PFAS

PerkinElmer
Science with Purpose

Simplify PFAS. Strengthen Compliance.



QSight® 500 LC/MS/MS system

PFAS Testing Solutions

Defensible data across every matrix, on the QSight® LC/MS/MS platform



Regulation Now Reaches Food and Packaging

PFAS persist in water, soil, wildlife and the food chain. Testing now has to cover drinking water and wastewater, soils and biosolids, food, and the packaging food comes in.

Each rule sets its own matrix, analyte list and limit. Laboratories need workflows that meet every one of them without buying a new instrument for each matrix.

EPA Method 1633

FINAL, JANUARY 2024

40 PFAS in aqueous, solid, biosolid and tissue samples. The multi-laboratory validated reference method.

EPA Method 533

DRINKING WATER

Isotope-dilution LC/MS/MS method for 25 PFAS in drinking water.

EU Regulation 2023/915

FOOD CONTAMINANTS

Maximum levels for PFOS, PFOA, PFNA and PFHxS in food, including meat and offal.

EU PPWR 2025/40

IN FORCE FROM 12 AUG 2026

Food-contact packaging barred at 25 ng/g or more of any individual PFAS.

Why Labs Choose QSight® for PFAS Testing

PerkinElmer
Science with Purpose

One system that meets current PFAS regulation in every sample type, with less preparation and more uptime.

ONE PLATFORM

5 matrices

Water, solids, tissue, food and packaging all run on the QSight 500.

LESS SAMPLE

250 mL

Half the usual 500 mL for EPA 1633 water, cutting SPE, shipping and storage cost.

NO SPE

15–20 min

Prep saved per packaging sample. Food and packaging workflows skip SPE entirely.

MORE UPTIME

21,700

Food-matrix injections with no loss of sensitivity or unplanned downtime.

COMPLIANCE

40 PFAS

Every EPA 1633 criterion met in water, solids and tissue, verified by third-party PT samples.

Ready to learn more? Visit www.PerkinElmer.com

Bring PFAS Testing In-House, On Your Terms

PerkinElmer
Science with Purpose

Outsourcing buys short-term capacity. An in-house QSight workflow gives you control of cost, schedule and data as regulation expands.

OUTSOURCING

Upfront cost
Lower to start, higher long-term expense

Turnaround
Queued behind other clients' samples

Data control
Limited visibility into methods and QC

New regulation
Wait for the lab to add the method

IN-HOUSE WITH QSIGHT

Long-term cost
Lower cost per result as volumes grow

Turnaround
You set the schedule and the priorities

Data control
Full ownership of data quality and audit trail

New regulation
Respond fast with one expandable workflow

Plan the transition

Budget	Compliance	Flexibility	People
Capital vs. outsourcing fees	Wider monitoring, lower limits	Grow without new hardware	Align management and QA

Five Matrices Types Put To The Test

PerkinElmer
Science with Purpose

Verified PerkinElmer workflows now cover every sample type in current PFAS regulation, all quantified by isotope dilution on the QSight® LC/MS/MS platform.

Surface and wastewater

Surface water and municipal wastewater, quantified at low ng/L

EPA 1633 · 40 PFAS

Soil, sediment and biosolids

Sand, garden soil, creek sediment, sludge and biosolids at low ng/g

EPA 1633 · 40 PFAS

Fish and animal tissue

Salmon, fish, shrimp, chicken, pork and beef

EPA 1633 · 40 PFAS

Animal-derived food

High-protein goat liver and muscle at ppt levels

Blend & Inject · 25 PFAS

Packaging and bottled water

Food and pharma packaging bottles, packaged drinking water

Direct Shoot · 26 PFAS

SPE for EPA 1633, Direct Injection for Food and Packaging

PerkinElmer
Science with Purpose

Matrix	Method basis	Sample preparation	PFAS	Performance
Surface and wastewater	EPA 1633	Automated dual-layer WAX/GCB SPE on 250 mL	40	Low ng/L
Soil, sediment, biosolids	EPA 1633	Solvent extraction, then GCB/WAX SPE clean-up	40	Low ng/g
Fish and animal tissue	EPA 1633	Solvent extraction, then automated GCB/WAX SPE	40	All EPA 1633 criteria met
Animal-derived food	EPA 533 list, EU 2023/915	Blend & Inject: extract, centrifuge, filter, inject	25	LOQ 0.025 µg/kg
Packaging, bottled water	EU PPWR 2025/40	Direct Shoot: methanol extract injected directly	26	Linear 0.05–25 ng/g

Shaded rows need no solid-phase extraction.

One Unified Workflow, Fewer Methods to Manage

PerkinElmer
Science with Purpose

Every matrix brings its own extraction and interference challenges. One set of principles for preparation, analysis and QC keeps results consistent without a separate method for each sample type.

01

Common principles

Shared preparation, analysis and QC rules across water, solids, tissue, food and packaging.

02

Fewer methods

Less method proliferation means faster staff training and simpler validation.

03

Consistent QC

Isotope-labelled internal standards and ion-ratio checks applied the same way in every matrix.

04

Room to grow

Add compounds, lower limits or new matrices without rebuilding the workflow.

The result: simpler operations, streamlined validation and confidence across every sample type.



QSight® 500 Is Built for PFAS Uptime, Not Just Sensitivity

QSight dual source with StayClean™ technology

01 EDIT Probe

Co-axial heating and an axial tip guide deliver 2-4x the signal of ESI, with much less probe tuning.

02 StayClean™ HSID™ inlet

Runs dirtier samples without losing performance, with few parameters to set.

