MilliporeSigma

PFAS-Tested Additives and Solvents

MilliporeSigma is the U.S. and Canada Life Science business of Merck KGaA, Darmstadt, Germany.

Supelco®
Analytical Products

Introduction

Per- and polyfluoroalkyl substances (PFAS), commonly known as “forever chemicals,” are infamous for their exceptional resistance to degradation, leading to persistent environmental contamination and potential health risks. These substances are prevalent in a variety of everyday products, including textiles, food packaging, and personal care items, making effective monitoring essential for public health and safety.

The urgency for rigorous testing and monitoring of PFAS has reached a critical level. Regulatory bodies like the EPA are taking decisive action by establishing legal limits and publishing official test methods to combat this growing concern.

We understand the challenges laboratories face in achieving low detection limits while minimizing contamination risks, particularly due to background noise interference that can result in inaccurate and inconsistent results. Our newly designed PFAS-tested additives and solvents are specifically crafted to address these challenges. By choosing our solutions, you can enhance your testing workflows, reduce false positives, and confidently navigate the evolving landscape of PFAS regulations.

PFAS testing methods

PFAS testing employs advanced analytical methods, primarily Liquid Chromatography-Mass Spectrometry (LC-MS) and Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), known for their sensitivity and specificity.

Key methods include EPA 533 and 537.1 for drinking water, targeting 25 and 18 PFAS compounds, respectively, and EPA 1633, which covers a broader range of 40 compounds across various environmental matrices. These methods provide laboratories with the tools necessary for accurate detection and compliance with regulatory standards. All three methods share common analytical principles while differing in scope, matrix coverage, and operational parameters. The table below summarizes the key characteristics of each method to support quick comparison and method selection.

Analysis	EPA 533	EPA 537.1	EPA 1633
Sample type	Drinking water	Drinking water	Environmental samples
Analytes	25 PFAS compounds	18 PFAS compounds	40 PFAS compounds
Method Complexity	Moderate	Moderate	Higher complexity, matrix variability
Matrix interference	Minor/ minimal	Intermediate effects	Significant matrix effects
Extraction	Solid phase extraction SPE	Solid phase extraction SPE	Solid phase extraction SPE
Detection	LC-MS/MS	LC-MS/MS	LC-MS/MS
Cleaning Solvent	Ammonium acetate solution, Methanol, Methanolic Ammonium Hydroxide & Phosphate Buffer	Methanol & Water	Acetone, Methanol, Methanolic Ammonium Hydroxide, Toluene & Water
Analysis time (min)	35	37	12
Flow rate (mL/min)	0.25	0.30	0.35 and 0.40 at different segments
Mobile phase	Methanol and 20 mM ammonium acetate buffer	Methanol and 20 mM ammonium acetate buffer	Acetonitrile and 2 mM ammonium acetate buffer
Solvent consumption (mL) per sample or gradient run	3.9 mL Methanol	7.3 mL Methanol	1.9 mL Acetonitrile
	4.8 mL Buffer solution	3.8 mL Buffer solution	2.9 mL Buffer solution
Active method version	EPA No. 815-B-19-020, Nov 2019	EPA 537.1 - version 2.0, March 2020	EPA 1633A – Dec 5, 2024

