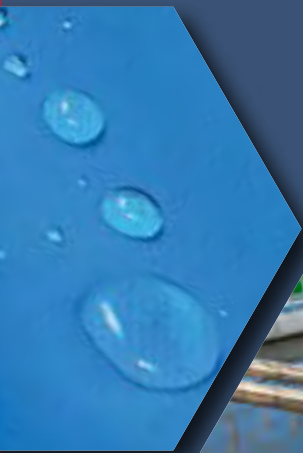


Per- & Polyfluoroalkyl Substances (PFAS) Standards



AccuStandard[®]

Per- and Polyfluoroalkyl Substances (PFAS)

Per- and polyfluoroalkyl substances (PFAS) belong to a continuously expanding family of over 4000 man-made chemical pollutants. The amphiphilic ability of PFAS has led to the manufacturing of PFAS in oils and water-resistant industrial and consumer products such as firefighting foams, cleaners, cosmetics, paints, adhesives and insecticides. However, environmental chemists and biologists have uncovered that PFAS have harmful toxicological effects and pose a significant risk to the public. The high thermal and chemical stability of PFAS make them persistent in the environment and nearly non-biodegradable, necessitating chemical reference standards to test the concentration of PFAS in drinking water, burn sites and teflon products.

PFOA / PFOS Compounds

Perfluoroalkylsulfonates	CAS No.	Conc.	Matrix	Cat. No.	Unit
Potassium perfluoro-1-octanesulfonate	2795-39-3	100 µg/mL	MeOH	PFOS-002S	1 mL
Potassium perfluoro-1-butanesulfonate (PPBS)	29420-49-3	50 µg/mL	MeOH	PFOS-005S	1 mL
Sodium perfluoro-1-pentanesulfonate	630402-22-1	50 µg/mL	MeOH	PFOS-006S	1 mL
Potassium perfluoro-1-hexanesulfonate	3871-99-6	50 µg/mL	MeOH	PFOS-007S	1 mL
Perfluoroalkylcarboxylic acids					
Perfluoro-n-octanoic acid	335-67-1		NEAT	PFOA-001N	100 mg
		100 µg/mL	MeOH	PFOA-001S	1 mL
Perfluoro-n-butanoic acid (PFBA)	375-22-4	100 µg/mL	MeOH	PFOA-002S	1 mL
Perfluoro-n-decanoic acid (PFDA)	335-76-2	100 µg/mL	MeOH	PFOA-003S	1 mL
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	100 µg/mL	MeOH	PFOA-004S	1 mL
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	100 µg/mL	MeOH	PFOA-005S	1 mL
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	100 µg/mL	MeOH	PFOA-006S	1 mL
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	100 µg/mL	MeOH	PFOA-007S	1 mL
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	100 µg/mL	MeOH	PFOA-008S	1 mL
Perfluoro-n-undecanoic acid (PFUnA)	2058-94-8	100 µg/mL	MeOH	PFOA-009S	1 mL
		2 µg/mL	MeOH	PFOA-027S-0.02X	1 mL
2H-Perfluoro-2-decenoic acid (FOUEA)	70887-84-2	100 µg/mL	MeOH	PFOA-027S	1 mL
		2 µg/mL	MeOH	PFOA-015S-0.02X	1 mL
2,2,3,3,3-Pentafluoropropionic acid (PFPrA)	422-64-0	100 µg/mL	MeOH	PFOA-015S	1 mL
		2 µg/mL	MeOH	PFOA-022S-0.02X	1 mL
2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)	914637-49-3	100 µg/mL	MeOH	PFOA-022S	1 mL
		2 µg/mL	MeOH	PFOA-023S-0.02X	1 mL
2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA)	812-70-4	100 µg/mL	MeOH	PFOA-023S	1 mL
		2 µg/mL	MeOH	PFOA-010S	1 mL
2H,2H,3H,3H-Perfluoroundecanoic acid (8:3 FTCA)	34598-33-9	100 µg/mL	MeOH	PFOA-010S	1 mL
		2 µg/mL	MeOH	PFOA-024S-0.02X	1 mL
2H-Perfluoro-2-octenoic acid (FHUEA)	70887-88-6	100 µg/mL	MeOH	PFOA-024S	1 mL
		50 µg/mL	MeOH:Water (50:50)	PFOA-016S-M-W	1 mL
Perfluoro-n-tridecanoic acid (PFTriA)	72629-94-8	50 µg/mL	MeOH:Water (50:50)	PFOA-017S-M-W	1 mL
		2 µg/mL	MeOH	PFOA-018S-0.02X	1 mL
Perfluoro-n-tetradecanoic acid (PFTreA)	376-06-7	100 µg/mL	MeOH	PFOA-018S	1 mL
		2 µg/mL	MeOH	PFOA-020S-0.02X	1 mL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	151772-58-6	100 µg/mL	MeOH	PFOA-020S	1 mL
		2 µg/mL	MeOH	PFOA-021S-0.02X	1 mL
Perfluoro-3-methoxypropanoic acid (PFMPA)	377-73-1	100 µg/mL	MeOH	PFOA-021S	1 mL
		2 µg/mL	MeOH		
Perfluoro(4-methoxybutanoic) acid (PFMBA)	863090-89-5	100 µg/mL	MeOH		
		2 µg/mL	MeOH		
Perfluorooctylsulfonamidoacetic acids					
N-ethylperfluoro-1-octanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6	2 µg/mL	MeOH	PFOS-015S-0.02X	1 mL
		100 µg/mL	MeOH	PFOS-015S	
N-methyl N-methylperfluoro-1-octanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9	2 µg/mL	MeOH	PFOS-014S-0.02X	1 mL
		100 µg/mL	MeOH	PFOS-004S	1 mL

