



US EPA Method 1633A Standards

The United States Environmental Protection Agency (US EPA) Method 1633A has been developed cooperatively by the US EPA's Office of Water and the Department of Defense and is recommended for use in the Clean Water Act (CWA) compliance monitoring program. Method 1633A is currently the most comprehensive testing method used for targeted PFAS analysis, determining 40 per- and polyfluoroalkyl substances (PFAS) across nine compound classes in aqueous, solid, and tissue samples by LC-MS/MS. Method 1633A is an isotope dilution quantitation method, but is "performance-based," and states that laboratories may include alternative labeled PFAS without the need for the EPA review and approval, provided they meet the appropriate QC requirements for those new compounds. CIL is now offering an expanded extracted internal standard (EIS) and non-extracted internal standard (NIS) with several improvements to support more robust quantitation of analytes in Method 1633A.

CIL's Method 1633A Mixtures' Innovative Advantages

- CIL's expanded EIS contains $^{13}\text{C}_6$ -labeled perfluorotridecanoic acid (PFTTrDA), which will dramatically improve quantitation of that analyte.
- CIL's expanded EIS contains $^{13}\text{C}_3$ -labeled 3:3-FTCA, 5:3-FTCA, and 7:3-FTCA, which will dramatically improve quantitation of those analytes.
- CIL's labeled fluorotelomer sulfonates (FTS) in the EIS are $^{13}\text{C}_2$;D₄-labeled (M+6), providing complete separation from the natural M+2 abundance from the sulfur in FTS compounds.
- CIL's EIS uses $^{13}\text{C}_7$ -PFHpA, which will not be affected by carryover from $^{13}\text{C}_3$ -PFHpA coming from oxidation surrogates used in TOP assay analysis.
- CIL uses a $^{13}\text{C}_6$ -perfluorohexanesulfonate (PFHxS) in the NIS instead of $^{18}\text{O}_2$ which is known to exchange with native ^{16}O under certain conditions, nullifying its use as a standard.
- CIL is offering both 1.2 mL and 5 mL sizes of the EIS and NIS for convenience in laboratories with either smaller or larger sample quantities.
- CIL's native analytes mixture is a single multi-component mixture formulated at 2x the concentration of other suppliers' offerings.
- CIL formulates mixtures of PFAS compounds to the target concentration of the free acid, alleviating the need to perform additional calculations to adjust for the salt content.

Featured Products

Catalog No.	Description	Concentration	Amount
ES-5667	PFAS 40 Multi-Class Native Standard Solution	in methanol (with 4 molar equivalents NaOH)	1.2 mL
ES-5669	8-Component PFAS 1633 Supplemental Mix	in methanol (with 4 molar equivalents NaOH)	1.2 mL
ES-5658	EPA Method 1633A Expanded Extracted Internal Standard (EIS)	in methanol (with 4 molar equivalents NaOH)	1.2 mL
ES-5658-5ML	EPA Method 1633A Expanded Extracted Internal Standard (EIS)	in methanol (with 4 molar equivalents NaOH)	5 mL
ES-5659	EPA Method 1633A Non-Extracted Internal Standard (NIS)	in methanol (with 4 molar equivalents NaOH)	1.2 mL
ES-5659-5ML	EPA Method 1633A Non-Extracted Internal Standard (NIS)	in methanol (with 4 molar equivalents NaOH)	5 mL