03 Laminar flow ion guide

Flow-induced transmission keeps the signal stable with minimal optimization.

04 UniField™ detector

Fast polarity switching raises sample throughput.

PFAS-ready hardware: PTFE-free autosampler kit, PEEK-Sil needle and an inline delay column that holds system PFAS away from the analyte window.

Stable PFAS Response Across 21,700 Continuous Injections

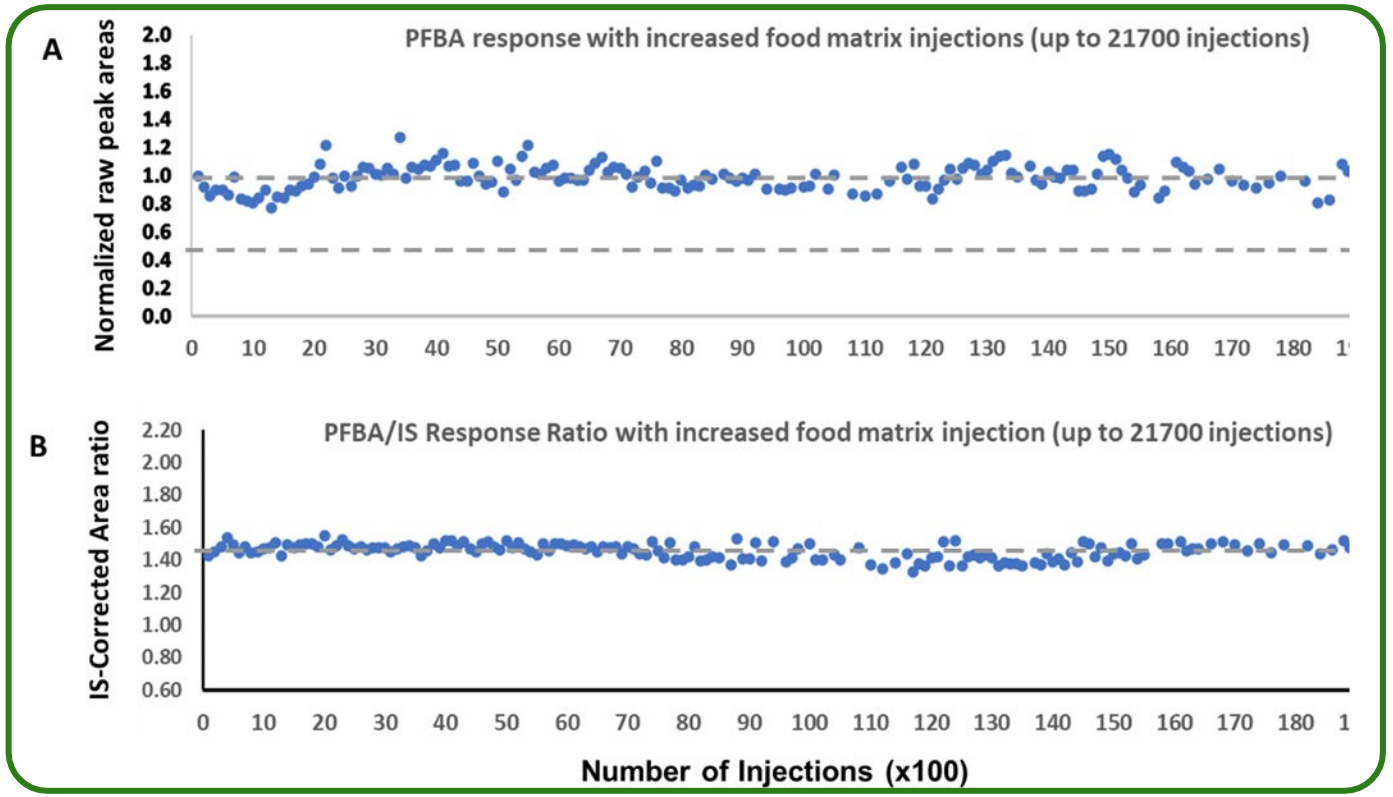
PerkinElmer
Science with Purpose

21,700

Continuous injections of high-load food extracts, with no loss of sensitivity or un-planned downtime

Study design

- Salmon, avocado, tomato mix, spice powder, and dog and cat feed
- Modified QuEChERS prep with the final SPE step left out to maximize matrix load
- QC check every 100 injections



PFBA raw peak area (A) and internal-standard-corrected area ratio (B), plotted every 100 injections

Source: PerkinElmer application note, Unmatched Robustness for Analysis of Per- and Polyfluoroalkyl Substances in Difficult Food Matrices.



WATER

Results that withstand scrutiny.

EPA 1633 compliance from half the sample volume.

Surface water · groundwater · wastewater

Water: EPA 1633 Compliance From Half the Sample Volume

PerkinElmer
Science with Purpose

Surface water and wastewater carry PFAS from low ng/L to µg/L. This workflow runs 40 PFAS with automated SPE and QSight LC/MS/MS.

Results

- All EPA 1633 performance criteria met in both matrices
- Recoveries within EPA 1633 ranges, precision within 20% RSD (n = 3)
- Accuracy confirmed with a third-party proficiency testing sample
- Runs on QSight 500 and QSight 420 systems

LESS SAMPLE, FASTER PREP

250 mL

instead of 500 mL. A wider SPP UHPLC column and larger injection keep sensitivity while cutting SPE time and the cost of collecting, shipping and storing samples.

