



Cambridge Isotope Laboratories, Inc.  
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ENVIRONMENTAL STANDARDS

# Per- and Polyfluoroalkyl Substances (PFAS)



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## Introduction

Per- and polyfluoroalkyl substances (PFAS) are a class of industrial chemicals that are used to resist grease, oil, water, and heat. They are most commonly used in the manufacture of water- and stain-resistant fabrics and carpeting, food packaging, and fire-fighting foams.

PFAS have been one of the most discussed classes of chemical pollutants in recent years due to their widespread use, prevalence and persistence in the environment, and human-exposure concerns. Regulatory agencies worldwide have begun proposing or enacting bans on certain PFAS compounds to protect the environment and

human health from additional PFAS accumulation and exposure. And with ever-decreasing allowable limits, the need for more analytical standards is increasingly important.

CIL has been working diligently to produce high-purity stable isotope-labeled and native individual and multi-component PFAS standards to assist with ongoing environmental and biomonitoring studies. More standards are being developed and released as new compounds of concern are identified and standardized methods are established.

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*Chemical purity for unlabeled/native compounds is 97-99% or greater unless otherwise specified; chemical purity for labeled compounds is 95-99% or greater unless otherwise specified.*



### Standards for Environmental Analysis

Through our collaborations with environmental testing laboratories, regulatory agencies, and research institutions around the world, CIL has developed numerous products to assist a wide range of testing applications. You will find more than 3,000 products developed specifically for trace and ultratrace analysis by isotope dilution mass spectrometry (IDMS). As new technology and methodologies advance, CIL maintains a leadership role in developing new standards and standard mixtures to keep pace with these new procedures. You will find throughout this catalog many new products developed in various solvents for use in not only new GC-MS applications, but also LC-MS methods that continue to gain importance as an integral part of the environmental testing laboratory.

## Perfluorocarboxylic Acids (PFCA)

| Catalog No.     | Description                                                                                | Concentration                                    | Amount |
|-----------------|--------------------------------------------------------------------------------------------|--------------------------------------------------|--------|
| CLM-11046-1.2   | Sodium trifluoroacetate (TFA) ( $^{13}\text{C}_2$ , 99%)                                   | 50 µg/mL in methanol                             | 1.2 mL |
| ULM-11087-1.2   | Sodium trifluoroacetate (TFA) (unlabeled)                                                  | 50 µg/mL in methanol                             | 1.2 mL |
| CLM-11324-A-1.2 | Perfluoropropanoic acid (PFPrA) ( $^{13}\text{C}_3$ , 99%)                                 | 50 µg/mL in MeOH (with 4 molar equivalent NaOH)  | 1.2 mL |
| ULM-11323-A-1.2 | Perfluoropropanoic acid (PFPrA) (unlabeled)                                                | 50 µg/mL in MeOH (with 4 molar equivalent NaOH)  | 1.2 mL |
| CLM-10883-1.2   | Sodium perfluoro- <i>n</i> -butyrate (PFBA) (2,3,4- $^{13}\text{C}_3$ , 99%)               | 50 µg/mL in methanol                             | 1.2 mL |
| CLM-8173-1.2    | Sodium perfluoro- <i>n</i> -butyrate (PFBA) ( $^{13}\text{C}_4$ , 99%)                     | 50 µg/mL in methanol                             | 1.2 mL |
| ULM-11058-1.2   | Sodium perfluoro- <i>n</i> -butyrate (PFBA) (unlabeled)                                    | 50 µg/mL in methanol                             | 1.2 mL |
| CLM-10931-1.2   | Sodium perfluoro- <i>n</i> -pentanoate (PFPeA) (pentanoyl- $^{13}\text{C}_5$ , 99%)        | 50 µg/mL in methanol                             | 1.2 mL |
| ULM-10960-1.2   | Sodium perfluoro- <i>n</i> -pentanoate (PFPeA) (unlabeled)                                 | 50 µg/mL in methanol                             | 1.2 mL |
| CLM-8340-1.2    | Sodium perfluoro- <i>n</i> -hexanoate (PFHxA) ( $^{13}\text{C}_6$ , 99%)                   | 50 µg/mL in methanol                             | 1.2 mL |
| ULM-8342-1.2    | Sodium perfluoro- <i>n</i> -hexanoate (PFHxA) (unlabeled)                                  | 50 µg/mL in methanol                             | 1.2 mL |
| CLM-10624-1.2   | Sodium perfluoro- <i>n</i> -heptanoate (PFHpA) ( $^{13}\text{C}_7$ , 99%)                  | 50 µg/mL in methanol                             | 1.2 mL |
| CLM-11723-1.2   | Sodium perfluoro- <i>n</i> -heptanoic acid (PFHpA) (5,6,7- $^{13}\text{C}_3$ , 99%)        | 100 µg/mL in methanol                            | 1.2 mL |
| ULM-9516-A-1.2  | Perfluoro- <i>n</i> -heptanoic acid (PFHpA) (unlabeled)                                    | 50 µg/mL in MeOH (with 4 molar equivalent NaOH)  | 1.2 mL |
| CLM-8005-A-1.2  | Perfluoro- <i>n</i> -octanoic acid (PFOA) ( $^{13}\text{C}_8$ , 99%)                       | 50 µg/mL in MeOH (with 4 molar equivalent NaOH)  | 1.2 mL |
| CLM-11727-1.2   | Perfluoro- <i>n</i> -octanoic acid (PFOA) (1,2,3,4,5,6- $^{13}\text{C}_6$ , 99%)           | 50 µg/mL in MeOH (with 4 molar equivalent NaOH)  | 1.2 mL |
| ULM-11782-1.2   | Sodium perfluoro- <i>n</i> -octanoate (PFOA) (unlabeled)                                   | 50 µg/mL in methanol                             | 1.2 mL |
| CLM-8060-A-1.2  | Perfluoro- <i>n</i> -nonanoic acid (PFNA) ( $^{13}\text{C}_9$ , 99%)                       | 50 µg/mL in MeOH (with 4 molar equivalent NaOH)  | 1.2 mL |
| CLM-11724-1.2   | Perfluoro- <i>n</i> -nonanoic acid (PFNA) (7,8,9- $^{13}\text{C}_3$ , 99%)                 | 100 µg/mL in MeOH (with 4 molar equivalent NaOH) | 1.2 mL |
| CLM-11537-1.2   | Sodium perfluoro- <i>n</i> -nonanoate (PFNA) (1,2,3,4,5,6- $^{13}\text{C}_6$ , 99%)        | 50 µg/mL in methanol                             | 1.2 mL |
| ULM-8066-A-1.2  | Perfluoro- <i>n</i> -nonanoic acid (PFNA) (unlabeled)                                      | 50 µg/mL in MeOH (with 4 molar equivalent NaOH)  | 1.2 mL |
| CLM-11039-1.2   | Sodium perfluoro- <i>n</i> -decanoate (PFDA) ( $^{13}\text{C}_9$ , 99%)                    | 50 µg/mL in methanol                             | 1.2 mL |
| CLM-11538-1.2   | Sodium perfluoro- <i>n</i> -decanoate (PFDA) (1,2,3,4,5,6- $^{13}\text{C}_6$ , 99%)        | 50 µg/mL in methanol                             | 1.2 mL |
| ULM-11038-1.2   | Sodium perfluoro- <i>n</i> -decanoate (PFDA) (unlabeled)                                   | 50 µg/mL in methanol                             | 1.2 mL |
| CLM-8789-1.2    | Sodium perfluoro- <i>n</i> -undecanoate (PFUA) ( $^{13}\text{C}_9$ , 99%)                  | 50 µg/mL in methanol                             | 1.2 mL |
| ULM-8084-1.2    | Sodium perfluoro- <i>n</i> -undecanoate (PFUA) (unlabeled)                                 | 50 µg/mL in methanol                             | 1.2 mL |
| CLM-10593-1.2   | Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA) ( $^{13}\text{C}_{12}$ , 99%)              | 50 µg/mL in methanol                             | 1.2 mL |
| ULM-10594-1.2   | Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA) (unlabeled)                                | 50 µg/mL in methanol                             | 1.2 mL |
| ULM-9955-1.2    | Perfluoro- <i>n</i> -tridecanoic acid (PFTrDA) (unlabeled)                                 | 50 µg/mL in methanol                             | 1.2 mL |
| CLM-11535-1.2   | Sodium perfluoro- <i>n</i> -tetradecanoate (PFTeDA) (1,2,3,4,5,6- $^{13}\text{C}_6$ , 99%) | 50 µg/mL in methanol                             | 1.2 mL |
| ULM-9956-1.2    | Perfluoro- <i>n</i> -tetradecanoic acid (PFTeDA) (unlabeled)                               | 50 µg/mL in methanol                             | 1.2 mL |
| CLM-11544-1.2   | Sodium perfluoro- <i>n</i> -hexadecanoate (PFHxDA) (1,2,3,4- $^{13}\text{C}_4$ , 99%)      | 50 µg/mL in methanol                             | 1.2 mL |
| ULM-10721-1.2   | Perfluoro- <i>n</i> -hexadecanoic acid (PFHxDA) (unlabeled)                                | 50 µg/mL in methanol                             | 1.2 mL |
| ULM-10722-1.2   | Perfluoro- <i>n</i> -octadecanoic acid (PFODA) (unlabeled)                                 | 50 µg/mL in methanol                             | 1.2 mL |

|         |                                                                                    |                    |
|---------|------------------------------------------------------------------------------------|--------------------|
| ES-5587 | Perfluoroalkylcarboxylic acid (PFCA) $\text{C}_4$ - $\text{C}_{14}$ Native Mixture | 1.2 mL in methanol |
|---------|------------------------------------------------------------------------------------|--------------------|

| Unlabeled                                       | (ng/mL)* |
|-------------------------------------------------|----------|
| Perfluoro- <i>n</i> -butyric acid (PFBA)        | 2000     |
| Perfluoro- <i>n</i> -pentanoic acid (PFPA)      | 2000     |
| Sodium perfluoro- <i>n</i> -hexanoate (PFHxA)   | 2000     |
| Perfluoro- <i>n</i> -heptanoic acid (PFHpA)     | 2000     |
| Perfluoro- <i>n</i> -octanoic acid (PFOA)       | 2000     |
| Perfluoro- <i>n</i> -nonanoic acid (PFNA)       | 2000     |
| Sodium perfluoro- <i>n</i> -decanoate (PFDA)    | 2000     |
| Sodium perfluoro- <i>n</i> -undecanoate (PFUA)  | 2000     |
| Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA) | 2000     |
| Perfluoro- <i>n</i> -tridecanoic acid (PFTrA)   | 2000     |
| Perfluoro- <i>n</i> -tetradecanoic acid (PFTeA) | 2000     |

\*Gravimetric concentration is based on the salt form, where applicable.