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Catalog No.	Description	Concentration	Amount
ES-5667	PFAS 40 Multi-Class Native Standard Solution	in methanol (with 4 molar equivalents NaOH)	1.2 mL
	Unlabeled	(ng/mL)	
	Sodium perfluoro- <i>n</i> -butyrate (PFBA)	2,000	
	Sodium perfluoro- <i>n</i> -pentanoate (PFPeA)	1,000	
	Sodium perfluoro- <i>n</i> -hexanoate (PFHxA)	500	
	Perfluoro- <i>n</i> -heptanoic acid (PFHpA)	500	
	Sodium perfluoro- <i>n</i> -octanoate (PFOA)	500	
	Perfluoro- <i>n</i> -nonanoic acid (PFNA)	500	
	Sodium perfluoro- <i>n</i> -decanoate (PFDA)	500	
	Sodium perfluoro- <i>n</i> -undecanoate (PFUA)	500	
	Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA)	500	
	Perfluoro- <i>n</i> -tridecanoic acid (PFTrDA)	500	
	Perfluoro- <i>n</i> -tetradecanoic acid (PFTeDA)	500	
	Potassium perfluoro-1-butanefluorobutanesulfonate (PFBS)	500	
	Sodium perfluoro-1-pentanesulfonate (PFPeS)	500	
	Potassium perfluorohexanesulfonate (PFHxS) mix of isomers	500	
	Sodium perfluoro-1-heptanesulfonate (PFHpS)	500	
	Perfluorooctanesulfonic acid (PFOS) mix of isomers	500	
	Sodium perfluoro-1-nonanesulfonate (PFNS)	500	
	Potassium perfluoro-1-decanesulfonate (PFDS)	500	
	Potassium perfluoro-1-dodecanesulfonate (PFDoDS)	500	
	Sodium 1 <i>H</i> ,1 <i>H</i> ,2 <i>H</i> ,2 <i>H</i> -perfluorohexanesulfonate (4:2 FTS)	2,000	
	Sodium 1 <i>H</i> ,1 <i>H</i> ,2 <i>H</i> ,2 <i>H</i> -perfluorooctanesulfonate (6:2 FTS)	2,000	
	Sodium 1 <i>H</i> ,1 <i>H</i> ,2 <i>H</i> ,2 <i>H</i> -perfluorodecanesulfonate (8:2 FTS)	2,000	
	Perfluorooctanesulfonamide (PFOSA) mix of isomers	500	
	<i>N</i> -Methylperfluorooctanesulfonamide (<i>N</i> -MeFOSA) mix of isomers	500	
	<i>N</i> -Ethylperfluorooctanesulfonamide (<i>N</i> -EtFOSA) mix of isomers	500	
	<i>N</i> -Methylperfluorooctanesulfonamidoacetic acid (<i>N</i> -MeFOSAA) mix of isomers	500	
	<i>N</i> -Ethylperfluorooctanesulfonamidoacetic acid (<i>N</i> -EtFOSAA) mix of isomers	500	
	<i>N</i> -Methylperfluorooctanesulfonamidoethanol (<i>N</i> -MeFOSE) mix of isomers	5,000	
	<i>N</i> -Ethylperfluorooctanesulfonamidoethanol (<i>N</i> -EtFOSE) mix of isomers	5,000	
	Sodium tetrafluoro-2-(heptafluoropropoxy)propanoate (HFPO-DA) "GenX"	2,000	
	Dodecafluoro-3 <i>H</i> -4,8-dioxanonanoic acid (DONA)	2,000	
	Perfluoro-3-methoxypropanoic acid (PFMPA)	1,000	
	Perfluoro-4-methoxybutanoic acid (PFMBA)	1,000	
	Perfluoro-3,6-dioxaheptanoic acid (PFDHA)	1,000	
	Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (9Cl-PF3ONS) F53B Major	2,000	
	Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (11Cl-PF3OUdS) F53B Minor	2,000	
	Perfluoro(2-ethoxyethane) sulfonic acid (PFEESA)	1,000	
	2 <i>H</i> ,2 <i>H</i> ,3 <i>H</i> ,3 <i>H</i> -Perfluorohexanoic acid (3:3 FTCA)	2,500	
	2 <i>H</i> ,2 <i>H</i> ,3 <i>H</i> ,3 <i>H</i> -Perfluorooctanoic acid (5:3 FTCA)	12,500	
	2 <i>H</i> ,2 <i>H</i> ,3 <i>H</i> ,3 <i>H</i> -Perfluorodecanoic acid (7:3 FTCA) mix of isomers	12,500	

*Gravimetric concentration is based on the free acid, where applicable.