ONE CARTRIDGE, FEWER STEPS

WAX/GCB

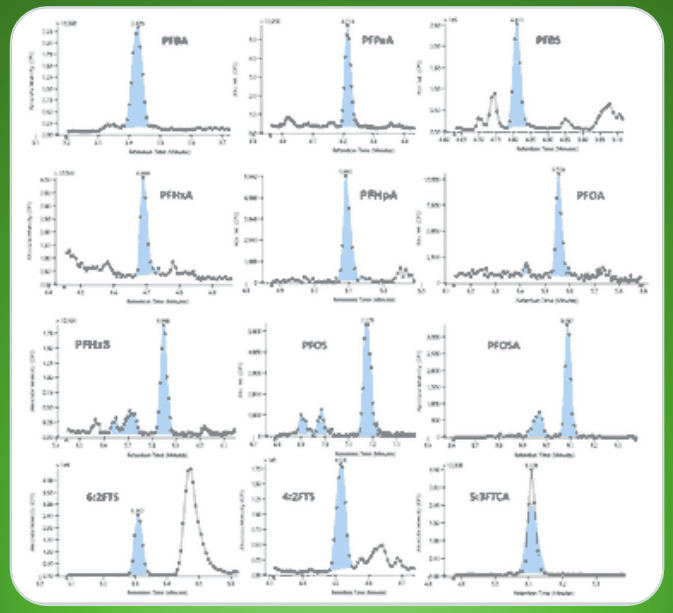
dual-layer SPE cartridge. It removes a clean-up step, improves recovery and accuracy, and avoids handling dispersive GCB.

Source: Analysis of 40 PFAS by US EPA Method 1633, Part 2: Application to Surface Water and Wastewater Samples, PerkinElmer application note.

Every EPA 1633 PFAS Recovered in Real Wastewater

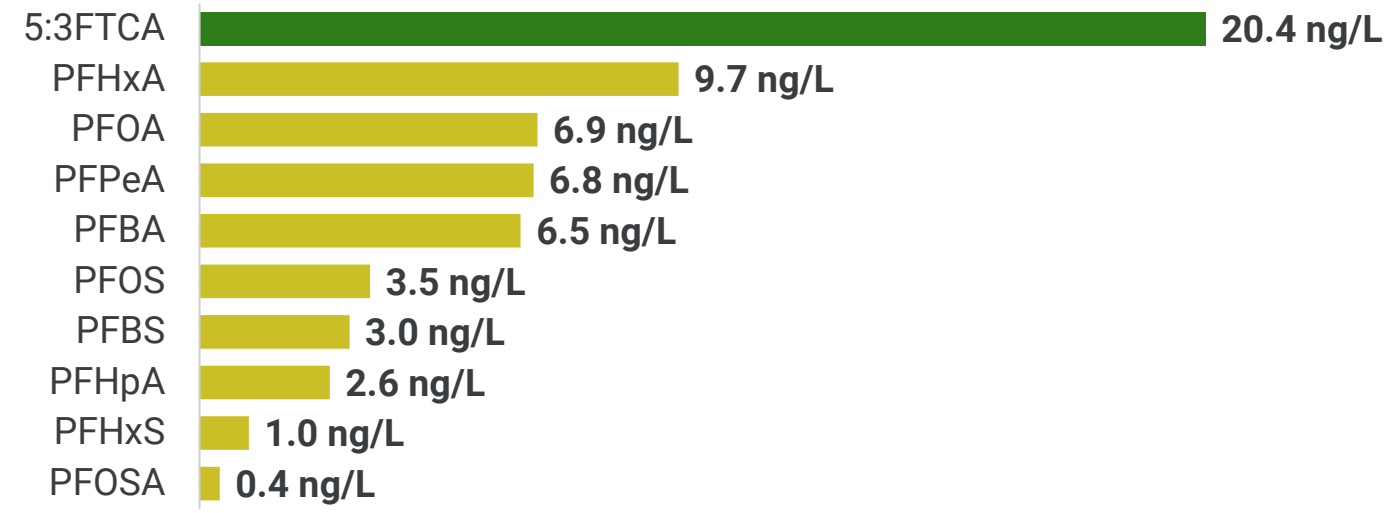
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LC/MS/MS chromatograms of PFAS in wastewater samples



Part 2 app note, Figure 3

PFAS in wastewater influent sample W-INF1, ng/L



40 of 40
PFAS recovered within EPA 1633 limits

74–115%
recovery in spiked surface water

≤ 20% RSD
precision across replicates (n = 3)

Source: Analysis of 40 PFAS by US EPA Method 1633, Part 2: Surface Water and Wastewater Samples



Soil, Sediment & Biosolids

Soil analysis that stands its ground.

Every EPA 1633 analyte at low ng/g in complex solids.

Sand · soil · sediment · sludge · biosolids

Solids: 40 PFAS at Low ng/g, From Sand to Biosolids

PerkinElmer
Science with Purpose

Solvent extraction	GCB/WAX SPE	QSight LC/MS/MS	EPA 1633 check
Isotope-labeled standards added, sample extracted and equilibrated	Dual-layer cartridge, run on an automated SPE system	40 PFAS quantified by isotope dilution	Results reviewed against every method criterion

Samples tested

- Sand, garden soil and creek sediment
- Sludge and two biosolids
- Other solids: plant and food-derived samples