Recent additions of PFOA / PFOS include Perfluoroalkylcarboxylic acids and Perfluorooctylsulfonamidoacetic acids compounds, and new categories including: Perfluorooctane sulfonamides, Sulfonic acids, and Fluorinated telomer alcohols. In addition we added methods: ASTM D8421, EPA 1633, M537.1 (updated), and ISO 21675:2009.

PFOA / PFOS Compounds (continued)

Perfluorooctane sulfonamides	CAS No.	Conc.	Matrix	Cat. No.	Unit
Perfluorooctane sulfonamide (PFOSA)	754-91-6	2 µg/mL	MeOH	PFOS-035S-0.02X	1 mL
		100 µg/mL	MeOH	PFOS-035S	1 mL
Bis(trifluoromethane)sulfonimide lithium salt (HQ-115)	90076-65-6	2 µg/mL	MeOH	PFOS-030S-0.02X	1 mL
		100 µg/mL	MeOH	PFOS-030S	1 mL
Sulfluramid (NEtFOSA)	4151-50-2	2 µg/mL	MeOH	PFOS-036S-0.02X	1 mL
		100 µg/mL	MeOH	PFOS-036S	1 mL
N-Ethyl-N-(2-hydroxyethyl)perfluorooctylsulphonamide (NEtFOSE)	1691-99-2	2 µg/mL	MeOH	PFOS-039S-0.02X	1 mL
		100 µg/mL	MeOH	PFOS-039S	1 mL
Sulfonic acids					
Perfluoro-n-octane sulfonic acid (PFOS)	1763-23-1	100 µg/mL	MeOH	PFOS-001S	1 mL
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	2 µg/mL	MeOH	PFOA-025S-0.02X	1 mL
		100 µg/mL	MeOH	PFOA-025S	1 mL
Perfluoro(2-ethoxyethane)sulphonic acid (PFEESA)	113507-82-7	2 µg/mL	MeOH	PFOA-019S-0.02X	1 mL
		100 µg/mL	MeOH	PFOA-019S	1 mL
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	39108-34-4	2 µg/mL	MeOH	PFOA-014S-0.02X	1 mL
		100 µg/mL	MeOH	PFOA-014S	1 mL
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	757124-72-4	2 µg/mL	MeOH	PFOA-013S-0.02X	1 mL
		100 µg/mL	MeOH	PFOA-013S	1 mL
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	2 µg/mL	MeOH	PFOA-028S-0.02X	1 mL
		100 µg/mL	MeOH	PFOS-028S	1 mL
Perfluorononanesulfonic acid (PFNS)	68259-12-1	2 µg/mL	MeOH	PFOS-031S-0.02X	1 mL
		100 µg/mL	MeOH	PFOS-031S	1 mL
Perfluorobutane-1-sulfonic acid (PFBS)	375-73-5	2 µg/mL	MeOH	PFOS-034S-0.02X	1 mL
		100 µg/mL	MeOH	PFOS-034S	1 mL