PFAS Analytes Overview by Method

PFAS analyte			Method		
Abbreviation	CAS Number	Analyte Name	EPA 533	EPA 537.1	EPA 1633
Perfluoroalkyl carboxylic acids					
PFBA	375-22-4	Perfluorobutanoic acid	x		x
PFPeA	2706-90-3	Perfluoropentanoic acid	x		x
PFHxA	307-24-4	Perfluorohexanoic acid	x	x	x
PFHpA	375-85-9	Perfluoroheptanoic acid	x	x	x
PFOA	335-67-1	Perfluorooctanoic acid	x	x	x
PFNA	375-95-1	Perfluorononaoic acid	x	x	x
PFDA	335-76-2	Perfluorodecanoic acid	x	x	x
PFUnA	2058-94-8	Perfluoroundecanoic acid	x	x	x
PFDoA	307-55-1	Perfluorododecanoic acid	x	x	x
PFTrDA	72629-94-8	Perfluorotridecanoic acid		x	x
PFTA / PFTeDA	376-06-7	Perfluorotetradecanoic acid		x	x
Perfluoroalkyl sulfonic acids					
PFBS	375-73-5	Perfluorobutanesulfonic acid	x	x	x
PFPeS	2706-91-4	Perfluoropentansulfonic acid	x		x
PFHxS	355-46-4	Perfluorohexanesulfonic acid	x	x	x
PFHpS	375-92-8	Perfluoroheptanesulfonic acid	x		x
PFOS	1763-23-1	Perfluorooctanesulfonic acid	x	x	x
PFNS	68259-12-1	Perfluorononanesulfonic acid			x
PFDS	335-77-3	Perfluorodecanesulfonic acid			x
PFDoS	79780-39-5	Perfluorododecanesulfonic acid			x
Fluorotelomer sulfonic acids					
4:2FTS	757124-72-4	1H, 1H, 2H, 2H-Perfluorohexane sulfonic acid	x		x
6:2FTS	27619-97-2	1H, 1H, 2H, 2H-Perfluorooctane sulfonic acid	x		x
8:2FTS	39108-34-4	1H, 1H, 2H, 2H-Perfluorodecane sulfonic acid	x		x
Perfluorooctane sulfonamides					
PFOSA	754-91-6	Perfluorooctanesulfonamide			x
NMeFOSA	31506-32-8	N-methyl perfluorooctanesulfonamide			x
NEtFOSA	4151-50-2	N-ethyl perfluorooctanesulfonamide			x
Perfluorooctane sulfonamidoacetic acids					
NMeFOSAA	2355-31-9	N-methyl perfluorooctanesulfonamidoacetic acid		x	x
NEtFOSAA	2991-50-6	N-ethyl perfluorooctancesulfonamidoacetic acid		x	x
Perfluorooctane sulfonamide ethanols					
NMeFOSE	24448-09-7	N-methyl perfluorooctanesulfonamidoethanol			x
NEtFOSE	1691-99-2	N-ethyl perfluorooctanesulfonamidoethanol			x
Per- and Polyfluoroether carboxylic acids					
HFPO-DA	13252-13-6	Hexafluoropropylene oxide dimer acid	x	x	x
ADONA	919005-14-4	4,8-Dioxa-3H-perfluorononaoic acid	x	x	x
PFMPA	377-73-1	Perfluoro-3-methoxypropanoic acid	x		x
PFMBA	863090-89-5	Perfluoro-4-methoxybutanoic acid	x		x
NFDHA	151772-58-6	Nonafluoro-3,6-dioxaheptanoic acid	x		x
Ether sulfonic acids					
9Cl-PF3ONS	756426-58-1	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	x	x	x
11Cl-PF3OUDS	763051-92-9	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	x	x	x
PFEESA	113507-82-7	Perfluoro(2-ethoxyethane)sulfonic acid	x		x
Fluorotelomer carboxylic acids					
3:3FTCA	356-02-5	3-Perfluoropropyl propanoic acid			x
5:3FTCA	914637-49-3	2H,2H,3H,3H-Perfluorooctanoic acid			x
7:3FTCA	812-70-4	3-Perfluoroheptyl propanoic acid			x

PFAS-tested Additives and Solvents

Addressing Challenges in PFAS testing

Testing for PFAS involves unique challenges, such as contamination risks from common lab materials and the necessity for ultra-trace detection limits. Background noise and complex sample matrices complicate interpretation and can lead to costly re-testing. Our PFAS-tested solvents and additives are designed to address these issues by ensuring low background signals and minimizing contamination risks. By aligning our products with regulatory methods, we enhance testing accuracy and efficiency.

Contamination can occur at various stages, from sampling tools to common lab materials, making vigilance essential. To address these challenges, we rigorously test our solvents to ensure they do not contribute detectable PFAS concentrations above reporting thresholds, keeping results reliable. We also specify low background signal intensity across positive/negative ESI and APCI ionization modes and maintain low metal content to enhance LC-MS sensitivity. Our packaging strategy uses inert borosilicate glass to limit leaching and offers sizes that align with method consumption, reducing contamination risks.