Results

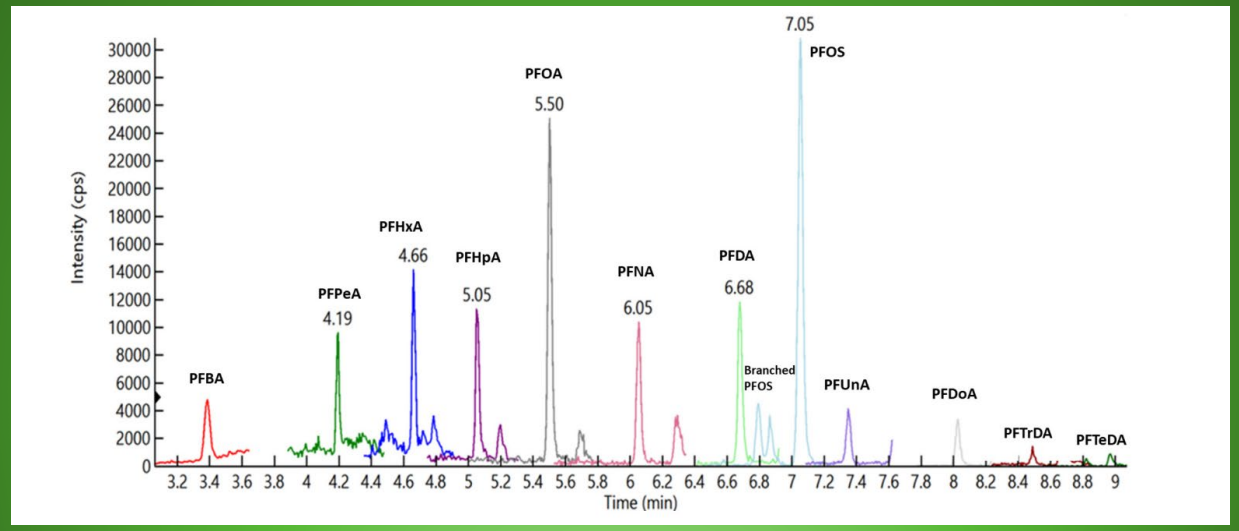
- All EPA 1633 performance criteria met for solid and biosolid samples
- More than 10 PFAS found at low ng/g in a garden soil and a sludge sample; most other samples had little or none
- Dual-layer SPE cuts prep steps and improves recovery versus dispersive GCB
- Accuracy confirmed with a third-party soil proficiency testing sample

Source: Analysis of 40 PFAS by US EPA Method 1633, Part 3: Application to Sand, Soil, Sediment, Sludge, Biosolid and Other Solid Samples, PerkinElmer application note.

Quantify PFAS in Biosolids Down to 0.1 ng/g

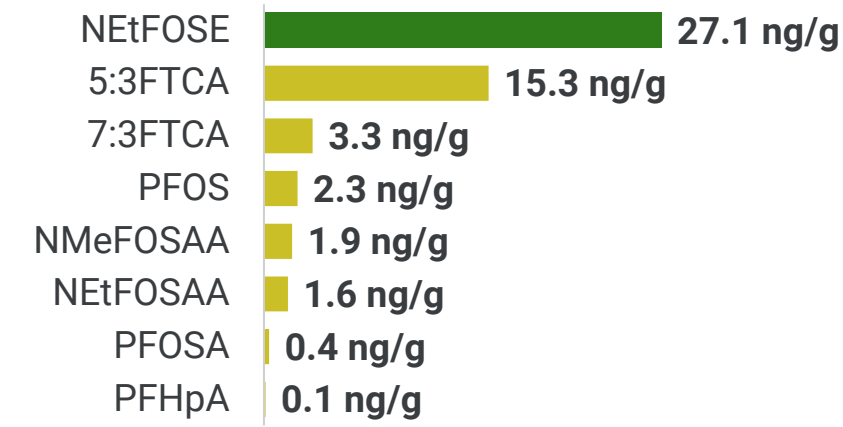
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Science with Purpose

LC/MS/MS chromatograms of PFAS in a black garden soil sample



Part 3 app note, Figure 3

PFAS in municipal biosolid sample S9, ng/g



40 PFAS meet every EPA 1633 criterion in solids

10+ PFAS in garden soil and sludge at low ng/g

PT verified third-party soil proficiency sample

Source: Analysis of 40 PFAS by US EPA Method 1633, Part 3: Sand, Soil, Sediment, Sludge, Biosolid and Other Solid Samples, PerkinElmer application note.



Fish & Animal Tissue

Dirty matrices. Regulatory-grade results.

One workflow for six fish and meat types.

Salmon · fish · shrimp · chicken · pork · beef

Tissue: One Workflow for Six Fish and Meat Types

PerkinElmer
Science with Purpose

Salmon | Fish | Shrimp | Chicken | Pork | Beef

How the workflow runs

1. Spike isotope-labeled standards and equilibrate for 30 minutes
2. Extract with solvent, sonicate and centrifuge
3. Clean up on a dual-layer GCB/WAX cartridge, automated on a PromoChrom SPE-03
4. Quantify 40 PFAS on QSight LC/MS/MS

Results

- All EPA 1633 performance criteria met in all six tissues
- Accuracy confirmed with a third-party fish tissue proficiency testing sample
- Dual-layer SPE removes steps and the hazards of dispersive GCB
- QSight stayed robust through high-fat, high-protein extracts