Telomer sulfonates					
Sodium 1H,1H,2H,2H-perfluoro-1-hexanesulfonate	27619-93-8	100 µg/mL	MeOH	PFOS-011S	1 mL
Sodium 1H,1H,2H,2H-perfluoro-1-octanesulfonate	27619-94-9	100 µg/mL	MeOH	PFOS-012S	1 mL
Sodium 1H,1H,2H,2H-perfluoro-1-decanesulfonate	27619-96-1	100 µg/mL	MeOH	PFOS-013S	1 mL
Fluorinated telomer alcohols					
2,2-Difluoropropan-1-ol 3H,3H,3H (2:1 FTOH)	33420-52-9	100 µg/mL	MeOH	FTA-001S	1 mL
2-(Perfluorobutyl)ethanol (4:2)	2043-47-2	100 µg/mL	MeOH	FTA-008S	1 mL
1H,1H,2H,2H-Perfluorooctan-1-ol (6:2)	647-42-7	100 µg/mL	MeOH	FTA-013S	1 mL
1H,1H,2H,2H-Perfluoro-1-decanol (8:2)	678-39-7	100 µg/mL	MeOH	FTA-021S	1 mL
1H,1H,2H,2H-Perfluorododecan-1-ol (10:2)	865-86-1	100 µg/mL	MeOH	FTA-027S	1 mL
Commercial / Technical grades					
Ammonium perfluoro(2-methyl-3-oxahexanoate) (GenX)	62037-80-3	100 µg/mL	MeOH	PFOS-019S	1 mL
Scotchgard™ Pre-2002 Formulation (Tech mix)		100 µg/mL	MeOH	PFOS-SCG-001S	1 mL
Scotchgard™ Post-2002 Formulation (Tech mix)		100 µg/mL	MeOH	PFOS-SCG-002S	1 mL
F-53B (Tech mix)		2 µg/mL	MeOH	PFOS-040S-0.02X	1 mL
		100 µg/mL	MeOH	PFOS-040S	1 mL

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Fluorinated telomer alcohols (FTAs) are known as precursors for PFAS compounds. FTAs can biodegrade (oxidize) to the Poly- and Perfluorinated Acids (PFCA) derivative. PFCA's are part of the PFAS target compounds in different EPA, ASTM as well as ISO test methods.

ASTM D8421 PFAS/PFOA in Aqueous Matrices by LC/MS/MS

ASTM test method D8421 is for the determination of PFAS in aqueous matrices by co-solvation and using LC-MS/MS technique. Our two Target Spike mixes and Surrogate Standard CRMs are offered to include the 44 native PFAS listed in the test method at a varied concentration.

D8421 Native PFAS/PFOA Target Spike 1 Standard

D-8421-TS-1 * 1 x 1 mL
2 µg/mL in each in MeOH:Water (95:5) 22 comps.