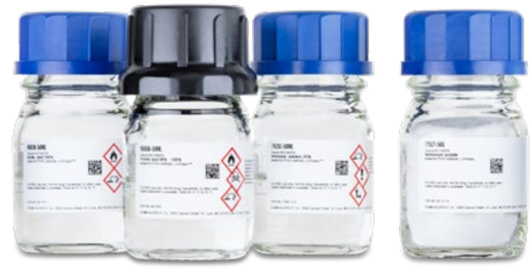
Features and Benefits

- **Method-Aligned PFAS Control:**
  Quality-controlled for all PFAS analytes per EPA 533, EPA 537.1, and EPA 1633.
- **Faster Compliance, Lower Cost:**
  Meets EPA 1633 expectations, eliminating the need for in-house batch validation.
- **Ultra-Low Background Interference:**
  Lowest impurity profiles support clean baselines and confident quantitation.
- **LC-MS Ready:**
  Optimized for ESI and APCI ionization in both positive and negative modes.
- **Reduced Contamination Risk:**
  Supplied in inert borosilicate glass to limit sodium and potassium leaching.
- **Controlled Trace Metals:**
  Low-ppb metal levels minimize ion suppression and metal adduct formation.
- **Assured Particulate Purity:** Microfiltered to 0.2 µm for consistent performance in sensitive workflows.

Product Overview

LiChropur™ additives tested for PFAS methods

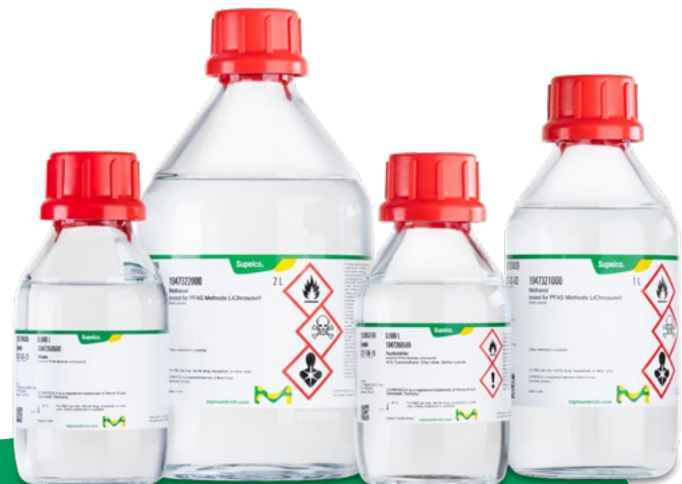
Product description	Size	Cat. No.	
Acetic acid 100% tested for PFAS methods LiChropur™	50 mL	**96836-50ML**	NEW
Formic acid 98%-100% tested for PFAS methods LiChropur™	50 mL	**95056-50ML**	NEW
Ammonia solution 25% tested for PFAS methods LiChropur™	50 mL	**74292-50ML**	NEW
Ammonium acetate tested for PFAS methods LiChropur™	50 g	**77527-50G**	NEW



LiChrosolv® solvents tested for PFAS methods

Product description	Size	Cat. No.
Acetonitrile tested for PFAS methods LiChrosolv®	500 mL	**1.04726.0500**
	1 L	**1.04726.1000**
	2 L	**1.04726.2000**
Methanol tested for PFAS methods LiChrosolv®	500 mL	**1.04732.0500**
	1 L	**1.04732.1000**
	2 L	**1.04732.2000**
Water tested for PFAS methods LiChrosolv®	500 mL	**1.04735.0500**
	1 L	**1.04735.1000**
	2 L	**1.04735.2000**

New pack sizes in 500 ml and 2 L available.



Discover More

- PFAS: Definition, Classification, Sources, Impact, & Detection
- PFAS Column & Solvent Guidance
- PFAS Sample Prep by Matrix

Explore our complete PFAS portfolio to streamline method development, meet evolving regulatory requirements, and achieve confident trace-level detection across complex matrices.

Browse products, download application resources, and find the right solutions for your workflow today at **SigmaAldrich.com/PFAS**

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