## Perfluoroalkyl Sulfonates (PFAS)

| Catalog No.   | Description                                                                                  | Concentration        | Amount |
|---------------|----------------------------------------------------------------------------------------------|----------------------|--------|
| ULM-11678-1.2 | Sodium trifluoromethanesulfonate (TFMS) (unlabeled)                                          | 50 µg/mL in methanol | 1.2 mL |
| ULM-11676-1.2 | Sodium perfluoroethanesulfonate (PFETs) (unlabeled)                                          | 50 µg/mL in methanol | 1.2 mL |
| CLM-11677-1.2 | Potassium perfluoro-1-propanesulfonate (PFPrS) ( <sup>13</sup> C <sub>3</sub> , 99%)         | 50 µg/mL in methanol | 1.2 mL |
| ULM-11655-1.2 | Sodium perfluoro-1-propanesulfonate (PFPrS) (unlabeled)                                      | 50 µg/mL in methanol | 1.2 mL |
| CLM-9523-1.2  | Potassium perfluoro-1-butanefulfonate (PFBS) ( <sup>13</sup> C <sub>4</sub> , 99%)           | 50 µg/mL in methanol | 1.2 mL |
| ULM-9521-1.2  | Potassium perfluoro-1-butanefulfonate (PFBS) (unlabeled)                                     | 50 µg/mL in methanol | 1.2 mL |
| ULM-9520-1.2  | Sodium perfluoro-1-pentanesulfonate (PFPeS) (unlabeled)                                      | 50 µg/mL in methanol | 1.2 mL |
| CLM-9526-1.2  | Potassium perfluoro-1-hexanesulfonate (PFHxS) ( <sup>13</sup> C <sub>6</sub> , 99%)          | 50 µg/mL in methanol | 1.2 mL |
| ULM-12310-1.2 | Potassium perfluoro-1-hexanesulfonate (PFHxS) (unlabeled) linear isomer                      | 50 µg/mL in methanol | 1.2 mL |
| ULM-9524-1.2  | Potassium perfluorohexanesulfonate (PFHxS) (unlabeled) mix of isomers                        | 50 µg/mL in methanol | 1.2 mL |
| ULM-9531-1.2  | Sodium perfluoro-1-heptanesulfonate (PFHpS) (unlabeled)                                      | 50 µg/mL in methanol | 1.2 mL |
| CLM-11340-1.2 | Potassium perfluoro-1-octanesulfonate (PFOS) ( <sup>13</sup> C <sub>8</sub> , 99%)           | 50 µg/mL in methanol | 1.2 mL |
| CLM-11540-1.2 | Potassium perfluoro-1-octanesulfonate (PFOS) (1,2,3,4,5- <sup>13</sup> C <sub>5</sub> , 99%) | 50 µg/mL in methanol | 1.2 mL |
| ULM-11563-1.2 | Potassium perfluoro-1-octanesulfonate (PFOS) (unlabeled)                                     | 50 µg/mL in methanol | 1.2 mL |
| ULM-9001-1.2  | Sodium perfluoro-1-octanesulfonate (PFOS) (unlabeled)                                        | 50 µg/mL in methanol | 1.2 mL |
| ULM-10655-1.2 | Perfluorooctanesulfonate (PFOS) (unlabeled) mix of isomers                                   | 50 µg/mL in methanol | 1.2 mL |
| ULM-9530-1.2  | Sodium perfluoro-1-nonanesulfonate (PFNS) (unlabeled)                                        | 50 µg/mL in methanol | 1.2 mL |
| ULM-12322-1.2 | Potassium perfluoro-1-decanesulfonate (PFDS) (unlabeled)                                     | 50 µg/mL in methanol | 1.2 mL |
| ULM-11557-1.2 | Potassium perfluoro-1-dodecanesulfonate (PFDoDS) (unlabeled)                                 | 50 µg/mL in methanol | 1.2 mL |

|           |                                                                               |                    |
|-----------|-------------------------------------------------------------------------------|--------------------|
| ES-5576-A | Perfluoroalkylsulfonate (PFAS) C <sub>4</sub> -C <sub>10</sub> Native Mixture | 1.2 mL in methanol |
|-----------|-------------------------------------------------------------------------------|--------------------|

| Unlabeled                                                 | (ng/mL)* |
|-----------------------------------------------------------|----------|
| Potassium perfluoro-1-butanefulfonate (PFBS)              | 5000     |
| Sodium perfluoro-1-pentanesulfonate (PFPeS)               | 5000     |
| Potassium perfluorohexanesulfonate (PFHxS) mix of isomers | 5000     |
| Sodium perfluoro-1-heptanesulfonate (PFHpS)               | 5000     |
| Sodium perfluoro-1-octanesulfonate (PFOS)                 | 5000     |
| Sodium perfluoro-1-nonanesulfonate (PFNS)                 | 5000     |
| Potassium perfluoro-1-decanesulfonate (PFDS)              | 5000     |

\*Gravimetric concentration is based on the salt form, where applicable.

## PFOS/PFOA Mixtures

| Catalog No.    | Description                          | Amount                  |
|----------------|--------------------------------------|-------------------------|
| ES-5570        | PFOS/PFOA Calibration Series CS1-CS5 | 5 × 0.25 mL in methanol |
| ES-5570-CS0.25 | PFOS/PFOA Calibration Series CS0.25  | 0.25 mL in methanol     |

All concentrations are in ng/mL\*

| Unlabeled                                                                       | CS0.25** | CS1 | CS2 | CS3 | CS4 | CS5  |
|---------------------------------------------------------------------------------|----------|-----|-----|-----|-----|------|
| Perfluoro- <i>n</i> -octanoic acid (PFOA)                                       | 0.5      | 2   | 10  | 50  | 200 | 1000 |
| Sodium perfluoro-1-octanesulfonate (PFOS)                                       | 0.5      | 2   | 10  | 50  | 200 | 1000 |
| Extraction                                                                      |          |     |     |     |     |      |
| Perfluoro- <i>n</i> -octanoic acid (PFOA) ( <sup>13</sup> C <sub>8</sub> , 99%) | 50       | 50  | 50  | 50  | 50  | 50   |
| Sodium perfluoro-1-octanesulfonate (PFOS) ( <sup>13</sup> C <sub>8</sub> , 99%) | 50       | 50  | 50  | 50  | 50  | 50   |
| Injection                                                                       |          |     |     |     |     |      |
| Perfluoro- <i>n</i> -nonanoic acid (PFNA) ( <sup>13</sup> C <sub>9</sub> , 99%) | 50       | 50  | 50  | 50  | 50  | 50   |

\*Gravimetric concentration is based on the salt form, where applicable. \*\*Not included in ES-5570 – available for separate purchase.

|         |                                       |                  |
|---------|---------------------------------------|------------------|
| ES-5571 | PFOS/PFOA Extraction Standard Mixture | 3 mL in methanol |
|---------|---------------------------------------|------------------|

| Labeled                                                                         | (ng/mL)* |
|---------------------------------------------------------------------------------|----------|
| Perfluoro- <i>n</i> -octanoic acid (PFOA) ( <sup>13</sup> C <sub>8</sub> , 99%) | 2000     |
| Sodium perfluoro-1-octanesulfonate (PFOS) ( <sup>13</sup> C <sub>8</sub> , 99%) | 2000     |

\*Gravimetric concentration is based on the salt form, where applicable.

|         |                                      |                  |
|---------|--------------------------------------|------------------|
| ES-5572 | PFOS/PFOA Injection Standard Mixture | 3 mL in methanol |
|---------|--------------------------------------|------------------|

| Labeled                                                                         | (ng/mL)* |
|---------------------------------------------------------------------------------|----------|
| Perfluoro- <i>n</i> -nonanoic acid (PFNA) ( <sup>13</sup> C <sub>9</sub> , 99%) | 2000     |

\*Gravimetric concentration is based on the salt form, where applicable.

|         |                                   |                    |
|---------|-----------------------------------|--------------------|
| ES-5573 | PFOS/PFOA Native Standard Mixture | 1.2 mL in methanol |
|---------|-----------------------------------|--------------------|

| Unlabeled                                 | (ng/mL)* |
|-------------------------------------------|----------|
| Perfluoro- <i>n</i> -octanoic acid (PFOA) | 5000     |
| Sodium perfluoro-1-octanesulfonate (PFOS) | 5000     |

\*Gravimetric concentration is based on the salt form, where applicable.