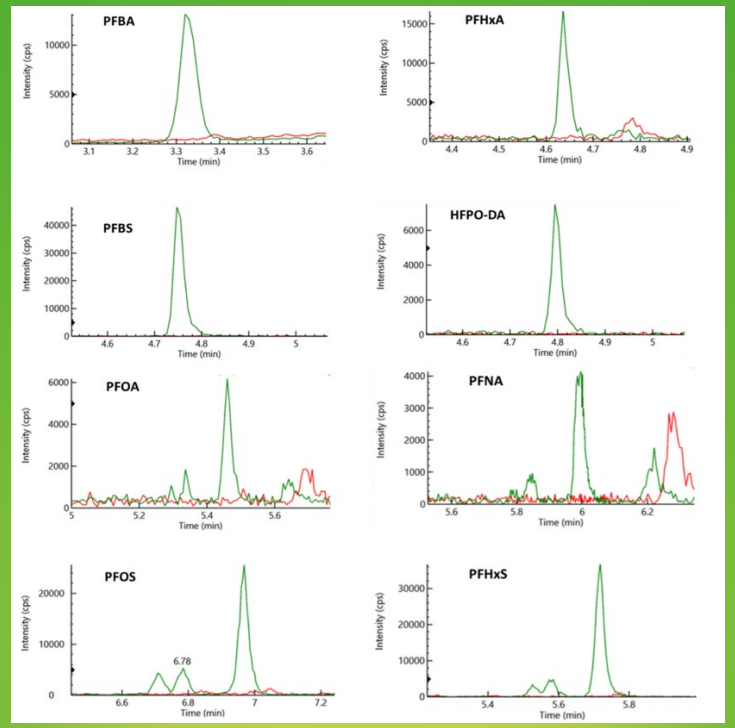
- The QSight ran surface water, wastewater, solid and animal tissue samples continuously for a whole year without maintenance.
- A spiked salmon sample was then injected 750 times.
- The extracted internal standard peak areas stayed within RSD < 10%: $^{13}C_8$-PFOS 6.3%, $^{13}C_5$-PFHxA 7.8%, $^{13}C_8$-PFOA 9.1%.

Source: Analysis of 40 PFAS by US EPA Method 1633, Part 4: Application to Fish and Other Animal Tissue Samples, PerkinElmer application note.

Quantify PFOS and PFHxS in Tissue at 0.03 ng/g

PerkinElmer
Science with Purpose

Selected PFAS in fish: unspiked (red) vs spiked (green)



Part 4 app note, Figure 4

Limits for regulated PFAS in tissue, ng/g, against EPA 1633 interlab results

PFAS	MDL	LOQ	EPA MDL	EPA LOQ
PFBA	0.374	0.25	0.208	1.6–4.0
PFBS	0.023	0.03	0.097	0.4–0.5
PFHxA	0.100	0.89	0.111	0.4–0.5
PFOA	0.137	0.52	0.105	0.4–0.5
PFNA	0.207	0.63	0.119	0.4–0.5
PFHxS	0.087	0.03	0.081	0.4–0.5
PFOS	0.222	0.03	0.145	0.4–2.0
HFPO-DA	0.430	0.25	0.339	1.6–2.1

30 of 40
LOQs at or below EPA's lowest interlab LOQ

6 tissues
all EPA 1633 criteria met

PT verified
third-party fish tissue sample

MDL: method detection limit; LOQ: limit of quantitation. Source: Analysis of 40 PFAS by US EPA Method 1633, Part 4: Fish and Other Animal Tissue Samples, PerkinElmer application note; EPA Method 1633, Jan 2024.



Food

Built for the toughest food matrices.

ppt-level PFAS results without SPE clean-up.

Meat · offal · animal-derived foods

Food: Blend & Inject Reaches 0.025 µg/kg Without SPE

PerkinElmer
Science with Purpose

25
PFAS from the EPA Method 533 list

0.025 µg/kg
limit of quantification, at ppt level

$R^2 \geq 0.990$
linear from 0.025 to 5.0 µg/kg

01
Weigh 1 g of homogenized tissue

02
Add 2 mL cold 20% methanol with 5 mM ammonium acetate

03
Sonicate for 10 minutes

04
Centrifuge 10 minutes at 4 °C and 5,000 rpm

05
Filter at 0.22 µm into a PP vial and inject

Spike recoveries at 0.050 and 0.10 µg/kg in goat liver and muscle met EU and EPA 1633 acceptance criteria, **with no solid-phase extraction.**

Source: PerkinElmer, Blend & Inject Quantification of PFAS in Animal Tissue with QSight 500 LC/MS/MS, 2026.

