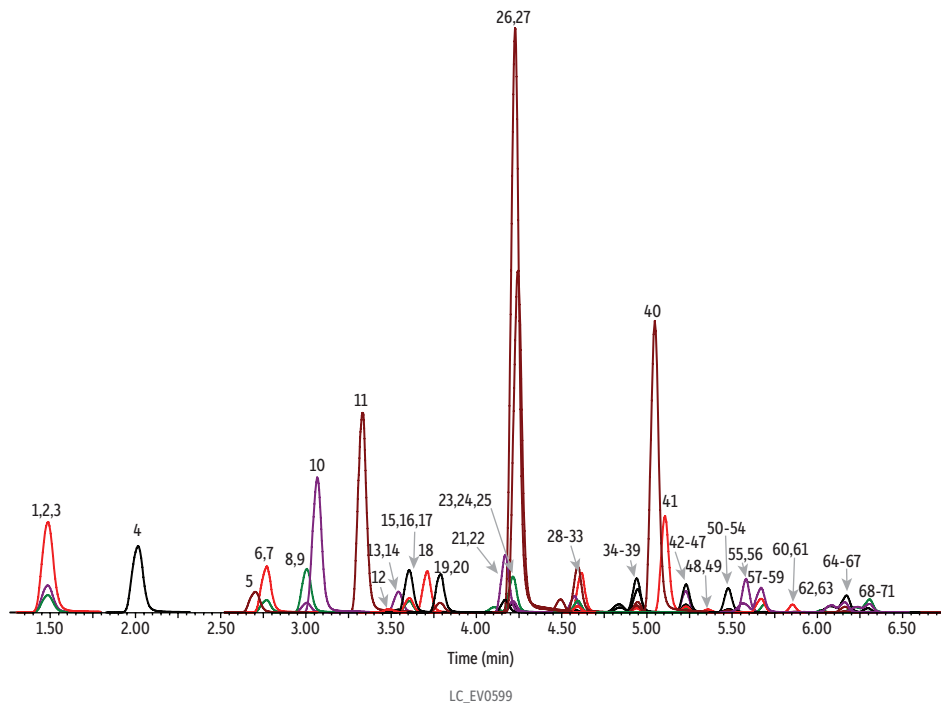


# EPA Method 1633 PFAS on Force C18 (50 x 2.1 mm) Extracted with Resprep PFAS SPE



**Column** Force C18 (cat.# 9634252)  
**Dimensions:** 50 mm x 2.1 mm ID  
**Particle Size:** 1.8 µm  
**Pore Size:** 100 Å  
**Temp.:** 40 °C  
**Standard/Sample**  
**Inj. Vol.:** 3 µL  
**Mobile Phase**  
**A:** Water, 5 mM ammonium acetate  
**B:** Methanol

Time (min)	Flow (mL/min)	%A	%B
0.00	0.4	80	20
6	0.4	5	95
6.6	0.4	5	95
6.61	0.4	80	20
7.5	0.4	80	20

**Max Pressure:** ~400 bar

**Detector** Waters Xevo TQ-S

**Ion Mode:** ESI-

**Mode:** MRM

**Instrument** Waters ACQUITY Premier

**Sample Preparation** Resprep PFAS cartridges (cat.# 28930) and a Thermo AutoTrace PFAS instrument were used for the following sample preparation procedure.

1. Spike 500 mL DI water with 200 µL of Wellington EPA-1633STK and 25 µL of Wellington MPFAC-HIF-ES.
  2. Rinse cartridge with 15 mL of 1% ammonium hydroxide in methanol.
  3. Rinse with 5 mL of 0.3 M formic acid in water.
  4. Load sample onto SPE cartridge dropwise at 5 mL/min.
  5. Rinse bottle with 5 mL DI water, load on to SPE cartridge dropwise at 5 mL/min., repeat.
  6. Rinse bottle with 5 mL of 1:1 0.1 M formic acid:methanol and load onto SPE cartridge dropwise at 5 mL/min.
  7. Flow nitrogen through cartridge for 15 minutes.
  8. Rinse bottles with 5 mL of 1% ammonium hydroxide in methanol, elute into collection vessel.
  9. Add 25 µL of concentrated acetic acid and 25 µL of Wellington MPFAC-HIF-ES.
  10. Transfer aliquot to autosampler vial (cat. # 23243) and cap (cat. # 23244).
- A PFAS delay column (cat.# 27854) was installed before the injector.