|         |                                          |                    |
|---------|------------------------------------------|--------------------|
| ES-5649 | PFOS/PFOA/PFHxS Labeled Standard Mixture | 1.2 mL in methanol |
|---------|------------------------------------------|--------------------|

| Labeled                                                                             | (ng/mL)* |
|-------------------------------------------------------------------------------------|----------|
| Sodium perfluoro-1-octanesulfonate (PFOS) ( <sup>13</sup> C <sub>8</sub> , 99%)     | 2000     |
| Perfluoro- <i>n</i> -octanoic acid (PFOA) ( <sup>13</sup> C <sub>8</sub> , 99%)     | 2000     |
| Potassium perfluoro-1-hexanesulfonate (PFHxS) ( <sup>13</sup> C <sub>6</sub> , 99%) | 2000     |

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

|           |                                        |                    |
|-----------|----------------------------------------|--------------------|
| ES-5648-A | PFOS/PFOA/PFHxS Native Analyte Mixture | 1.2 mL in methanol |
|-----------|----------------------------------------|--------------------|

| Unlabeled                                     | (ng/mL)* |
|-----------------------------------------------|----------|
| Sodium perfluoro-1-octanesulfonate (PFOS)     | 5000     |
| Sodium perfluoro- <i>n</i> -octanoate (PFOA)  | 5000     |
| Potassium perfluoro-1-hexanesulfonate (PFHxS) | 5000     |

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

## Fluoroethers and Polyethers

| Catalog No.     | Description                                                                                             | Concentration                                 | Amount |
|-----------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------|--------|
| CLM-11543-1.2   | Sodium tetrafluoro-2-(heptafluoropropoxy)propanoate (HFPO-DA) "GenX" (propoxy- $^{13}\text{C}_3$ , 99%) | 100 µg/mL in methanol                         | 1.2 mL |
| ULM-11542-1.2   | Sodium tetrafluoro-2-(heptafluoropropoxy)propanoate (HFPO-DA) "GenX" (unlabeled)                        | 100 µg/mL in methanol                         | 1.2 mL |
| ULM-11280-A-1.2 | Dodecafluoro-3H-4,8-dioxanonanoic acid (DONA) (unlabeled)                                               | 100 µg/mL in MeOH (w/4 molar equivalent NaOH) | 1.2 mL |
| ULM-10843-1.2   | Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (9CI-PF3ONS) (F53B Major) (unlabeled)          | 100 µg/mL in methanol                         | 1.2 mL |
| ULM-10844-1.2   | Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (11CI-PF3OUdS) (F53B Minor) (unlabeled)       | 100 µg/mL in methanol                         | 1.2 mL |
| ULM-11230-1.2   | Perfluoro-3,6-dioxa-4-methyl-7-octenesulfonic acid (Nafion BP1) (unlabeled)                             | 50 µg/mL in methanol                          | 1.2 mL |
| ULM-11231-1.2   | 7H-Perfluoro-4-methyl-3,6-dioxaoctanesulfonic acid (Nafion BP2) (unlabeled)                             | 50 µg/mL in methanol                          | 1.2 mL |
| ULM-11226-1.2   | Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA) (unlabeled)                                                 | 50 µg/mL in methanol                          | 1.2 mL |
| ULM-12320-1.2   | Perfluoro-2-methoxypropanoic acid (PMPA), sodium salt (unlabeled)                                       | 50 µg/mL in methanol                          | 1.2 mL |
| ULM-12321-1.2   | Perfluoro-2-ethoxypropanoic acid (PEPA) (unlabeled)                                                     | 50 µg/mL in methanol                          | 1.2 mL |
| ULM-11223-1.2   | Perfluoro-2-methoxyacetic acid (PFMOAA) (unlabeled)                                                     | 50 µg/mL in methanol                          | 1.2 mL |
| ULM-10738-1.2   | Perfluoro-3-methoxypropanoic acid (PFMPA) (unlabeled)                                                   | 100 µg/mL in methanol                         | 1.2 mL |
| ULM-10739-1.2   | Perfluoro-4-methoxybutanoic acid (PFMBA) (unlabeled)                                                    | 50 µg/mL in methanol                          | 1.2 mL |
| ULM-10734-1.2   | Perfluoro-3,6-dioxaheptanoic acid (PFDHA) (unlabeled)                                                   | 100 µg/mL in methanol                         | 1.2 mL |
| ULM-11128-1.2   | Perfluoro(2-ethoxyethane) sulfonic acid (PFEEA) (unlabeled)                                             | 50 µg/mL in methanol                          | 1.2 mL |

## Other Fluorinated Compounds

| Catalog No.   | Description                                                              | Concentration         | Amount |
|---------------|--------------------------------------------------------------------------|-----------------------|--------|
| ULM-11073-1.2 | Bis(1H,1H,2H,2H-perfluorodecyl) phosphate (8:2-DiPAP) (unlabeled)        | 50 µg/mL in methanol  | 1.2 mL |
| CLM-11260-1.2 | 2,2-Difluoromalononic acid (MMF), sodium salt ( $^{13}\text{C}_3$ , 99%) | 100 µg/mL in methanol | 1.2 mL |
| ULM-12303-1.2 | 2,2-Difluoromalononic acid (MMF), sodium salt (unlabeled)                | 100 µg/mL in methanol | 1.2 mL |
| ULM-11742-1.2 | Lithium bis(trifluoromethanesulfonyl)imide (TFSI) (unlabeled)            | 100 µg/mL in methanol | 1.2 mL |

## Fluorotelomer Sulfonates (FTS)

| Catalog No.    | Description                                                                                             | Concentration        | Amount |
|----------------|---------------------------------------------------------------------------------------------------------|----------------------|--------|
| CDLM-10753-1.2 | Sodium 1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS) ( $^{13}\text{C}_2$ , 99%; $\text{D}_4$ , 98%)    | 50 µg/mL in methanol | 1.2 mL |
| ULM-10757-1.2  | Sodium 1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS) (unlabeled)                                       | 50 µg/mL in methanol | 1.2 mL |
| CDLM-10752-1.2 | Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS) ( $^{13}\text{C}_2$ , 99%; $\text{D}_4$ , 98%)    | 50 µg/mL in methanol | 1.2 mL |
| ULM-10756-1.2  | Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS) (unlabeled)                                       | 50 µg/mL in methanol | 1.2 mL |
| CDLM-10751-1.2 | Sodium 1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS) ( $^{13}\text{C}_2$ , 99%; $\text{D}_4$ , 98%)    | 50 µg/mL in methanol | 1.2 mL |
| ULM-10755-1.2  | Sodium 1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS) (unlabeled)                                       | 50 µg/mL in methanol | 1.2 mL |
| CDLM-10750-1.2 | Sodium 1H,1H,2H,2H-perfluorododecanesulfonate (10:2 FTS) ( $^{13}\text{C}_2$ , 99%; $\text{D}_4$ , 98%) | 50 µg/mL in methanol | 1.2 mL |
| ULM-10754-1.2  | Sodium 1H,1H,2H,2H-perfluorododecanesulfonate (10:2 FTS) (unlabeled)                                    | 50 µg/mL in methanol | 1.2 mL |

|            |                                                                    |                    |
|------------|--------------------------------------------------------------------|--------------------|
| ES-5661    | Fluorotelomer Sulfonates (FTS) Labeled Standard Mixture            | 1.2 mL in methanol |
| ES-5661-2X | Fluorotelomer Sulfonates (FTS) Labeled Standard Mixture (2X Stock) | 1.2 mL in methanol |

| Labeled                                                                                                 | ES-5661 (ng/mL)* | ES-5661-2X (ng/mL)* |
|---------------------------------------------------------------------------------------------------------|------------------|---------------------|
| Sodium 1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS) ( $^{13}\text{C}_2$ , 99%; $\text{D}_4$ , 98%)    | 1000             | 2000                |
| Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS) ( $^{13}\text{C}_2$ , 99%; $\text{D}_4$ , 98%)    | 1000             | 2000                |
| Sodium 1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS) ( $^{13}\text{C}_2$ , 99%; $\text{D}_4$ , 98%)    | 1000             | 2000                |
| Sodium 1H,1H,2H,2H-perfluorododecanesulfonate (10:2 FTS) ( $^{13}\text{C}_2$ , 99%; $\text{D}_4$ , 98%) | 1000             | 2000                |

\*Gravimetric concentration is based on the salt form, where applicable.

|         |                                                        |                    |
|---------|--------------------------------------------------------|--------------------|
| ES-5662 | Fluorotelomer Sulfonates (FTS) Native Standard Mixture | 1.2 mL in methanol |
|---------|--------------------------------------------------------|--------------------|

| Unlabeled                                                            | (ng/mL)* |
|----------------------------------------------------------------------|----------|
| Sodium 1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS) (unlabeled)    | 1000     |
| Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS) (unlabeled)    | 1000     |
| Sodium 1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS) (unlabeled)    | 1000     |
| Sodium 1H,1H,2H,2H-perfluorododecanesulfonate (10:2 FTS) (unlabeled) | 1000     |

\*Gravimetric concentration is based on the salt form, where applicable.