Confirm 25 PFAS at ppt Levels in Animal Tissue

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Science with Purpose

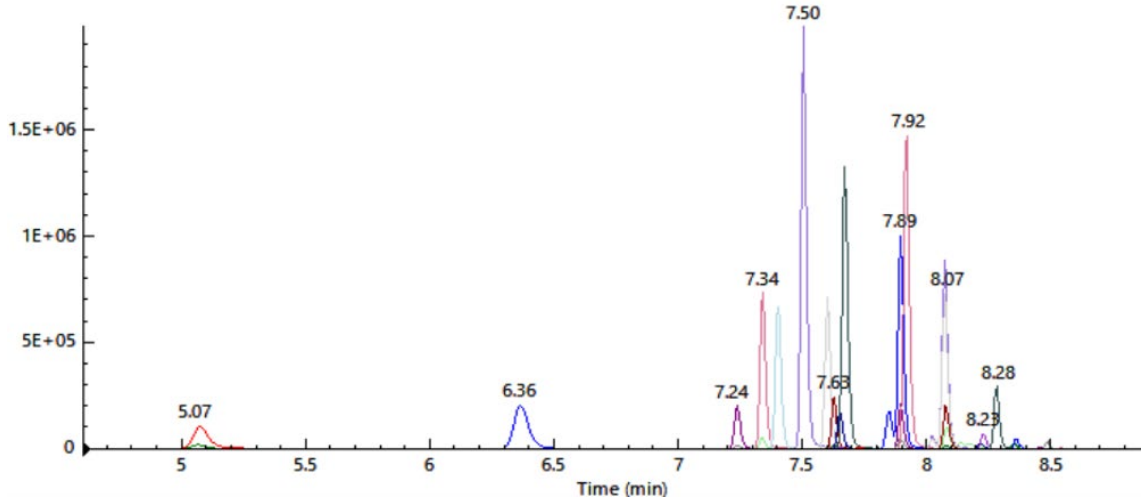
Samples tested



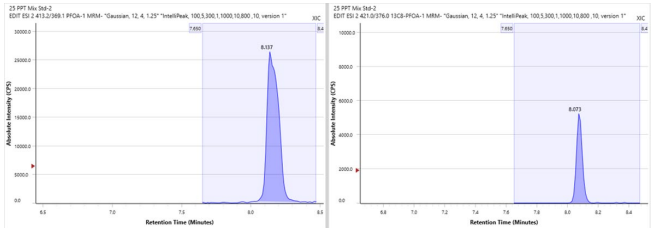
Goat liver

Goat muscle

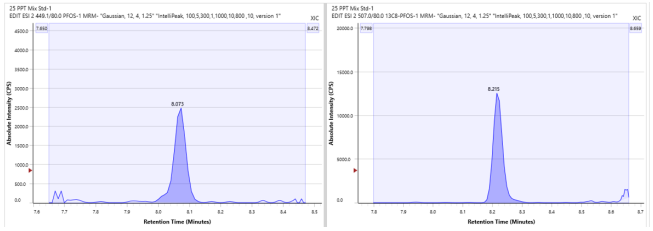
Quantifier ion overlay, 25 EPA 533 PFAS, animal tissue extract



PFOA, 25 ppt standard



PFOS, 25 ppt standard

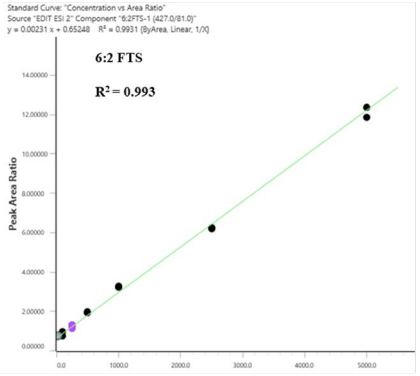


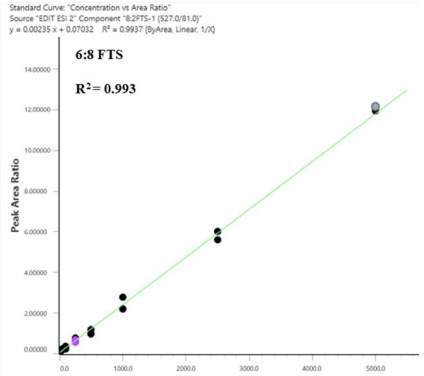
Source: Blend & Inject Quantification of PFAS in Animal Tissue with QSight 500 LC/MS/MS, PerkinElmer, 2026.

Accurate Results at 50 ppt Without SPE Clean-Up

PerkinElmer
Science with Purpose

Representative calibration curves, 0.025–5.0 µg/kg





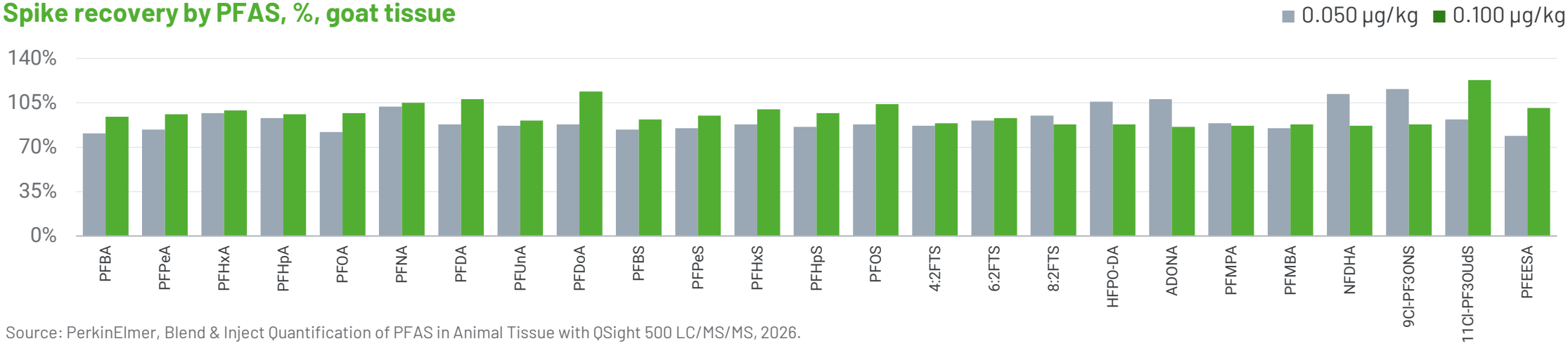
$R^2 \geq 0.990$
linearity for all 25 PFAS

0.025 µg/kg
LOQ, at ppt level

n = 10
replicates at each spike level

Spikes at 0.050 µg/kg (50 ppt) and 0.100 µg/kg (100 ppt), within EU and EPA 1633 acceptance criteria.

Spike recovery by PFAS, %, goat tissue



Source: PerkinElmer, Blend & Inject Quantification of PFAS in Animal Tissue with QSight 500 LC/MS/MS, 2026.



Packaging

Be ready for the next regulatory threshold

Screen against the PPWR 25 ng/g limit in one injection.