**Notes**

Peaks	tR (min)	Conc. (ng/L)	Precursor 1	Product 1	Product 2	Precursor 2	Product 1
1. Perfluoro- <i>n</i> -[1,2,3,4- 13C3]butanoic acid (13C3-PFBA)	1.485	5	216	172	-	-	-
2. Perfluoro- <i>n</i> -[1,2,3,4- 13C4]butanoic acid (13C4-PFBA)	1.487	10	217	172	-	-	-
3. Perfluorobutanoic acid (PFBA)	1.489	10	213	169	-	-	-
4. Perfluoro-3-methoxypropanoic acid (PFMPA)	2.007	5	229	85	-	-	-
5. 3-Perfluoropropyl propanoic acid (3:3FTCA)	2.7	12.5	241	177	117	-	-
6. Perfluoro- <i>n</i> -[1,2,3,4,5- 13C5]pentanoic acid (13C5-PFPeA)	2.765	5	268	223	-	-	-
7. Perfluoropentanoic acid (PFPeA)	2.768	5	263	219	69	-	-
8. Perfluorobutane sulfonate (PFBS)	3.006	2.5	299	80	99	-	-
9. Sodium perfluoro-1-[2,3,4- 13C3]butanesulfonate (13C3-PFBS)	3.007	2.5	302	80	99	-	-
10. Perfluoro-4-methoxybutanoic acid (PFMBA)	3.071	5	279	85	-	-	-
11. Perfluoro(2-ethoxyethane)sulfonic acid (PFEEISA)	3.333	5	315	135	83	-	-
12. Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	3.493	5	295	201	85	-	-
13. 1 <i>H</i> , 1 <i>H</i> , 2 <i>H</i> , 2 <i>H</i> -perfluorohexane sulfonate (4:2 FTS)	3.545	10	327	307	81	-	-
14. Sodium 1 <i>H</i> , 1 <i>H</i> , 2 <i>H</i> , 2 <i>H</i> -perfluoro-1-[1,2- 13C2]hexane sulfonate (13C2-4:2FTS)	3.55	5	329	81	309	-	-
15. Perfluorohexanoic acid (PFHxA)	3.608	2.5	313	269	119	-	-
16. Perfluoro- <i>n</i> -[1,2,3,4,6- 13C2]hexanoic acid (13C2-PFHxA)	3.609	2.5	315	270	119	-	-
17. Perfluoro- <i>n</i> -[1,2,3,4,6- 13C5]hexanoic acid (13C5-PFHxA)	3.61	2.5	318	273	120	-	-
18. Perfluoropentane sulfonate (PFPeS)	3.718	2.5	349	80	99	-	-
19. 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)13C3-propanoic acid (13C3-HFPO-DA)	3.79	10	287	169	185	-	-
20. Hexafluoropropylene oxide (HFPO-DA)	3.795	10	285	169	185	-	-
21. Perfluoroheptanoic acid (PFHpA)	4.174	2.5	363	319	169	-	-
22. Perfluoro- <i>n</i> -[1,2,3,4- 13C4]heptanoic acid (13C4-PFHpA)	4.174	2.5	367	322	-	-	-
23. Perfluoro-1-hexane[18O2]sulfonic acid (18O2-PFHxS)	4.218	2.5	403	84	-	-	-
24. Sodium perfluoro-1-[1,2,3- 13C3]hexanesulfonate (13C3-PFHxS)	4.218	2.5	402	80	99	-	-
25. Perfluorohexane sulfonate (PFHxS)	4.22	2.5	399	80	99	-	-
26. 4,8-Dioxa-3 <i>H</i> -perfluorononanoic acid (ADONA)	4.232	10	377	251	85	-	-
27. 2 <i>H</i> , 2 <i>H</i> , 3 <i>H</i> , 3 <i>H</i> -Perfluorooctanoic acid (5:3FTCA)	4.247	62.5	341	237	217	-	-
28. 1 <i>H</i> , 1 <i>H</i> , 2 <i>H</i> , 2 <i>H</i> -perfluorooctane sulfonate (6:2 FTS)	4.58	10	427	407	81	-	-
29. Sodium 1 <i>H</i> , 1 <i>H</i> , 2 <i>H</i> , 2 <i>H</i> -perfluoro-1-[1,2-13C2]-octane sulfonate (13C2-6:2FTS)	4.581	5	429	81	409	-	-
30. Perfluoro- <i>n</i> -[ 13C8]octanoic acid (13C8-PFOA)	4.598	2.5	421	376	-	-	-
31. Perfluorooctanoic acid (PFOA)	4.601	2.5	413	369	169	-	-
32. Perfluoro- <i>n</i> -[ 13C4]octanoic acid (13C4-PFOA)	4.601	2.5	417	172	-	-	-
33. Perfluoroheptane sulfonate (PFHpS)	4.621	2.5	449	80	99	-	-
34. Perfluorononanoic acid (PFNA)	4.944	2.5	463	419	219	-	-
35. Perfluoro- <i>n</i> -[ 13C5]nonanoic acid (13C5-PFNA)	4.944	1.25	468	423	-	-	-
36. Perfluoro- <i>n</i> -[ 13C9]nonanoic acid (13C9-PFNA)	4.944	1.25	472	427	-	-	-