## Fluorotelomer Alcohols (FTOH)

| Catalog No.    | Description                                                                                                               | Concentration         | Amount |
|----------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------|--------|
| ULM-10723-1.2  | 1H,1H,2H,2H-Perfluoro-1-hexanol (4:2 FTOH) (unlabeled)                                                                    | 100 µg/mL in methanol | 1.2 mL |
| CDLM-10709-1.2 | 1H,1H,2H,2H-Perfluoro-1-octanol (6:2 FTOH) (1,2- <sup>13</sup> C <sub>2</sub> , 99%; 1,1,2,2-D <sub>4</sub> , 98%)        | 50 µg/mL in methanol  | 1.2 mL |
| ULM-10724-1.2  | 1H,1H,2H,2H-Perfluoro-1-octanol (6:2 FTOH) (unlabeled)                                                                    | 100 µg/mL in methanol | 1.2 mL |
| CDLM-10712-1.2 | 1H,1H,2H,2H-Perfluoro-1-decanol (8:2 FTOH) (1,2- <sup>13</sup> C <sub>2</sub> , 99%; 1,1,2,2-D <sub>4</sub> , 98%) CP 95% | 50 µg/mL in methanol  | 1.2 mL |
| ULM-10727-1.2  | 1H,1H,2H,2H-Perfluoro-1-decanol (8:2 FTOH) (unlabeled)                                                                    | 100 µg/mL in methanol | 1.2 mL |
| CDLM-10715-1.2 | 1H,1H,2H,2H-Perfluoro-1-dodecanol (10:2 FTOH) (1,2- <sup>13</sup> C <sub>2</sub> , 99%; 1,1,2,2-D <sub>4</sub> , 98%)     | 50 µg/mL in methanol  | 1.2 mL |
| ULM-11175-1.2  | 1H,1H,2H,2H-Perfluoro-1-dodecanol (10:2 FTOH) (unlabeled)                                                                 | 50 µg/mL in methanol  | 1.2 mL |

## Fluorotelomer Acids (FTA)

| Catalog No.   | Description                                               | Concentration         | Amount |
|---------------|-----------------------------------------------------------|-----------------------|--------|
| ULM-10725-1.2 | 2H,2H-Perfluorooctanoic acid (6:2 FTA) (unlabeled)        | 100 µg/mL in methanol | 1.2 mL |
| ULM-10726-1.2 | 2H,2H-Perfluorodecanoic acid (8:2 FTA) (unlabeled)        | 100 µg/mL in methanol | 1.2 mL |
| ULM-11532-1.2 | 2H,2H,3H,3H-Perfluorohexanoic acid (3:3 FTCA) (unlabeled) | 100 µg/mL in methanol | 1.2 mL |
| ULM-11533-1.2 | 2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA) (unlabeled) | 100 µg/mL in methanol | 1.2 mL |
| ULM-11534-1.2 | 2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA) (unlabeled) | 100 µg/mL in methanol | 1.2 mL |

## Perfluorooctanesulfonamidoacetic Acids (FOSAA)

| Catalog No.   | Description                                                                                                         | Concentration        | Amount |
|---------------|---------------------------------------------------------------------------------------------------------------------|----------------------|--------|
| DLM-10663-1.2 | <i>N</i> -Methylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -MeFOSAA) ( <i>N</i> -methyl-D <sub>3</sub> , 98%) | 50 µg/mL in methanol | 1.2 mL |
| ULM-10656-1.2 | <i>N</i> -Methylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -MeFOSAA) (unlabeled) mix of isomers               | 50 µg/mL in methanol | 1.2 mL |
| DLM-10664-1.2 | <i>N</i> -Ethylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -EtFOSAA) ( <i>N</i> -ethyl-D <sub>5</sub> , 98%)   | 50 µg/mL in methanol | 1.2 mL |
| ULM-10657-1.2 | <i>N</i> -Ethylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -EtFOSAA) (unlabeled) mix of isomers                | 50 µg/mL in methanol | 1.2 mL |

## Perfluorooctanesulfonamides (FOSA)

| Catalog No.   | Description                                                                               | Concentration         | Amount |
|---------------|-------------------------------------------------------------------------------------------|-----------------------|--------|
| ULM-11129-1.2 | Perfluorobutanesulfonamide (PFBSA) (unlabeled)                                            | 50 µg/mL in methanol  | 1.2 mL |
| ULM-11130-1.2 | Perfluorohexanesulfonamide (PFHxSA) (unlabeled)                                           | 50 µg/mL in methanol  | 1.2 mL |
| CLM-11722-1.2 | Perfluoroheptanesulfonamide (PFHpSA) (5,6,7- <sup>13</sup> C <sub>3</sub> , 99%)          | 100 µg/mL in methanol | 1.2 mL |
| CLM-11007-1.2 | Perfluorooctanesulfonamide (PFOSA) ( <sup>13</sup> C <sub>8</sub> , 99%)                  | 50 µg/mL in methanol  | 1.2 mL |
| ULM-10977-1.2 | Perfluorooctanesulfonamide (PFOSA) (unlabeled) mix of isomers                             | 50 µg/mL in methanol  | 1.2 mL |
| ULM-11309-1.2 | Perfluorooctanesulfonamide (PFOSA) (unlabeled) linear isomer                              | 50 µg/mL in methanol  | 1.2 mL |
| DLM-10740-1.2 | <i>N</i> -Methylperfluorooctanesulfonamide ( <i>N</i> -MeFOSA) (D <sub>3</sub> , 98%)     | 100 µg/mL in methanol | 1.2 mL |
| ULM-10779-1.2 | <i>N</i> -Methylperfluorooctanesulfonamide ( <i>N</i> -MeFOSA) (unlabeled) mix of isomers | 100 µg/mL in methanol | 1.2 mL |
| DLM-10741-1.2 | <i>N</i> -Ethylperfluorooctanesulfonamide ( <i>N</i> -EtFOSA) (D <sub>5</sub> , 98%)      | 100 µg/mL in methanol | 1.2 mL |
| ULM-10780-1.2 | <i>N</i> -Ethylperfluorooctanesulfonamide ( <i>N</i> -EtFOSA) (unlabeled) mix of isomers  | 100 µg/mL in methanol | 1.2 mL |

## Perfluorooctanesulfonamido Ethanols (FOSE)

| Catalog No.   | Description                                                                                                    | Concentration        | Amount |
|---------------|----------------------------------------------------------------------------------------------------------------|----------------------|--------|
| DLM-11035-1.2 | <i>N</i> -Methylperfluorooctanesulfonamidoethanol ( <i>N</i> -MeFOSE) ( <i>N</i> -methyl-D <sub>3</sub> , 98%) | 50 µg/mL in methanol | 1.2 mL |
| ULM-11034-1.2 | <i>N</i> -Methylperfluorooctanesulfonamidoethanol ( <i>N</i> -MeFOSE) (unlabeled) mix of isomers               | 50 µg/mL in methanol | 1.2 mL |
| DLM-11037-1.2 | <i>N</i> -Ethylperfluorooctanesulfonamidoethanol ( <i>N</i> -EtFOSE) ( <i>N</i> -ethyl-D <sub>5</sub> , 98%)   | 50 µg/mL in methanol | 1.2 mL |
| ULM-11036-1.2 | <i>N</i> -Ethylperfluorooctanesulfonamidoethanol ( <i>N</i> -EtFOSE) (unlabeled) mix of isomers                | 50 µg/mL in methanol | 1.2 mL |

## Bile Acid Salts

| Catalog No.   | Description                                                   | Concentration | Amount |
|---------------|---------------------------------------------------------------|---------------|--------|
| ULM-9943-0.01 | Taurodeoxycholic acid (TDCA), sodium salt hydrate (unlabeled) | neat          | 0.01 g |
| ULM-9561-0.01 | Taurochenodeoxycholic acid (TCDCA), sodium salt (unlabeled)   | neat          | 0.01 g |
| ULM-9885-0.01 | Tauroursodeoxycholic acid (TUDCA), dihydrate (unlabeled)      | neat          | 0.01 g |

## EPA Method 537.1 Mixtures

| Catalog No. | Description                                                                                                         | Amount                                        |
|-------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| ES-5631-A   | Method 537.1 Analyte Primary Dilution Standard (PDS)                                                                | 1.2 mL in MeOH (with 4 molar equivalent NaOH) |
|             | <b>Unlabeled</b>                                                                                                    | <b>(ng/mL)*</b>                               |
|             | Sodium perfluoro- <i>n</i> -hexanoate (PFHxA)                                                                       | 2000                                          |
|             | Perfluoro- <i>n</i> -heptanoic acid (PFHpA)                                                                         | 2000                                          |
|             | Perfluoro- <i>n</i> -octanoic acid (PFOA)                                                                           | 2000                                          |
|             | Perfluoro- <i>n</i> -nonanoic acid (PFNA)                                                                           | 2000                                          |
|             | Sodium perfluoro- <i>n</i> -decanoate (PFDA)                                                                        | 2000                                          |
|             | Sodium perfluoro- <i>n</i> -undecanoate (PFUA)                                                                      | 2000                                          |
|             | Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA)                                                                     | 2000                                          |
|             | Perfluoro- <i>n</i> -tridecanoic acid (PFTrDA)                                                                      | 2000                                          |
|             | Perfluoro- <i>n</i> -tetradecanoic acid (PFTeDA)                                                                    | 2000                                          |
|             | Potassium perfluoro-1-butanesulfonate (PFBS)                                                                        | 2000                                          |
|             | Potassium perfluorohexanesulfonate (PFHxS) mix of isomers                                                           | 2000                                          |
|             | Perfluorooctanesulfonate (PFOS) mix of isomers                                                                      | 2000                                          |
|             | <i>N</i> -Methylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -MeFOSAA) mix of isomers                           | 2000                                          |
|             | <i>N</i> -Ethylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -EtFOSAA) mix of isomers                            | 2000                                          |
|             | Sodium tetrafluoro-2-(heptafluoropropoxy)propanoate (HFPO-DA) "GenX"                                                | 2000                                          |
|             | Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (9Cl-PF3ONS) (F53B Major)                                  | 2000                                          |
|             | Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (11Cl-PF3OUdS) (F53B Minor)                               | 2000                                          |
|             | Dodecafluoro-3H-4,8-dioxanonanoic acid (DONA)                                                                       | 2000                                          |
|             | <i>*Gravimetric concentration is based on the free acid, where applicable.</i>                                      |                                               |
| ES-5610-A   | Method 537.1 Internal Standard Primary Dilution Standard (ISPDS)                                                    | 1.2 mL in MeOH (with 4 molar equivalent NaOH) |
|             | <b>Labeled</b>                                                                                                      | <b>(ng/mL)*</b>                               |
|             | Perfluoro- <i>n</i> -octanoic acid (PFOA) ( <sup>13</sup> C <sub>8</sub> , 99%)                                     | 1000                                          |
|             | Potassium perfluoro-1-octanesulfonate (PFOS) ( <sup>13</sup> C <sub>8</sub> , 99%)                                  | 3000                                          |
|             | <i>N</i> -Methylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -MeFOSAA) ( <i>N</i> -methyl-D <sub>3</sub> , 98%) | 4000                                          |
|             | <i>*Gravimetric concentration is based on the free acid, where applicable.</i>                                      |                                               |
| ES-5632-A   | Method 537.1 Surrogate Primary Dilution Standard (SUR PDS)                                                          | 1.2 mL in MeOH (with 4 molar equivalent NaOH) |
|             | <b>Labeled</b>                                                                                                      | <b>(ng/mL)*</b>                               |
|             | Sodium perfluoro- <i>n</i> -hexanoate (PFHxA) ( <sup>13</sup> C <sub>6</sub> , 99%)                                 | 1000                                          |
|             | Sodium perfluoro- <i>n</i> -decanoate (PFDA) ( <sup>13</sup> C <sub>9</sub> , 99%)                                  | 1000                                          |
|             | <i>N</i> -Ethylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -EtFOSAA) ( <i>N</i> -ethyl-D <sub>5</sub> , 98%)   | 4000                                          |
|             | Sodium tetrafluoro-2-(heptafluoropropoxy)propanoate (HFPO-DA) "GenX" ( <sup>13</sup> C <sub>3</sub> , 99%)          | 1000                                          |
|             | <i>*Gravimetric concentration is based on the free acid, where applicable.</i>                                      |                                               |