Perfluoro-n-tetradecanoic acid
Perfluoro-n-tridecanoic acid
Perfluoro-n-dodecanoic acid
Perfluoro-n-undecanoic acid
Perfluoro-n-decanoic acid
Perfluoro-n-nonanoic acid
Perfluoro-n-octanoic acid
Perfluoro-n-heptanoic acid
Perfluoro-n-hexanoic acid
Perfluorodecane-1-sulfonic acid
Perfluorononanesulfonic acid
Perfluorooctane-1-sulfonic acid (Linear and branched)
Perfluoroheptanesulfonic acid
Perfluorohexane-1-sulfonic acid (Linear and Branched)
Perfluoropentanesulfonic acid
Perfluorobutane-1-sulfonic acid
Perfluorooctane sulfonamide
1H,1H,2H,2H-Perfluorodecanesulfonic acid
1H,1H,2H,2H-Perfluorooctane sulfonic acid
1H,1H,2H,2H-Perfluorohexanesulfonic acid
N-ethylperfluoro-1-octanesulfonamidoacetic acid
N-methylperfluoro-1-octanesulfonamidoacetic acid

* NaOH is added to enhance stability.

D8421 Native PFAS/PFOA Target Spike 2 Standard

D-8421-TS-2 * 1 x 1 mL
2 µg/mL each in MeOH:Water (95:5) 19 comps.

Perfluorododecanesulfonic acid
N-Methylperfluoro-1-octanesulfonamide
Sulfuramid
N-Methylperfluorooctanesulfonamidoethanol
N-Ethyl-N-(2-hydroxyethyl)perfluorooctylsulphonamide
Perfluoro(2-methyl-3-oxahexanoic) acid
4,8-Dioxa-3H-perfluorononanoic acid
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid
Nonafluoro-3,6-dioxaheptanoic acid
Perfluoro(2-ethoxyethane)sulphonic acid
Perfluoro-3-methoxypropanoic acid
Perfluoro(4-methoxybutanoic) acid
3-Perfluoropropyl propanoic acid
2H,2H,3H,3H-Perfluorooctanoic acid
2H,2H,3H,3H-Perfluorodecanoic acid
2H-Perfluoro-2-octenoic acid
2H-Perfluoro-2-decenoic acid
Bis(trifluoromethane)sulfonimide lithium salt

D8421 Native PFAS/PFOA Surrogate Standard

D-8421-SS * 1 x 1 mL
10 µg/mL each in MeOH:Water (95:5) 3 comps.

Perfluoro-n-pentanoic acid
Perfluoro-n-butanoic acid
2,2,3,3,3-Pentafluoropropionic acid

EPA Method 1633 PFAS/PFOA in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS

USEPA Method 1633 is for analysis of PFAS in aqueous, solid, biosolids and tissue samples using LC-MS/MS technique. M-1633 products is offered to cover the 40 native PFAS required by the method.

Method 1633 Mix 1

M-1633-1 * 1 mL
At stated conc. (µg/mL) in MeOH 11 comps.

Perfluoro-n-butanoic acid 8
Perfluoro-n-pentanoic acid 4
Perfluoro-n-hexanoic acid 2
Perfluoro-n-heptanoic acid 2
Perfluoro-n-octanoic acid 2
Perfluoro-n-nonanoic acid 2
Perfluoro-n-decanoic acid 2
Perfluoro-n-undecanoic acid 2
Perfluoro-n-dodecanoic acid 2
Perfluoro-n-tridecanoic acid 2
Perfluoro-n-tetradecanoic acid 2

Method 1633 Mix 2

M-1633-2 * 1 mL
At stated conc. (µg/mL) in MeOH 11 comps.

