORIES

Merit Laboratories offers many options for PFAS: EPA 533, EPA 537 Rev. 1.1, EPA 537.1 ASTM D7979 with Isotopic Dilution, and ASTM D7968-17 with Isotopic Dilution.

EPA 533: A new drinking water method for short chain PFAS (none greater than C12). This method includes a total of 25 PFAS compounds, which includes 14 of the 18 listed in EPA 537.1 along with 11 additional short chain PFAS. The list of additional compounds in EPA 533 includes those that cannot be analyzed by EPA 537.1 because of physicochemical properties. EPA 533 is performed by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry. Isotope dilution is incorporated into the method, which can minimize sample matrix interference and improve data quality.

EPA 537 REV. 1.1: This is a drinking water method for 14 PFAS compounds using Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). As with most EPA drinking water methods, EPA 537 is prescriptive and the only allowable modifications are mentioned in the method. The U.S. EPA has made it abundantly clear that EPA 537 should not be used for any sample matrix other than drinking water. Additionally, the method is limited to the 14 PFAS compounds listed in the method. Merit performs EPA 537 rev. 1.1 in drinking water for the list of 14 compounds.

EPA 537.1: A drinking water method updated in 2020. EPA 537.1, a prescriptive method, is performed for the determination of a select list of 18 PFAS compounds using Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). This revision is an update to EPA 537, first published in 2009. Merit performs EPA 537.1 in drinking water for the list of 18 compounds detailed in the method.

ASTM D797 WITH ISOTOPIC DILUTION: The first validated method for non-drinking water aqueous matrices using Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). During method development, Merit consistently demonstrated much better recoveries for all PFAS compounds. The better recoveries are partly attributed to less sample handling. Sample handling can both contaminate and remove compounds of interest in your samples. There are other key advantages for using this method, including a much lower chance of contamination or analyte loss. ASTM D7979 also provides consistent results. In order to achieve low limits of detection, the laboratory must commit to using the latest state-of-art instrumentation and technology and employing much longer run times to separate out interferences.

ASTM D7968-17 WITH ISOTOPIC DILUTION: A PFAS method performed for soil and solid matrices. Developed by the U.S. EPA Region 5 Chicago Regional Laboratory (CRL), this method is performed using Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). Merit performs ASTM D7968-17 to support site investigation efforts or other projects involving the collection of soil or solid samples. Soil samples are prepared for analysis with a solvent extraction prior to analysis.

ASTM PFAS BY LC/MS/MS COMPLIANT WITH QSM TABLE B-15 (DOD METHOD): A replacement for Method 537M. It is the PFAS method listed in the Department of Defense Quality Systems Manual. This method is used for DOD projects or other projects requiring DoD ELAP accreditation.

PFAS Testing Leaders

SAMPLE MATRICES ANALYZED FOR PFAS

We can perform PFAS testing on drinking water, wastewater, groundwater, surface water, soil, and sediment samples.

PFAS TEST LIST

To support PFAS investigations, monitoring, and scientific studies, Merit Laboratories provides analytical testing for 46 PFAS compounds by LC/MS/MS with isotopic dilution.

Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (10:2 FTSA)	Perfluorobutanesulfonamide (PFBSA)
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUDS)	Perfluorodecanoic acid (PFDA)
4:2 Fluorotelomer Sulfonic Acid (4:2 FTSA)	Perfluorododecanoic acid (PFDoDA)
6:2 Fluorotelomer Sulfonic Acid (6:2 FTSA)	Perfluorodecane Sulfonic Acid (PFDS)
8:2 Fluorotelomer Sulfonic Acid (8:2 FTSA)	Perfluoro-4-ethylcyclohexanesulfonate (PFECHS)
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	Perfluoroheptanoic Acid (PFHpA)
N-Ethyl Perfluorooctane Sulfonamidoacetic Acid (EtFOSAA)	Perfluoroheptane Sulfonic Acid (PFHpS)
2H-Perfluoro-2-dodecenoic acid (FDUEA)	Perfluorohexanoic acid (PFHxA)
3-Perfluoroheptyl propanoic acid (FHpPA or 7:3 FTCA)	Perfluorohexanesulfonamide (PFHxSA)
2H-Perfluoro-2-octenoic acid (FHUEA)	Perfluorohexanesulfonic acid (PFHxS)
Perfluorooctane Sulfonamide (FOSA)	Perfluoro-4-methoxybutanoic acid (PFMBA)
2H-Perfluoro-2-dodecenoic acid (FOUEA)	Perfluoro-3-methoxypropanoic acid (PFMPA)
3-Perfluoropentyl propanoic acid (FPePA or 5:3 FTCA)	Perfluorononanoic acid (PFNA)
3-Perfluoropropyl propanoic acid (FPrPA or 3:3 FTCA)	Perfluorononane Sulfonic Acid (PFNS)
Hexafluoropropylene oxide dimer acid (HFPO-DA)	Perfluorooctanoic acid (PFOA)
Sodium perfluoro-1-dodecanesulfonate (LPFDoS)	Perfluorooctane sulfonic acid (PFOS)
N-ethylperfluoro-1-octanesulfonamide (NEfFOSAM)	Perfluoropentanoic acid (PFPeA)
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	Perfluoropentane sulfonic acid (PFPeS)
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	Sodium Perfluoropropanesulfonic acid (PFPrS)
N-methylperfluoro-1-octanesulfonamide (NMeFOSAM)	Perfluorotetradecanoic Acid (PFTeDA)
Perfluorobutanoic acid (PFBA)	Perfluorotridecanoic Acid (PFTTrDA)
Perfluorobutane sulfonic acid (PFBS)	Perfluoroundecanoic Acid (PFUnDA)