## EPA Method 533 Mixture

| Catalog No.                                                                           | Description                       | Concentration                          | Amount |
|---------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------|--------|
| ES-5654                                                                               | EPA Method 533 Native Analyte PDS | in MeOH (with 4 molar equivalent NaOH) | 1.2 mL |
| <b>Unlabeled</b>                                                                      |                                   | <b>(ng/mL)*</b>                        |        |
| Sodium perfluoro- <i>n</i> -butyrate (PFBA)                                           |                                   | 1000                                   |        |
| Sodium perfluoro- <i>n</i> -pentanoate (PFPeA)                                        |                                   | 1000                                   |        |
| Sodium perfluoro- <i>n</i> -hexanoate (PFHxA)                                         |                                   | 1000                                   |        |
| Perfluoro- <i>n</i> -heptanoic acid (PFHpA)                                           |                                   | 1000                                   |        |
| Perfluoro- <i>n</i> -octanoic acid (PFOA)                                             |                                   | 1000                                   |        |
| Perfluoro- <i>n</i> -nonanoic acid (PFNA)                                             |                                   | 1000                                   |        |
| Sodium perfluoro- <i>n</i> -decanoate (PFDA)                                          |                                   | 1000                                   |        |
| Sodium perfluoro- <i>n</i> -undecanoate (PFUA)                                        |                                   | 1000                                   |        |
| Sodium perfluoro- <i>n</i> -dodecanoate (PFDaA)                                       |                                   | 1000                                   |        |
| Potassium perfluoro-1-butanefluorobutanesulfonate (PFBS)                              |                                   | 1000                                   |        |
| Sodium perfluoro-1-pentanesulfonate (PFPS)                                            |                                   | 1000                                   |        |
| Potassium perfluorohexanesulfonate (PFHxS) mix of isomers                             |                                   | 1000                                   |        |
| Sodium perfluoro-1-heptanesulfonate (PFHpS)                                           |                                   | 1000                                   |        |
| Perfluorooctanesulfonate (PFOS) mix of isomers                                        |                                   | 1000                                   |        |
| Sodium 1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)                                 |                                   | 1000                                   |        |
| Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS)                                 |                                   | 1000                                   |        |
| Sodium 1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)                                 |                                   | 1000                                   |        |
| Sodium tetrafluoro-2-(heptafluoropropoxy)propanoate (HFPO-DA) "GenX"                  |                                   | 1000                                   |        |
| Dodecafluoro-3H-4,8-dioxanonanoic acid (DONA)                                         |                                   | 1000                                   |        |
| Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (9CI-PF3ONS) (F53B Major)    |                                   | 1000                                   |        |
| Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (11CI-PF3OUdS) (F53B Minor) |                                   | 1000                                   |        |
| Perfluoro-3-methoxypropanoic acid (PFMPA)                                             |                                   | 1000                                   |        |
| Perfluoro-4-methoxybutanoic acid (PFMBA)                                              |                                   | 1000                                   |        |
| Perfluoro-3,6-dioxahexanoic acid (PFDHA)                                              |                                   | 1000                                   |        |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)                                       |                                   | 1000                                   |        |

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

## EPA Method 533 Mixtures

| Catalog No. | Description                                  | Concentration                          | Amount |
|-------------|----------------------------------------------|----------------------------------------|--------|
| ES-5656     | EPA Method 533 Isotope Dilution Standard PDS | in MeOH (with 4 molar equivalent NaOH) | 1.2 mL |

| Labeled                                                                                                           | (ng/mL)* |
|-------------------------------------------------------------------------------------------------------------------|----------|
| Sodium perfluoro- <i>n</i> -butyrate (PFBA) ( <sup>13</sup> C <sub>4</sub> , 99%)                                 | 500      |
| Sodium perfluoro- <i>n</i> -pentanoate (PFPeA) ( <sup>13</sup> C <sub>5</sub> , 99%)                              | 500      |
| Sodium perfluoro- <i>n</i> -hexanoate (PFHxA) ( <sup>13</sup> C <sub>6</sub> , 99%)                               | 500      |
| Sodium perfluoro- <i>n</i> -heptanoate (PFHpA) ( <sup>13</sup> C <sub>7</sub> , 99%)                              | 500      |
| Perfluoro- <i>n</i> -octanoic acid (PFOA) ( <sup>13</sup> C <sub>8</sub> , 99%)                                   | 500      |
| Perfluoro- <i>n</i> -nonanoic acid (PFNA) ( <sup>13</sup> C <sub>9</sub> , 99%)                                   | 500      |
| Sodium perfluoro- <i>n</i> -decanoate (PFDA) ( <sup>13</sup> C <sub>9</sub> , 99%)                                | 500      |
| Sodium perfluoro- <i>n</i> -undecanoate (PFUA) ( <sup>13</sup> C <sub>9</sub> , 99%)                              | 500      |
| Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA) ( <sup>13</sup> C <sub>12</sub> , 99%)                            | 500      |
| Potassium perfluoro-1-butanedisulfonate (PFBS) ( <sup>13</sup> C <sub>4</sub> , 99%)                              | 500      |
| Potassium perfluoro-1-hexanedisulfonate (PFHxS) ( <sup>13</sup> C <sub>6</sub> , 99%)                             | 500      |
| Potassium perfluoro-1-octanedisulfonate (PFOS) ( <sup>13</sup> C <sub>8</sub> , 99%),                             | 500      |
| Sodium tetrafluoro-2-(heptafluoropropoxy)propanoate (HFPO-DA) "GenX" ( <sup>13</sup> C <sub>3</sub> , 99%)        | 500      |
| Sodium 1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS) ( <sup>13</sup> C <sub>2</sub> , 99%; D <sub>4</sub> , 98%) | 2000     |
| Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS) ( <sup>13</sup> C <sub>2</sub> , 99%; D <sub>4</sub> , 98%) | 2000     |
| Sodium 1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS) ( <sup>13</sup> C <sub>2</sub> , 99%; D <sub>4</sub> , 98%) | 2000     |

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

|          |                                                 |                                        |        |
|----------|-------------------------------------------------|----------------------------------------|--------|
| ES-5655* | EPA Method 533 Isotope Performance Standard PDS | in MeOH (with 4 molar equivalent NaOH) | 1.2 mL |
|----------|-------------------------------------------------|----------------------------------------|--------|

| Labeled                                                                                 | (ng/mL)** |
|-----------------------------------------------------------------------------------------|-----------|
| Sodium perfluoro- <i>n</i> -butyrate (PFBA) (2,3,4- <sup>13</sup> C <sub>3</sub> , 99%) | 1000      |
| Sodium perfluoro- <i>n</i> -octanoate (PFOA) ( <sup>13</sup> C <sub>6</sub> , 99%)      | 1000      |
| Potassium perfluoro-1-octanedisulfonate (PFOS) ( <sup>13</sup> C <sub>5</sub> , 99%)    | 3000      |

\*Currently in production. Please contact CIL or your CIL representative for a delivery estimate.