Perfluorobutane-1-sulfonic acid 2
Perfluoropentanesulfonic acid 2
Perfluorohexane-1-sulfonic acid (Linear and Branched) 2
Perfluoroheptanesulfonic acid 2
Perfluorooctane-1-sulfonic acid (Linear and branched) 2
Perfluorononanesulfonic acid 2
Perfluorodecane-1-sulfonic acid 2
Perfluorododecanesulfonic acid 2
1H,1H,2H,2H-Perfluorohexanesulfonic acid 8
1H,1H,2H,2H-Perfluorooctane sulfonic acid 8
1H,1H,2H,2H-Perfluorodecanesulfonic acid 8

Method 1633 Mix 3

M-1633-3 * 1 mL
At stated conc. (µg/mL) in MeOH 7 comps.

Perfluorooctane sulfonamide 2
N-Methylperfluoro-1-octanesulfonamide 2
Sulfuramid 2
N-methylperfluoro-1-octanesulfonamidoacetic acid 2
N-ethylperfluoro-1-octanesulfonamidoacetic acid 2
N-Methylperfluorooctanesulfonamidoethanol 10
N-Ethyl-N-(2-hydroxyethyl)perfluorooctylsulphonamide 10

Method 1633 Mix 4

M-1633-4 * 1 mL
At stated conc (µg/mL) in MeOH 11 comps

Perfluoro(2-methyl-3-oxahexanoic) acid 2
Perfluoro-3-methoxypropanoic acid 2
Perfluoro(4-methoxybutanoic) acid 2
Nonafluoro-3,6-dioxaheptanoic acid 2
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid 2
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid 2
Perfluoro(2-ethoxyethane)sulphonic acid 2
3-Perfluoropropyl propanoic acid 4
2H,2H,3H,3H-Perfluorooctanoic acid 20
2H,2H,3H,3H-Perfluorodecanoic acid 20
4,8-Dioxa-3H-perfluorononanoic acid 2

* NaOH is added to enhance stability.

EPA Method 537.1 - Standard

This updated version of Method 537 can be used for the quantitative analysis of 18 analytes by Solid Phase Extraction (SPE) and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS).

EPA 537.1 Method Standard

M-537.1

2 µg/mL each in MeOH

1 mL

18 comps.

Perfluoro(2-methyl-3-oxahexanoic) acid	Perfluoro-n-nonanoic acid
N-ethylperfluoro-1-octanesulfonamidoacetic acid	Perfluorooctane-1-sulfonic acid
N-methylperfluoro-1-octanesulfonamidoacetic acid	Perfluoro-n-octanoic acid
Perfluorobutane-1-sulfonic acid	Perfluoro-n-tetradecanoic acid
Perfluoro-n-decanoic acid	Perfluoro-n-tridecanoic acid
Perfluoro-n-dodecanoic acid	Perfluoro-n-undecanoic acid
Perfluoro-n-heptanoic acid	11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid
Perfluorohexane-1-sulfonic acid	9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid
Perfluoro-n-hexanoic acid	4,8-Dioxa-3H-perfluorononanoic acid

PFAS compounds exist in both linear and branched forms in nature. Each lot manufactured may carry a different ratio than previous lots. A ratio of linear and branched isomers will be provided on each standard's Certificate of Analysis if both linear and branched isomers are present. If no ratio appears, then the standard contains only the linear isomer. Contact our Technical Department if the ratio of our current lots must be known prior to placing an order.

Technical Notes

LC/MS/MS is preferable for low detection limit analysis, and for regulatory compliance for EPA, ASTM D7979 or other methods.

EPA Method 537 - Native Compound Standard

EPA Method 537 (Determination of selected perfluorinated alkyl acids in drinking water analyzed by LC/MS/MS)
This 14 component standard mixture is associated with this method.

Method 537 Native Compound Standard

M-537

50 µg/mL each in AcCN:Water (95:5)

1 mL

14 comps.