37. Perfluorooctane sulfonate (PFOS)	4.949	2.5	499	80	99	-	-
38. Sodium perfluoro-[ 13C4]octanesulfonate (13C4-PFOS)	4.95	2.5	503	80	99	-	-
39. Sodium perfluoro-[ 13C8]octanesulfonate (13C8-PFOS)	4.95	2.5	507	80	99	-	-
40. 3-Perfluoroheptyl propanoic acid (7:3FTCA)	5.046	62.5	441	317	337	-	-
41. 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	5.114	10	531	351	-	533	353
42. Perfluorodecanoic acid (PFDA)	5.237	2.5	513	469	219	-	-
43. Perfluoro- <i>n</i> -[1,2,3,4,5,6- 13C2]decanoic acid (13C2-PFDA)	5.237	1.25	515	470	-	-	-
44. Perfluoro- <i>n</i> -[1,2,3,4,5,6- 13C6]decanoic acid (13C6-PFDA)	5.237	1.25	519	474	-	-	-
45. 1 <i>H</i> , 1 <i>H</i> , 2 <i>H</i> , 2 <i>H</i> -perfluorodecane sulfonate (8:2 FTS)	5.238	10	527	507	81	-	-
46. Sodium 1 <i>H</i> , 1 <i>H</i> , 2 <i>H</i> , 2 <i>H</i> -perfluoro-1-[1,2- 13C2]-decane sulfonate (13C2-8:2FTS)	5.238	5	529	81	509	-	-
47. Perfluorononanesulfonic acid (PFNS)	5.239	2.5	549	80	99	-	-
48. <i>N</i> -methyl- <i>d</i> 3-perfluoro-1-octanesulfonamidoacetic acid (D3-NMeFOSAA)	5.361	5	573	419	-	-	-
49. <i>N</i> -methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	5.366	2.5	570	419	483	-	-
50. Perfluorodecanesulfonic acid (PFDS)	5.475	2.5	599	80	99	-	-
51. Perfluoroundecanoic acid (PFUnA)	5.486	2.5	563	519	269	-	-
52. Perfluoro- <i>n</i> -[1,2,3,4,5,6,7- 13C7]undecanoic acid (13C7-PFUnA)	5.486	1.25	570	525	-	-	-
53. <i>N</i> -ethyl- <i>d</i> 5-perfluoro-1-octanesulfonamidoacetic acid (D5-NEtFOSAA)	5.487	5	589	419	-	-	-
54. <i>N</i> -ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	5.487	2.5	584	419	526	-	-
55. 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	5.59	10	631	451	-	633	453
56. Perfluorooctanesulfonamide (PFOSA)	5.669	2.5	498	78	478	-	-
57. Perfluoro-1-[ 13C8]octanesulfonamide (13C8-PFOSA)	5.669	2.5	506	78	-	-	-
58. Perfluorododecanoic acid (PFDoA)	5.691	2.5	613	569	319	-	-
59. Perfluoro- <i>n</i> -[1,2- 13C2]dodecanoic acid (13C2-PFDoA)	5.692	1.25	615	570	-	-	-
60. Perfluorododecanesulfonic acid (PFDoS)	5.861	2.5	699	80	99	-	-
61. Perfluorotridecanoic acid (PFTrDA)	5.876	2.5	663	619	169	-	-
62. Perfluorotetradecanoic acid (PFTeDA)	6.031	2.5	713	669	169	-	-
63. Perfluoro- <i>n</i> -[1,2- 13C2]tetradecanoic acid (13C2-PFTeDA)	6.031	1.25	715	670	-	-	-
64. <i>N</i> -methyl perfluorooctanesulfonamide (NMeFOSA)	6.158	2.5	512	219	169	-	-
65. <i>N</i> -methyl- <i>D</i> 3-perfluoro-1-octanesulfonamide (D3-NMeFOSA)	6.159	2.5	515	219	-	-	-
66. <i>N</i> -methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	6.166	25	616	59	-	-	-
67. <i>N</i> -methyl- <i>D</i> 7-perfluorooctanesulfonamidoethanol (D7-NMeFOSE)	6.167	25	623	59	-	-	-
68. <i>N</i> -ethyl- <i>D</i> 5-perfluoro-1-octanesulfonamide (D5-NEtFOSA)	6.295	2.5	531	219	-	-	-
69. <i>N</i> -ethyl perfluorooctanesulfonamide (NEtFOSA)	6.296	2.5	526	219	169	-	-
70. <i>N</i> -ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	6.298	25	630	59	-	-	-
71. <i>N</i> -ethyl- <i>D</i> 9-perfluorooctanesulfonamidoethanol (D9-NEtFOSE)	6.298	25	639	59	-	-	-