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

## UCMR 5 Supplemental Mixture

| Catalog No. | Description                                     | Concentration                          | Amount |
|-------------|-------------------------------------------------|----------------------------------------|--------|
| ES-5664     | UCMR 5 Supplemental Native PFAS 4-Component Mix | in MeOH (with 4 molar equivalent NaOH) | 1.2 mL |

| Unlabeled                                                                                 | (ng/mL)* |
|-------------------------------------------------------------------------------------------|----------|
| <i>N</i> -Methylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -MeFOSAA) mix of isomers | 2000     |
| <i>N</i> -Ethylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -EtFOSAA) mix of isomers  | 2000     |
| Perfluoro- <i>n</i> -tridecanoic acid (PFTrA)                                             | 2000     |
| Perfluoro- <i>n</i> -tetradecanoic acid (PFTeA)                                           | 2000     |

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

## EPA Method 8327 Mixtures

| Catalog No.                                                                                                         | Description                           | Amount                                        |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------|
| ES-5643-A                                                                                                           | Method 8327 Surrogate Spiking Mixture | 1.2 mL in MeOH (with 4 molar equivalent NaOH) |
| <b>Labeled</b>                                                                                                      |                                       | <b>(ng/mL)*</b>                               |
| Sodium perfluoro- <i>n</i> -butyrate (PFBA) (2,3,4- <sup>13</sup> C <sub>3</sub> , 99%)                             |                                       | 1000                                          |
| Sodium perfluoro- <i>n</i> -pentanoate (PFPeA) (pentanoyl- <sup>13</sup> C <sub>5</sub> , 99%)                      |                                       | 1000                                          |
| Sodium perfluoro- <i>n</i> -hexanoate (PFHxA) ( <sup>13</sup> C <sub>6</sub> , 99%)                                 |                                       | 1000                                          |
| Sodium perfluoro- <i>n</i> -heptanoate (PFHpA) (heptanoyl- <sup>13</sup> C <sub>7</sub> , 99%)                      |                                       | 1000                                          |
| Perfluoro- <i>n</i> -octanoic acid (PFOA) ( <sup>13</sup> C <sub>8</sub> , 99%)                                     |                                       | 1000                                          |
| Perfluoro- <i>n</i> -nonanoic acid (PFNA) ( <sup>13</sup> C <sub>9</sub> , 99%)                                     |                                       | 1000                                          |
| Perfluoro- <i>n</i> -decanoic acid (PFDA) ( <sup>13</sup> C <sub>9</sub> , 99%)                                     |                                       | 1000                                          |
| Sodium perfluoro- <i>n</i> -undecanoate (PFUA) ( <sup>13</sup> C <sub>9</sub> , 99%)                                |                                       | 1000                                          |
| Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA) (dodecanoyl- <sup>13</sup> C <sub>12</sub> , 99%)                   |                                       | 1000                                          |
| Sodium perfluoro- <i>n</i> -tetradecanoate (PFTeDA) (1,2,3,4,5,6- <sup>13</sup> C <sub>6</sub> , 99%)               |                                       | 1000                                          |
| Potassium perfluoro-1-butanesulfonate (PFBS) ( <sup>13</sup> C <sub>4</sub> , 99%)                                  |                                       | 1000                                          |
| Potassium perfluoro-1-hexanesulfonate (PFHxS) ( <sup>13</sup> C <sub>6</sub> , 99%)                                 |                                       | 1000                                          |
| Potassium perfluoro-1-octanesulfonate (PFOS) ( <sup>13</sup> C <sub>8</sub> , 99%)                                  |                                       | 1000                                          |
| Sodium 1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS) ( <sup>13</sup> C <sub>2</sub> , 99%; D <sub>4</sub> , 98%)   |                                       | 1000                                          |
| Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS) ( <sup>13</sup> C <sub>2</sub> , 99%; D <sub>4</sub> , 98%)   |                                       | 1000                                          |
| Sodium 1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS) ( <sup>13</sup> C <sub>2</sub> , 99%; D <sub>4</sub> , 98%)   |                                       | 1000                                          |
| Perfluorooctanesulfonamide (PFOSA) ( <sup>13</sup> C <sub>8</sub> , 99%)                                            |                                       | 1000                                          |
| <i>N</i> -Methylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -MeFOSAA) ( <i>N</i> -methyl-D <sub>3</sub> , 98%) |                                       | 1000                                          |
| <i>N</i> -Ethylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -EtFOSAA) ( <i>N</i> -ethyl-D <sub>5</sub> , 98%)   |                                       | 1000                                          |
| <i>*Gravimetric concentration is based on the free acid, where applicable.</i>                                      |                                       |                                               |
| ES-5642                                                                                                             | Method 8327 Target Analyte Mixture    | 1.2 mL in MeOH (with 4 molar equivalent NaOH) |
| <b>Unlabeled</b>                                                                                                    |                                       | <b>(ng/mL)*</b>                               |
| Sodium perfluoro- <i>n</i> -butyrate (PFBA)                                                                         |                                       | 2000                                          |
| Sodium perfluoro- <i>n</i> -pentanoate (PFPeA)                                                                      |                                       | 2000                                          |
| Sodium perfluoro- <i>n</i> -hexanoate (PFHxA)                                                                       |                                       | 2000                                          |
| Perfluoro- <i>n</i> -heptanoic acid (PFHpA)                                                                         |                                       | 2000                                          |
| Perfluoro- <i>n</i> -octanoic acid (PFOA)                                                                           |                                       | 2000                                          |
| Perfluoro- <i>n</i> -nonanoic acid (PFNA)                                                                           |                                       | 2000                                          |
| Sodium perfluoro- <i>n</i> -decanoate (PFDA)                                                                        |                                       | 2000                                          |
| Sodium perfluoro- <i>n</i> -undecanoate (PFUA)                                                                      |                                       | 2000                                          |
| Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA)                                                                     |                                       | 2000                                          |
| Perfluoro- <i>n</i> -tridecanoic acid (PFTrDA)                                                                      |                                       | 2000                                          |
| Perfluoro- <i>n</i> -tetradecanoic acid (PFTeDA)                                                                    |                                       | 2000                                          |
| Potassium perfluoro-1-butanesulfonate (PFBS)                                                                        |                                       | 2000                                          |
| Sodium perfluoro-1-pentanesulfonate (PFPeS)                                                                         |                                       | 2000                                          |
| Potassium perfluorohexanesulfonate (PFHxS) mix of isomers                                                           |                                       | 2000                                          |
| Sodium perfluoro-1-heptanesulfonate (PFHpS)                                                                         |                                       | 2000                                          |
| Perfluorooctanesulfonic acid (PFOS) mix of isomers                                                                  |                                       | 2000                                          |
| Sodium perfluoro-1-nonanesulfonate (PFNS)                                                                           |                                       | 2000                                          |
| Potassium perfluoro-1-decanesulfonate (PFDS)                                                                        |                                       | 2000                                          |
| Sodium 1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)                                                               |                                       | 2000                                          |
| Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS)                                                               |                                       | 2000                                          |
| Sodium 1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)                                                               |                                       | 2000                                          |
| Perfluorooctanesulfonamide (PFOSA) mix of isomers                                                                   |                                       | 2000                                          |
| <i>N</i> -Methylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -MeFOSAA) mix of isomers                           |                                       | 2000                                          |
| <i>N</i> -Ethylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -EtFOSAA) mix of isomers                            |                                       | 2000                                          |
| <i>*Gravimetric concentration is based on the free acid, where applicable.</i>                                      |                                       |                                               |

## EPA Method 1633 Mixtures

| Catalog No. | Description                                  | Amount                                        |
|-------------|----------------------------------------------|-----------------------------------------------|
| ES-5667     | PFAS 40 Multi-Class Native Standard Solution | 1.2 mL in MeOH (with 4 molar equivalent NaOH) |

| Unlabeled                                                                                 | (ng/mL)* |
|-------------------------------------------------------------------------------------------|----------|
| Sodium perfluoro- <i>n</i> -butyrate (PFBA)                                               | 2000     |
| Sodium perfluoro- <i>n</i> -pentanoate (PFPeA)                                            | 1000     |
| Sodium perfluoro- <i>n</i> -hexanoate (PFHxA)                                             | 500      |
| Perfluoro- <i>n</i> -heptanoic acid (PFHpA)                                               | 500      |
| Perfluoro- <i>n</i> -octanoic acid (PFOA) linear isomer only                              | 500      |
| Perfluoro- <i>n</i> -nonanoic acid (PFNA) linear isomer only                              | 500      |
| Sodium perfluoro- <i>n</i> -decanoate (PFDA)                                              | 500      |
| Sodium perfluoro- <i>n</i> -undecanoate (PFUA)                                            | 500      |
| Sodium perfluoro- <i>n</i> -dodecanoate (PFDaA)                                           | 500      |
| Perfluoro- <i>n</i> -tridecanoic acid (PFTrDA)                                            | 500      |
| Perfluoro- <i>n</i> -tetradecanoic acid (PFTeDA)                                          | 500      |
| Potassium perfluoro-1-butanedisulfonate (PFBS)                                            | 500      |
| Sodium perfluoro-1-pentanesulfonate (PFPeS)                                               | 500      |
| Potassium perfluorohexanesulfonate (PFHxS) mix of isomers                                 | 500      |
| Sodium perfluoro-1-heptanesulfonate (PFHpS)                                               | 500      |
| Perfluorooctanesulfonate (PFOS) mix of isomers                                            | 500      |
| Sodium perfluoro-1-nonanesulfonate (PFNS)                                                 | 500      |
| Potassium perfluoro-1-decanedisulfonate (PFDS)                                            | 500      |
| Potassium perfluoro-1-dodecanedisulfonate (PFDoDS)                                        | 500      |
| Sodium 1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)                                     | 2000     |
| Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS)                                     | 2000     |
| Sodium 1H,1H,2H,2H-perfluorodecanedisulfonate (8:2 FTS)                                   | 2000     |
| 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      | 5000     |
| <i>N</i> -Ethylperfluorooctanesulfonamidoethanol ( <i>N</i> -EtFOSE) mix of isomers       | 5000     |
| Sodium tetrafluoro-2-(heptafluoropropoxy) propanoic acid (HFPO-DA) "GenX"                 | 2000     |
| Dodecafluoro-3H-4,8-dioxananoic acid (DONA)                                               | 2000     |
| Perfluoro-3-methoxypropanoic acid (PFMPA)                                                 | 1000     |
| Perfluoro-4-methoxybutanoic acid (PFMBA)                                                  | 1000     |
| Perfluoro-3,6-dioxahexanoic acid (PFDHA)                                                  | 1000     |
| Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (9Cl-PF3ONS) (F53B Major)        | 2000     |
| Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (11Cl-PF3OUdS) (F53B Minor)     | 2000     |
| Perfluoro(2-ethoxyethane) sulfonic acid (PFEESA)                                          | 1000     |
| 2H,2H,3H,3H-Perfluorohexanoic acid (3:3 FTCA)                                             | 2500     |
| 2H,2H,3H,3H-Perfluorooctanoic acid (5:3 FTCA)                                             | 12,500   |
| 2H,2H,3H,3H-Perfluorodecanoic acid (7:3 FTCA) mix of isomers                              | 12,500   |