Catalog No.	Description	Concentration	Amount
ES-5669	8-Component PFAS 1633 Supplemental Mix	in methanol (with 4 molar equivalents NaOH)	1.2 mL
	Unlabeled	(ng/mL)	
	Perfluoropropanoic acid (PFPrA)	8000	
	Perfluoro- <i>n</i> -hexadecanoic acid (PFHxDA)	2000	
	Perfluoro- <i>n</i> -octadecanoic acid (PFODA)	2000	
	Sodium perfluoro-1-propanesulfonate (PFPrS)	2000	
	Perfluorobutanesulfonamide (PFBSA)	2000	
	Perfluorohexanesulfonamide (PFHxSA)	2000	
	Sodium 1 <i>H</i> ,1 <i>H</i> ,2 <i>H</i> ,2 <i>H</i> -perfluorododecanesulfonate (10:2 FTS)	2000	
	Lithium bis(trifluoromethanesulfonyl)imide (TFSI)	2000	
	<i>*Gravimetric concentration is based on the free acid, where applicable.</i>		
ES-5658	EPA Method 1633A Expanded Extracted Internal Standard (EIS)	in methanol (with 4 molar equivalents NaOH)	1.2 mL
ES-5658-5ML	EPA Method 1633A Expanded Extracted Internal Standard (EIS)	in methanol (with 4 molar equivalents NaOH)	5 mL
	Labeled	(ng/mL)	
	Sodium perfluoro- <i>n</i> -butyrate (PFBA) (¹³ C ₄ , 99%)	2000	
	Sodium perfluoro- <i>n</i> -pentanoate (PFPeA) (pentanoyl- ¹³ C ₅ , 99%)	1000	
	Sodium perfluoro- <i>n</i> -hexanoate (PFHxA) (¹³ C ₆ , 99%)	500	
	Sodium perfluoro- <i>n</i> -heptanoate (PFHpA) (¹³ C ₇ , 99%)	500	
	Perfluoro- <i>n</i> -octanoic acid (PFOA) (¹³ C ₈ , 99%)	500	
	Perfluoro- <i>n</i> -nonanoic acid (PFNA) (¹³ C ₉ , 99%)	250	
	Sodium perfluoro- <i>n</i> -decanoate (PFDA) (1,2,3,4,5,6- ¹³ C ₆ , 99%)	250	
	Sodium perfluoro- <i>n</i> -undecanoate (PFUA) (¹³ C ₉ , 99%)	250	
	Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA) (¹³ C ₁₂ , 99%)	250	
	Sodium perfluoro- <i>n</i> -tridecanoate (PFTrDA) (1,2,3,4,5,6- ¹³ C ₆ , 99%)	250	
	Sodium perfluoro- <i>n</i> -tetradecanoate (PFTeDA) (1,2,3,4,5,6- ¹³ C ₆ , 99%)	250	
	Potassium perfluoro-1-butanedisulfonate (PFBS) (¹³ C ₄ , 99%)	500	
	Potassium perfluoro-1-hexanedisulfonate (PFHxS) (4,5,6- ¹³ C ₃ , 99%)	500	
	Potassium perfluoro-1-octanedisulfonate (PFOS) (¹³ C ₈ , 99%)	500	
	Sodium 1 <i>H</i> ,1 <i>H</i> ,2 <i>H</i> ,2 <i>H</i> -perfluoro-1-hexanesulfonate (4:2 FTS) (¹³ C ₂ , 99%; D ₄ , 98%)	1000	
	Sodium 1 <i>H</i> ,1 <i>H</i> ,2 <i>H</i> ,2 <i>H</i> -perfluoro-1-octanesulfonate (6:2 FTS) (¹³ C ₂ , 99%; D ₄ , 98%)	1000	
	Sodium 1 <i>H</i> ,1 <i>H</i> ,2 <i>H</i> ,2 <i>H</i> -perfluoro-1-decanesulfonate (8:2 FTS) (¹³ C ₂ , 99%; D ₄ , 98%)	1000	
	Perfluorooctanesulfonamide (PFOSA) (¹³ C ₈ , 99%)	500	
	<i>N</i> -Methylperfluorooctanesulfonamide (<i>N</i> -MeFOSA) (D ₃ , 98%)	500	
	<i>N</i> -Ethylperfluorooctanesulfonamide (<i>N</i> -EtFOSA) (D ₅ , 98%)	500	
	<i>N</i> -Methylperfluorooctanesulfonamidoacetic acid (<i>N</i> -MeFOSAA) (<i>N</i> -methyl-D ₃ , 98%)	1000	
	<i>N</i> -Ethylperfluorooctanesulfonamidoacetic acid (<i>N</i> -EtFOSAA) (<i>N</i> -ethyl-D ₅ , 98%)	1000	
	<i>N</i> -Methylperfluorooctanesulfonamidoethanol (<i>N</i> -MeFOSE) (<i>N</i> -methyl-D ₃ , 98%)	5000	
	<i>N</i> -Ethylperfluorooctanesulfonamidoethanol (<i>N</i> -EtFOSE) (<i>N</i> -ethyl-D ₅ , 98%)	5000	
	Sodium tetrafluoro-2-(heptafluoropropoxy)propanoate "GenX" (HFPO-DA) (propoxy- ¹³ C ₃ , 99%)	2000	
	2 <i>H</i> ,2 <i>H</i> ,3 <i>H</i> ,3 <i>H</i> -Perfluorohexanoic acid (3:3-FTCA) (1,2,3- ¹³ C ₃ , 99%)	2500	
	2 <i>H</i> ,2 <i>H</i> ,3 <i>H</i> ,3 <i>H</i> -Perfluorooctanoic acid (5:3-FTCA) (1,2,3- ¹³ C ₃ , 99%)	6250	
	2 <i>H</i> ,2 <i>H</i> ,3 <i>H</i> ,3 <i>H</i> -Perfluorodecanoic acid (7:3-FTCA) (1,2,3- ¹³ C ₃ , 99%)	6250	
	<i>*Gravimetric concentration is based on the free acid, where applicable.</i>		

