



Method Summary

The Determination of Per- and Polyfluorinated substances (PFAS) in Soils by LC-MS/MS

Scope and Range

This test method has been designed to quantify a suite of per- and polyfluorinated alkyl substances (PFAS) in soil samples. PFAS are surfactants and flame retardants with many industrial uses, particularly in the production of PTFE and in coatings for paper. Historically they have seen use in foaming agents, particularly aqueous film-forming foams used in firefighting.

Quantitation range: 1 to 200 µg/Kg or higher with dilutions

Perfluoroalkylcarboxylic Acids		CAS	µg/Kg
PFBA	perfluoro-n-butanoic acid	375-22-4	3
PFPA	perfluoro-n-pentanoic acid	2706-90-3	3
PFHxA	perfluoro-n-hexanoic acid	307-24-4	2
PFHpA	perfluoro-n-heptanoic acid	375-85-9	1
PFOA	perfluoro-n-octanoic acid	335-67-1	1
PFNA	perfluoro-n-nonanoic acid	375-95-1	1
PFDA	perfluoro-n-decanoic acid	335-76-2	1
PFUnA	perfluoro-n-undecanoic acid	2058-94-8	1
PFDoA	perfluoro-n-dodecanoic acid	307-55-1	1
Perfluoroalkylsulfonates#			
PFPeS	perfluoro-1-pentanesulfonate	2706-91-4	1
PFHxS	perfluoro-1-hexanesulfonate	355-46-4	1
PFHpS	perfluoro-1-heptanesulfonate	375-92-8	1
Linear PFOS	perfluoro-1-octanesulfonate	1763-23-1	1
Branched PFOS	(mixture of isomers)	-	1
Total PFOS	(sum of linear and branched)	-	1
Perfluorooctanesulfonamides			
PFOSA	perfluorooctanesulfonamide	754-91-6	1

Table 1 List of per- and polyfluorinated compounds contained within suite and associated limits of detection.

- The listed CAS numbers refer to the parent perfluoroalkylsulfonic acid. It should be noted that the method detects the perfluoroalkylsulfonate base anion which may derive from a range of substances, such as the parent acid and salts of the acid.

References

Agilent Application Note 5989-6577EN, Quantitative analysis of perfluorooctanoic acid by LC/MS/MS (2007).

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The Determination of Per- and Polyfluorinated substances (PFAS) in Soils by LC-MS/MS

DIN 38414-14 Determination of selected polyfluorinated compounds (PFC) in sludge, compost and soil - Method using high performance liquid chromatography and mass spectrometric detection (HPLC-MS/MS).

Principle

A known mass of soil undergoes extraction using methanol and analysed by liquid chromatography coupled with a triple quadrupole mass spectrometer (LC-MS/MS).

Interferences

Extracted samples may contain interferences from other compounds contained within the sample matrix. Using the principles of MS/MS, many of these interferences will be eliminated. However, there may be occasions when interferences from non-target compounds arise from similar precursor and product ions. In these cases, reported limits of detection may be raised.