Food packaging · pharma packaging · bottled water

Packaging: Direct Shoot Covers the PPWR Limit

PerkinElmer
Science with Purpose

A methanol extract goes straight onto the QSight LX50 UHPLC and QSight 500, with no cartridges, evaporation or reconstitution.

Matrices tested

- Food packaging bottles
- Pharmaceutical packaging bottles
- Packaged drinking water

Built for PPWR

One calibration from 0.05 to 25 ng/g covers trace screening and the 25 ng/g PPWR limit, with no re-injection at a second dilution.

26
PFAS in one run

15–20 min
prep time saved per sample

70–130%
recoveries at 1, 5 and 10 ng/g

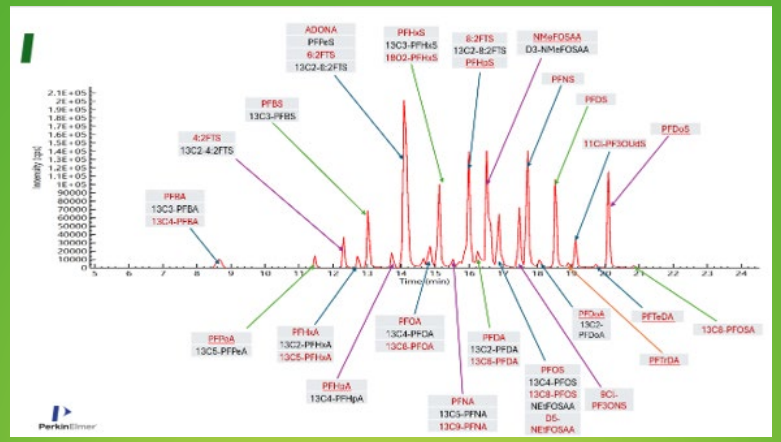
0.991–0.997
R^2 across 0.05–25 ng/g

Source: Kumar, Atugade, Kardelis, Taylor. Testing Plastic Packaging for PFAS Without SPE, PerkinElmer application note.

Screen Packaging for 26 PFAS in One Injection

PerkinElmer
Science with Purpose

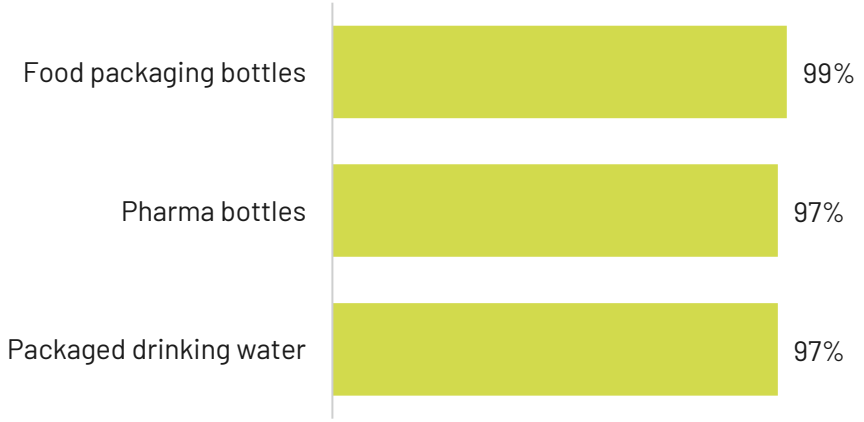
Total ion chromatogram, 26 PFAS in a fortified packaging extract



Direct Shoot LC-MS/MS on the QSight 500
(Direct Shoot application note)

Recoveries within 70–130%, by sample type

26 PFAS at 1, 5 and 10 ng/g, n = 6



26 PFAS in one direct injection, no SPE

R^2 0.991–0.997 linear from 0.05 to 25 ng/g

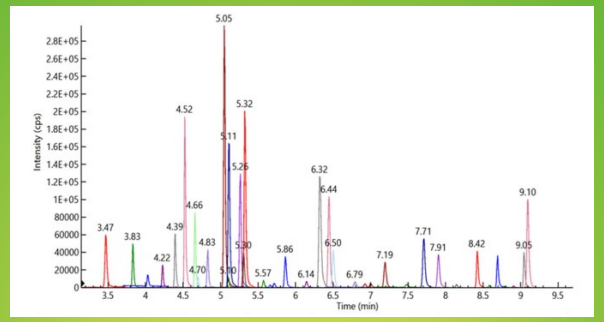
15–20 min prep saved per sample

Source: Kumar, Atugade, Kardelis, Taylor, Testing Plastic Packaging for PFAS Without SPE: Direct Shoot LC-MS/MS on the QSight 500, PerkinElmer.

Clean Peaks From Standards to Real Samples

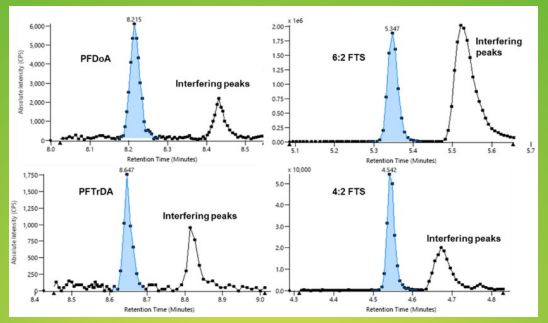
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40 native PFAS standards, EPA 1633