Chemical purity (CP) is 98% or greater, unless otherwise specified.

Catalog No.	Description	Concentration	Amount
ES-5659	EPA Method 1633A Non-Extracted Internal Standard (NIS)	in methanol (with 4 molar equivalents NaOH)	1.2 mL
ES-5659-5ML	EPA Method 1633A Non-Extracted Internal Standard (NIS)	in methanol (with 4 molar equivalents NaOH)	5 mL
Labeled		(ng/mL)	
Sodium perfluoro- <i>n</i> -butyrate (PFBA) (2,3,4- ¹³ C ₃ , 99%)		1000	
Sodium perfluoro- <i>n</i> -hexanoate (PFHxA) (4,5,6- ¹³ C ₃ , 99%)		500	
Perfluoro- <i>n</i> -octanoic acid (PFOA) (1,2,3,4,5,6- ¹³ C ₆ , 99%)		500	
Sodium perfluoro- <i>n</i> -nonanoate (PFNA) (1,2,3,4,5,6- ¹³ C ₆ , 99%)		250	
Sodium perfluoro- <i>n</i> -decanoate (PFDA) (¹³ C ₉ , 99%)		250	
Potassium perfluoro-1-hexanesulfonate (PFHxS) (¹³ C ₆ , 99%)		500	
Potassium perfluoro-1-octanesulfonate (PFOS) (1,2,3,4,5- ¹³ C ₅ , 99%)		500	

*Gravimetric concentration is based on the free acid, where applicable.

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