FREESTYLE™ PFAS

# Automated PFAS Clean-up

## PFAS Clean-Up with Minimized Blank Values

Based on the robust and established FREESTYLE robotic system, LCTech has developed a solution especially for PFAS applications by avoiding fluorine-containing plastics such as PTFE and is thus solving the challenge: No blank values from the system were measurable.

### Processing on Established Robotic System

***Easy handling, robust setup, low maintenance, and low cost of ownership***

For automated determination of PFAS in up to 100 mL samples via solid phase extraction:

- FREESTYLE BASIC system with SPE-PFAS module
- Specially designed needle
- Wide variety of racks for all kinds of vials
- Positive pressure up to 4 bar
- No cross-contamination

**For automated determination of PFAS in 0.1 –** 10 L water samples (high throughput water analysis):

- FREESTYLE BASIC system with SPE-PFAS module and
- XANA-PFAS module
- Fully automated processing of up to 24 samples in one sequence
- Parallel processing of up to 7 samples

**According to DIN 38407-42** and US EPA 537.1



LCTech

# According to Recent Regulations

The FREESTYLE-PFAS system enables the fully automated processing of PFAS samples according to public regulations. In the following, 14 selected PFAS were processed on the FREESTYLE XANA system in order to see whether all compounds are recovered and do not adhere to the system.

One of the key challenges in analysing PFAS is to keep the background of analytes as low as possible. Furthermore, any fluorocarbon materials, commonly used in laboratory systems due to their unique chemical properties, are prone to a release of small amounts of PFAS that may significantly increase background levels.

*Therefore, any fluorocarbon materials of the FREESTYLE SPE as well as the XANA system were consequently removed and replaced by polyethylene or polypropylene, respectively.*

As seen in the table below, the analytes of the DIN method were found with good recoveries and very low standard variations because of the reliable and robust automation. Also the blind values are kept at an absolute minimum, to stay in accordance to any PFAS related regulation.

| No | Component Name | Recovery [%] | STD [%] | Background FREESTYLE [ng / L ] |
|---|---|---|---|---|
| 1 | Polyfluorobutanoic acid (PFBA) | 80 | 3,8 | n.d |
| 2 | Polyfluoropentanoic acid (PFPeA) | 106 | 1,1 | 0,03 |
| 3 | Polyfluorohexanoic acid (PFHxA) | 101 | 1,3 | n.d. |
| 4 | Polyfluoroheptanoic acid (PFHpA) | 106 | 1,5 | n.d. |
| 5 | Polyfluorooctanoic acid (PFOA) | 107 | 1,6 | n.d. |
| 6 | Polyfluorononanoic acid (PFNA) | 102 | 1,8 | n.d. |
| 7 | Polyfluorodecanoic acid (PFDA) | 66 | 2,0 | n.d. |
| 8 | Polyfluorobutane sulfonate (PFBS) | 102 | 1,4 | n.d. |
| 9 | Polyfluorohexane sulfonate (PFHxS) | 107 | 2,1 | n.d. |
| 10 | Polyfluorooctane sulfonate (PFOS) | 79 | 1,7 | n.d. |
| 11 | $^{13}C_4$ perfluorobutanoic acid ($^{13}C_4$ PFBA) | 84 | 2,3 | - |
| 12 | $^{13}C_2$ perfluorohexanoic acid ($^{13}C_2$ PFHxA) | 108 | 1,6 | - |
| 13 | $^{13}C_4$ perfluorooctanoic acid ($^{13}C_4$ PFOA) | 113 | 1,3 | - |
| 14 | $^{13}C_4$ perfluorooctanesulfonic acid ($^{13}C_4$ PFOS) | 85 | 1,8 | - |

Table 1: Recovery data of 14 selected PFAS compounds according to DIN 38407-42 and comparison of PFAS background concentrations of neat solvent and water samples processed with the FREESTYLE XANA system

for detailed information see our *App Note AN0033*

The information contained in this flyer is based on our current knowledge and has been carefully checked.
However, since we continually work on the further development of our products, please accept texts, pictures and numbers on these pages as non-binding and exemplary only.



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