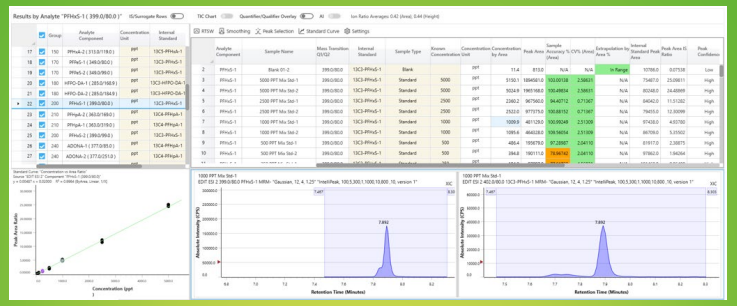
Part 1 app note, Figure 12

Delay column separates system PFAS from analytes



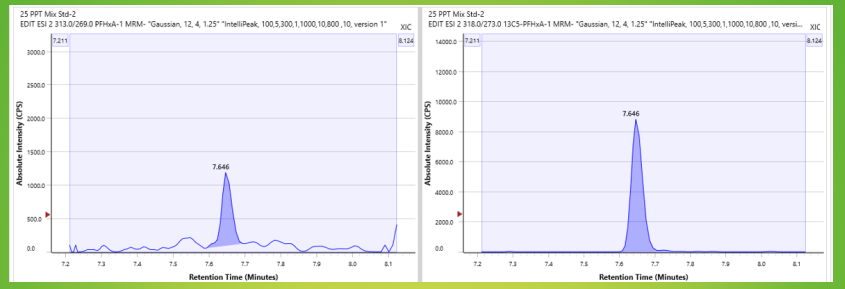
Part 1 app note, Figure 2

PFHxS peak and calibration, animal tissue



Blend & Inject animal tissue study

PFHxA in animal tissue, 25 ppt standard



Blend & Inject animal tissue study

Sources: Analysis of 40 PFAS by US EPA Method 1633, Part 1, PerkinElmer application note; Blend & Inject Quantification of PFAS in Animal Tissue with QSight 500, PerkinElmer, 2026.

Software, Kits & Support

Cost-effective PFAS testing.

Up and running fast, and kept running.

Simplicity 3Q™ · starter kits · service · training





PFAS | Defensible Data Across Every Matrix

From Raw Data to EPA-Ready Report, Faster

PerkinElmer
Science with Purpose

Simplicity 3Q™ Software

A modular, workflow-based package that guides analysts from method set-up through to accredited reporting, so new staff produce compliant results quickly.

What your lab gains

- Less manual calculation, fewer transcription errors
- Faster training for new operators
- Reports that match EPA method requirements

Ready for EPA 1633 on day one

Methods, isomer rules and report templates included.

PFAS E-METHODS

Pre-built acquisition methods and report templates for EPA Method 1633, ready to run on day one

ISOMER SUMMING

Totals linear and branched isomers automatically by summing their peak areas.

HAZARD INDEX

Calculates the Hazard Index required under the latest EPA regulations.

REPROCESSING AND REPORTING

Re-integrate and re-report batches without re-running samples.

Start Testing Sooner With Kits and Support

PerkinElmer
Science with Purpose

CONSUMABLES

PFAS Testing Starter Kit for EPA 1633

- PTFE-free system upgrade kit
- Dual-bed WAX/GCB SPE cartridges
- Guard, delay and analytical columns
- Vials verified for PFAS work

One order, components verified to EPA 1633, at bulk pricing.

SERVICE

Expert field and application support

- Field engineers with fast response
- High first-time fix rates
- Preventive maintenance and IQ/OQ
- On-site and remote assistance

Keeps instruments running and audits on track.

TRAINING

Hands-on operator training at your lab

- Train several operators at once
- Delivered by Certified Service Engineers
- Method and software coaching
- Application support after go-live

New staff reach productive runs with minimal downtime.

Request a quote: www.perkinelmer.com

Keep Background PFAS Out of Your Results

PerkinElmer
Science with Purpose

THE CHALLENGE

PFAS are everywhere in the lab: tubing, vial caps, solvents and filters.

At ppt levels, background contamination causes false positives and costly reanalysis.

PFAS-free materials

HDPE and polypropylene vials and tubes cut background contamination.

PTFE-free flow path

PTFE-free upgrade kit, PEEK tubing and a delay column keep system PFAS away from your peaks.

Fewer handling steps

Blend & Inject and Direct Shoot remove filtration and SPE steps, and the contamination they bring.

Confident detection

Isotope-labelled standards and ion-ratio confirmation reduce false positives at low levels.

Application Notes and Resources

PerkinElmer
Science with Purpose

Full methods, conditions and data for every workflow in this brochure.

APPLICATION NOTE

EPA 1633, Part 1

Method development and verification with QC samples

APPLICATION NOTE

EPA 1633, Part 2

Surface water and wastewater from 250 mL samples

APPLICATION NOTE

EPA 1633, Part 3

Sand, soil, sediment, sludge and biosolids

APPLICATION NOTE

EPA 1633, Part 4

Fish and other animal tissue samples

APPLICATION NOTE

Direct Shoot

26 PFAS in plastic packaging and bottled water, no SPE

APPLICATION NOTE

Blend & Inject

25 PFAS in animal tissue at 0.025 µg/kg, no SPE

Talk to a PFAS specialist, request a demo or get a quote: www.perkinelmer.com/pfas

Start Your PFAS Readiness Assessment

PerkinElmer
Science with Purpose

Wherever your lab is today, our PFAS specialists will work with you to plan the next step.

1

Understand

Review your current PFAS capability, sample mix and regulatory exposure.

2

Improve

Identify where workflows, consumables and automation can save time and cost.

3

Build

Lay out a clear path to in-house testing that scales with new regulation.

Bring clarity, control and scalability to PFAS analysis.

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For more on our PFAS testing solutions, visit

www.perkinelmer.com



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