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

|         |                                        |                                               |
|---------|----------------------------------------|-----------------------------------------------|
| ES-5669 | 8-Component PFAS 1633 Supplemental Mix | 1.2 mL in MeOH (with 4 molar equivalent NaOH) |
|---------|----------------------------------------|-----------------------------------------------|

| 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-propanedisulfonate (PFPrS)              | 2000     |
| Perfluorobutanesulfonamide (PFBSA)                         | 2000     |
| Perfluorohexanesulfonamide (PFHxSA)                        | 2000     |
| Sodium 1H,1H,2H,2H-perfluorododecanedisulfonate (10:2 FTS) | 2000     |
| Lithium bis(trifluoromethanesulfonyl)imide (TFSI)          | 2000     |

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

## PFAS Mixture

| Catalog No. | Description                       | Amount                                        |
|-------------|-----------------------------------|-----------------------------------------------|
| ES-5665-1.2 | PFAS RM-41 Native Spiking Mixture | 1.2 mL in MeOH (with 4 molar equivalent NaOH) |
| ES-5665     | PFAS RM-41 Native Spiking Mixture | 5 mL in MeOH (with 4 molar equivalent NaOH)   |

| Unlabeled                                                                                 | (ng/mL)* |
|-------------------------------------------------------------------------------------------|----------|
| Sodium perfluoro- <i>n</i> -butyrate (PFBA)                                               | 1000     |
| Sodium perfluoro- <i>n</i> -pentanoate (PFPeA)                                            | 1000     |
| Sodium perfluoro- <i>n</i> -hexanoate (PFHxA)                                             | 1000     |
| Perfluoro- <i>n</i> -heptanoic acid (PFHpA)                                               | 1000     |
| Perfluoro- <i>n</i> -octanoic acid (PFOA)                                                 | 1000     |
| Perfluoro- <i>n</i> -nonanoic acid (PFNA)                                                 | 1000     |
| Sodium perfluoro- <i>n</i> -decanoate (PFDA)                                              | 1000     |
| Sodium perfluoro- <i>n</i> -undecanoate (PFUA)                                            | 1000     |
| Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA)                                           | 1000     |
| Perfluoro- <i>n</i> -tridecanoic acid (PFTrDA)                                            | 1000     |
| Perfluoro- <i>n</i> -tetradecanoic acid (PFTeDA)                                          | 1000     |
| Perfluoro- <i>n</i> -hexadecanoic acid (PFHxDA)                                           | 1000     |
| Perfluoro- <i>n</i> -octadecanoic acid (PFODA)                                            | 1000     |
| Sodium perfluoro-1-propanesulfonate (PFPrS)                                               | 1000     |
| Potassium perfluoro-1-butanesulfonate (PFBS)                                              | 1000     |
| Sodium perfluoro-1-pentanesulfonate (PFPeS)                                               | 1000     |
| Potassium perfluorohexanesulfonate (PFHxS) mix of isomers                                 | 1000     |
| Sodium perfluoro-1-heptanesulfonate (PFHpS)                                               | 1000     |
| Perfluorooctanesulfonate (PFOS) mix of isomers                                            | 1000     |
| Sodium perfluoro-1-nonanesulfonate (PFNS)                                                 | 1000     |
| Potassium perfluoro-1-decanesulfonate (PFDS)                                              | 1000     |
| Potassium perfluoro-1-dodecanesulfonate (PFDoDS)                                          | 1000     |
| Sodium 1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)                                     | 1000     |
| Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS)                                     | 1000     |
| Sodium 1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)                                     | 1000     |
| Sodium 1H,1H,2H,2H-perfluorododecanesulfonate (10:2 FTS)                                  | 1000     |
| Perfluorooctanesulfonamide (PFOSA) mix of isomers                                         | 1000     |
| <i>N</i> -Methylperfluorooctanesulfonamide ( <i>N</i> -MeFOSA) mix of isomers             | 1000     |
| <i>N</i> -Ethylperfluorooctanesulfonamide ( <i>N</i> -EtFOSA) mix of isomers              | 1000     |
| <i>N</i> -Methylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -MeFOSAA) mix of isomers | 1000     |
| <i>N</i> -Ethylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -EtFOSAA) mix of isomers  | 1000     |
| <i>N</i> -Methylperfluorooctanesulfonamidoethanol ( <i>N</i> -MeFOSE) mix of isomers      | 1000     |
| <i>N</i> -Ethylperfluorooctanesulfonamidoethanol ( <i>N</i> -EtFOSE) mix of isomers       | 1000     |
| Sodium tetrafluoro-2-(heptafluoropropoxy) propanoic acid (HFPO-DA) "GenX"                 | 1000     |
| Dodecafluoro-3H-4,8-dioxanonanoic acid (DONA)                                             | 1000     |
| Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate (9Cl-PF3ONS) (F53B Major)        | 1000     |
| Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate (11Cl-PF3OUdS) (F53B Minor)     | 1000     |
| Perfluoro-3-methoxypropanoic acid (PFMPA)                                                 | 1000     |
| Perfluoro-4-methoxybutanoic acid (PFMBA)                                                  | 1000     |
| Perfluoro-3,6-dioxahexanoic acid (PFDHA)                                                  | 1000     |
| Perfluoro(2-ethoxyethane) sulfonic acid (PFEESA)                                          | 1000     |

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

## PFAS Mixtures

| Catalog No.                                                                                                          | Description                  | Amount                                        |
|----------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------|
| ES-5640-A                                                                                                            | PFAS SIL Superfund Mixture 1 | 1.2 mL in MeOH (with 4 molar equivalent NaOH) |
| <b>Labeled</b>                                                                                                       |                              | <b>(ng/mL)*</b>                               |
| Sodium perfluoro- <i>n</i> -butyrate (PFBA) ( <sup>13</sup> C <sub>3</sub> , 99%)                                    |                              | 1000                                          |
| Sodium perfluoro- <i>n</i> -pentanoate (PFPeA) ( <sup>13</sup> C <sub>5</sub> , 99%)                                 |                              | 1000                                          |
| Sodium perfluoro- <i>n</i> -hexanoate (PFHxA) ( <sup>13</sup> C <sub>6</sub> , 99%)                                  |                              | 1000                                          |
| Sodium perfluoro- <i>n</i> -heptanoate (PFHpA) ( <sup>13</sup> C <sub>7</sub> , 99%)                                 |                              | 1000                                          |
| Perfluoro- <i>n</i> -octanoic acid (PFOA) ( <sup>13</sup> C <sub>8</sub> , 99%)                                      |                              | 1000                                          |
| Perfluoro- <i>n</i> -nonanoic acid (PFNA) ( <sup>13</sup> C <sub>9</sub> , 99%)                                      |                              | 1000                                          |
| Sodium perfluoro- <i>n</i> -decanoate (PFDA) ( <sup>13</sup> C <sub>9</sub> , 99%)                                   |                              | 1000                                          |
| Sodium perfluoro- <i>n</i> -undecanoate (PFUA) ( <sup>13</sup> C <sub>9</sub> , 99%)                                 |                              | 1000                                          |
| Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA) ( <sup>13</sup> C <sub>12</sub> , 99%)                               |                              | 1000                                          |
| Sodium perfluoro- <i>n</i> -tetradecanoate (PFTeDA) (1,2,3,4,5,6- <sup>13</sup> C <sub>6</sub> , 99%)                |                              | 1000                                          |
| Sodium perfluoro- <i>n</i> -hexadecanoate (PFHxDA) (1,2,3,4- <sup>13</sup> C <sub>4</sub> , 99%)                     |                              | 1000                                          |
| Potassium perfluoro-1-butanefluorobutanesulfonate (PFBS) ( <sup>13</sup> C <sub>4</sub> , 99%)                       |                              | 1000                                          |
| Potassium perfluoro-1-hexanesulfonate (PFHxS) ( <sup>13</sup> C <sub>6</sub> , 99%)                                  |                              | 1000                                          |
| Potassium perfluoro-1-octanesulfonate (PFOS) ( <sup>13</sup> C <sub>8</sub> , 99%)                                   |                              | 1000                                          |
| Sodium 1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS) ( <sup>13</sup> C <sub>2</sub> , 99%; D <sub>4</sub> , 98%)    |                              | 1000                                          |
| Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS) ( <sup>13</sup> C <sub>2</sub> , 99%; D <sub>4</sub> , 98%)    |                              | 1000                                          |
| Sodium 1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS) ( <sup>13</sup> C <sub>2</sub> , 99%; D <sub>4</sub> , 98%)    |                              | 1000                                          |
| Sodium 1H,1H,2H,2H-perfluorododecanesulfonate (10:2 FTS) ( <sup>13</sup> C <sub>2</sub> , 99%; D <sub>4</sub> , 98%) |                              | 1000                                          |
| Perfluorooctanesulfonamide (PFOSA) ( <sup>13</sup> C <sub>8</sub> , 99%)                                             |                              | 1000                                          |
| <i>N</i> -Methylperfluorooctanesulfonamide ( <i>N</i> -MeFOSA) (D <sub>3</sub> , 98%)                                |                              | 1000                                          |
| <i>N</i> -Methylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -MeFOSAA) (D <sub>3</sub> , 98%)                    |                              | 1000                                          |
| <i>N</i> -Ethylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -EtFOSAA) (D <sub>5</sub> , 98%)                     |                              | 1000                                          |
| Sodium tetrafluoro-2-(heptafluoropropoxy)propanoate (HFPO-DA) "GenX" ( <sup>13</sup> C <sub>3</sub> , 99%)           |                              | 1000                                          |
| *Gravimetric concentration is based on the free acid, where applicable.                                              |                              |                                               |
| ES-5641 *                                                                                                            | PFAS SIL Superfund Mixture 2 | 1.2 mL in MeOH (with 4 molar equivalent NaOH) |
| <b>Labeled</b>                                                                                                       |                              | <b>(ng/mL)**</b>                              |
| Sodium perfluoro- <i>n</i> -butyrate (PFBA) ( <sup>13</sup> C <sub>3</sub> , 99%)                                    |                              | 1000                                          |
| Sodium perfluoro- <i>n</i> -pentanoate (PFPeA) ( <sup>13</sup> C <sub>5</sub> , 99%)                                 |                              | 1000                                          |
| Sodium perfluoro- <i>n</i> -hexanoate (PFHxA) ( <sup>13</sup> C <sub>6</sub> , 99%)                                  |                              | 1000                                          |
| Perfluoro- <i>n</i> -decanoic acid (PFDA) ( <sup>13</sup> C <sub>9</sub> , 99%)                                      |                              | 1000                                          |
| Sodium perfluoro- <i>n</i> -undecanoate (PFUA) ( <sup>13</sup> C <sub>9</sub> , 99%)                                 |                              | 1000                                          |
| Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA) ( <sup>13</sup> C <sub>12</sub> , 99%)                               |                              | 1000                                          |
| Perfluoro- <i>n</i> -tetradecanoic acid (PFTeDA) ( <sup>13</sup> C <sub>2</sub> , 99%)                               |                              | 1000                                          |
| Potassium perfluoro-1-butanefluorobutanesulfonate (PFBS) ( <sup>13</sup> C <sub>4</sub> , 99%)                       |                              | 1000                                          |
| Potassium perfluoro-1-hexanesulfonate (PFHxS) ( <sup>13</sup> C <sub>6</sub> , 99%)                                  |                              | 1000                                          |
| Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS) ( <sup>13</sup> C <sub>2</sub> , 99%; D <sub>4</sub> , 98%)    |                              | 1000                                          |
| Sodium 1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS) ( <sup>13</sup> C <sub>2</sub> , 99%; D <sub>4</sub> , 98%)    |                              | 1000                                          |
| Perfluorooctanesulfonamide (PFOSA) ( <sup>13</sup> C <sub>8</sub> , 99%)                                             |                              | 1000                                          |
| *Currently in production. Please contact CIL or your CIL representative for a delivery estimate.                     |                              |                                               |
| **Gravimetric concentration is based on the free acid, where applicable.                                             |                              |                                               |