Perfluoro-n-hexanoic acid	Perfluoro-n-tridecanoic acid
Perfluoro-n-heptanoic acid	Perfluoro-n-tetradecanoic acid
Perfluoro-n-octanoic acid	N-Methylperfluorooctanesulfonamidoacetic acid
Perfluoro-n-nonanoic acid	N-Ethylperfluorooctanesulfonamidoacetic acid
Perfluoro-n-decanoic acid	Perfluoro-n-butane sulfonic acid
Perfluoro-n-undecanoic acid	Perfluoro-n-hexane sulfonic acid
Perfluoro-n-dodecanoic acid	Perfluoro-n-octane sulfonic acid

Technical Note

This was the first method introduced for the determination of 14 PFAS in drinking water. It includes 14 PFAS for determination using Solid Phase Extraction (SPE) and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). This method was updated in 2018 to 537.1 which adds additional analytes.

EPA Method 8327 - Native PFAS Reference Standard for Ground, Surface, and Wastewater

This CRM contains the 24 PFAS based on the newest publication of USEPA Method 8327 which is suitable for testing PFAS in surface water, groundwater and wastewater matrices. CRMs M-8327-10X and M-8327 are offered at a high and a low concentration to meet the specific needs of your testing.

Native PFAS Reference Standard

M-8327 *

2 µg/mL each in MeOH

1 mL

24 comps.

M-8327-10X *

20 µg/mL each in MeOH

1 mL

24 comps.

Perfluorobutane-1-sulfonic acid	Perfluoro-n-hexanoic acid
Perfluoropentanesulfonic acid	Perfluoro-n-heptanoic acid
Perfluorohexane-1-sulfonic acid	Perfluoro-n-octanoic acid
Perfluoroheptanesulfonic acid	Perfluoro-n-nonanoic acid
Perfluorooctane-1-sulfonic acid	Perfluoro-n-decanoic acid
Perfluorononanesulfonic acid	Perfluoro-n-undecanoic acid
Perfluorodecane-1-sulfonic acid	Perfluoro-n-dodecanoic acid
1H,1H,2H,2H-Perfluorohexanesulfonic acid	Perfluoro-n-tridecanoic acid
1H,1H,2H,2H-Perfluorooctane sulfonic acid	Perfluoro-n-tetradecanoic acid
1H,1H,2H,2H-Perfluorodecanesulfonic acid	N-ethylperfluoro-1-octanesulfonamidoacetic acid
Perfluoro-n-butanoic acid	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoro-n-pentanoic acid	Perfluorooctane sulfonamide

* NaOH is added to enhance stability.

Native PFAS Reference Standard

ISO21675-PFAS *

2 µg/mL each in MeOH

1 mL
30 comps.

Perfluoro-n-butanoic acid	Sulfuramid
Perfluoro-n-pentanoic acid	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluoro-n-hexanoic acid	N-ethylperfluoro-1-octanesulfonamidoacetic acid
Perfluoro-n-heptanoic acid	2H-Perfluoro-2-decenoic acid
Perfluoro-n-octanoic acid	Perfluoro(2-methyl-3-oxahexanoic) acid
Perfluoro-n-nonanoic acid	Perfluorobutane-1-sulfonic acid
Perfluoro-n-decanoic acid	Perfluorohexane-1-sulfonic acid
Perfluoro-n-undecanoic acid	Perfluoroheptanesulfonic acid
Perfluoro-n-dodecanoic acid	Perfluorooctane-1-sulfonic acid
Perfluoro-n-tridecanoic acid	Perfluorodecane-1-sulfonic acid
Perfluoro-n-tetradecanoic acid	1H,1H,2H,2H-Perfluorooctane sulfonic acid
Perfluorohexadecanoic acid	1H,1H,2H,2H-Perfluorodecanesulfonic acid
Perfluorooctadecanoic acid	Sodium dodecafluoro-3H-4,8-dioxanonoate
Perfluorooctane sulfonamide	Potassium 9-chlorohexadecafluoro-3-oxanone-1-sulfonate
N-Methylperfluoro-1-octanesulfonamide	Bis[2-(perfluorooctyl)ethyl] phosphate

*** NaOH is added to enhance stability.**



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