## PFAS Mixture

| Catalog No.                                                                               | Description              | Amount                                        |
|-------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------|
| ES-5639-A                                                                                 | PFAS Superfund Mixture 1 | 1.2 mL in MeOH (with 4 molar equivalent NaOH) |
| <b>Unlabeled</b>                                                                          |                          | <b>(ng/mL)*</b>                               |
| Sodium perfluoro- <i>n</i> -butyrate (PFBA)                                               |                          | 2000                                          |
| Sodium perfluoro- <i>n</i> -pentanoate (PFPeA)                                            |                          | 2000                                          |
| Sodium perfluoro- <i>n</i> -hexanoate (PFHxA)                                             |                          | 2000                                          |
| Perfluoro- <i>n</i> -heptanoic acid (PFHpA)                                               |                          | 2000                                          |
| Perfluoro- <i>n</i> -octanoic acid (PFOA)                                                 |                          | 2000                                          |
| Perfluoro- <i>n</i> -nonanoic acid (PFNA)                                                 |                          | 2000                                          |
| Sodium perfluoro- <i>n</i> -decanoate (PFDA)                                              |                          | 2000                                          |
| Sodium perfluoro- <i>n</i> -undecanoate (PFUA)                                            |                          | 2000                                          |
| Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA)                                           |                          | 2000                                          |
| Perfluoro- <i>n</i> -tetradecanoic acid (PFTeDA)                                          |                          | 2000                                          |
| Perfluoro- <i>n</i> -hexadecanoic acid (PFHxDA)                                           |                          | 2000                                          |
| Perfluoro- <i>n</i> -octadecanoic acid (PFODA)                                            |                          | 2000                                          |
| Potassium perfluoro-1-butanefluorobutanesulfonate (PFBS)                                  |                          | 2000                                          |
| Potassium perfluorohexanesulfonate (PFHxS) mix of isomers                                 |                          | 2000                                          |
| Perfluorooctanesulfonate (PFOS) mix of isomers                                            |                          | 2000                                          |
| Sodium 1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)                                     |                          | 2000                                          |
| Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS)                                     |                          | 2000                                          |
| Sodium 1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)                                     |                          | 2000                                          |
| Sodium 1H,1H,2H,2H-perfluorododecanesulfonate (10:2 FTS)                                  |                          | 2000                                          |
| Perfluorooctanesulfonamide (PFOSA) mix of isomers                                         |                          | 2000                                          |
| <i>N</i> -Methylperfluorooctanesulfonamide ( <i>N</i> -MeFOSA) mix of isomers             |                          | 2000                                          |
| <i>N</i> -Methylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -MeFOSAA) mix of isomers |                          | 2000                                          |
| <i>N</i> -Ethylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -EtFOSAA) mix of isomers  |                          | 2000                                          |
| Tetrafluoro-2-(heptafluoropropoxy) propanoic acid (HFPO-DA) "GenX"                        |                          | 2000                                          |

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

## PFAS Mixture

| Catalog No.      | Description                                                                               | Amount             |
|------------------|-------------------------------------------------------------------------------------------|--------------------|
| ES-5636-A        | PFAS EF-28 Native Mixture                                                                 | 1.2 mL in methanol |
| <b>Unlabeled</b> |                                                                                           | <b>(ng/mL)*</b>    |
|                  | Sodium perfluoro- <i>n</i> -butyrate (PFBA)                                               | 1000               |
|                  | Sodium perfluoro- <i>n</i> -pentanoate (PFPeA)                                            | 1000               |
|                  | Sodium perfluoro- <i>n</i> -hexanoate (PFHxA)                                             | 1000               |
|                  | Perfluoro- <i>n</i> -heptanoic acid (PFHpA)                                               | 1000               |
|                  | Perfluoro- <i>n</i> -octanoic acid (PFOA)                                                 | 1000               |
|                  | Perfluoro- <i>n</i> -nonanoic acid (PFNA)                                                 | 1000               |
|                  | Sodium perfluoro- <i>n</i> -decanoate (PFDA)                                              | 1000               |
|                  | Sodium perfluoro- <i>n</i> -undecanoate (PFUA)                                            | 1000               |
|                  | Sodium perfluoro- <i>n</i> -dodecanoate (PFDoA)                                           | 1000               |
|                  | Perfluoro- <i>n</i> -tridecanoic acid (PFTrDA)                                            | 1000               |
|                  | Perfluoro- <i>n</i> -tetradecanoic acid (PFTeDA)                                          | 1000               |
|                  | Perfluoro- <i>n</i> -hexadecanoic acid (PFHxDA)                                           | 1000               |
|                  | Perfluoro- <i>n</i> -octadecanoic acid (PFODA)                                            | 1000               |
|                  | Potassium perfluoro-1-butanedisulfonate (PFBS)                                            | 1000               |
|                  | Sodium perfluoro-1-pentanesulfonate (PFPeS)                                               | 1000               |
|                  | Potassium perfluorohexanesulfonate (PFHxS) mix of isomers                                 | 1000               |
|                  | Sodium perfluoro-1-heptanesulfonate (PFHpS)                                               | 1000               |
|                  | Sodium perfluoro-1-octanesulfonate (PFOS)                                                 | 1000               |
|                  | Potassium perfluoro-1-decanedisulfonate (PFDS)                                            | 1000               |
|                  | Sodium 1H,1H,2H,2H-perfluorohexanesulfonate (4:2 FTS)                                     | 1000               |
|                  | Sodium 1H,1H,2H,2H-perfluorooctanesulfonate (6:2 FTS)                                     | 1000               |
|                  | Sodium 1H,1H,2H,2H-perfluorodecanesulfonate (8:2 FTS)                                     | 1000               |
|                  | Sodium 1H,1H,2H,2H-perfluorododecanesulfonate (10:2 FTS)                                  | 1000               |
|                  | Perfluorooctanesulfonamide (PFOSA) mix of isomers                                         | 1000               |
|                  | <i>N</i> -Methylperfluorooctanesulfonamide ( <i>N</i> -MeFOSA) mix of isomers             | 1000               |
|                  | <i>N</i> -Methylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -MeFOSAA) mix of isomers | 1000               |
|                  | <i>N</i> -Ethylperfluorooctanesulfonamidoacetic acid ( <i>N</i> -EtFOSAA) mix of isomers  | 1000               |
|                  | Bis(1H,1H,2H,2H-perfluorodecyl)phosphate (8:2-DiPAP)                                      | 1000               |

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

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