Presto

8-Channel Accelerated SPE System

PROMOCHROM TECHNOLOGIES

A Compact, Robust and Efficient SPE system **for large-volume** or **high-particulate** environmental samples

Capable of fully automating even the most challenging extractions like PFAS following EPA Method 1633, 525, 608 and more.

Efficiency & Versatility Redefined

Proudly Canadian and supporting the local industry
Products designed, built and tested at our Richmond and Surrey locations

ABOUT PROMOCHROM

PromoChrom Technologies focuses on the development of sample preparation solutions for trace analysis. Our highly versatile systems have helped customers automate even the most challenging sample extraction processes.

Since **2005**, PromoChrom has developed the SPE-01 and SPE-03 cleanup stations, SPE-04 online/offline SPE's, LC-04 online SPE, RT-01 sample purifier and SPE-06 mini-SPE. Each of the instruments targeted specific applications.

In **2011**, the **flow-path-integration technique** was patented for multi-channel liquid handling. It combines various switching valves into one liquid handling module. This simplified our instruments considerably, making them more cost-effective and reliable

In **2017**, "**Two-tier online SPE**" was invented by PromoChrom which uses a second SPE column for online SPE. This method significantly increased the detection sensitivity and mitigated column compatibility and clogging issues commonly found in online SPE systems.

By **2019**, the SPE-03 is widely used by government and commercial labs for PFAS extraction following EPA, DOD, ISO, modified and other proprietary methods. To expand production, a new office location was opened in Richmond.

In **2023**, the development of the "**Presto Accelerated SPE system**" by PromoChrom was completed. Following this milestone, the system was sent to various customer labs for beta testing. Over the course of the year, two phases of the Presto-Beta-Test were conducted, both of which were completed successfully.

In **2024**, the **Presto 8-Channel SPE system** was officially launched. This new system set a remarkable industry record for efficiency, with the capability of completing extractions for EPA methods 533/3537.1/1633 in under one hour. Following its launch, the Presto garnered overwhelming interest from the public, marking a significant achievement for PromoChrom.

Today, we continue to seek new breakthroughs in laboratory process automation

EFFICIENCY

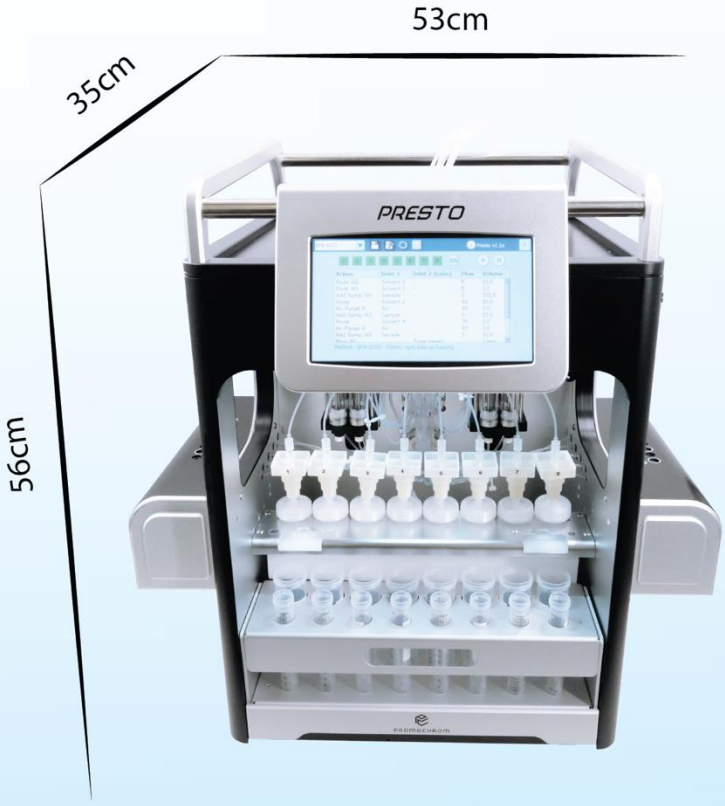
&

VERSATILITY

REDEFINED

Compact & Robust

Imagine an 8-channel system so efficient and compact that it fits three units within a 10-foot fume hood. The Presto 8-Channel Accelerated SPE System is engineered to handle large volumes and high particulate matter samples effortlessly. Equipped with continuous pumps, it can rapidly process 1L samples in just 10 to 20 minutes. The system features a 7” touch screen interface for intuitive method editing, individual flow control for each sample line, and advanced pressure monitoring with flow correction. This ensures accurate and reliable trace analysis, while reducing the time and effort needed for sample preparation. Elevate your environmental testing with the robust and efficient Presto system.



• parallel operation • positive pressure system • minimal-teflon option • 0.5 - 4000mL sample loading • continuous pumps for sample loading • individual flow control • empty line detection • pressure monitoring and and flow correction • sample bottle rinsing and sonication • SPE cartridge conditioning/washing/elution • SPE cartridge blockage detection • nitrogen dry • air purge • solvent mixing • programmable wait • system cleaning • 2 fractions per sample • 2 waste channels • 1/3/6 mL or 6/12/20 mL SPE cartridges • 7” touch interface • up to 100 methods • customizable

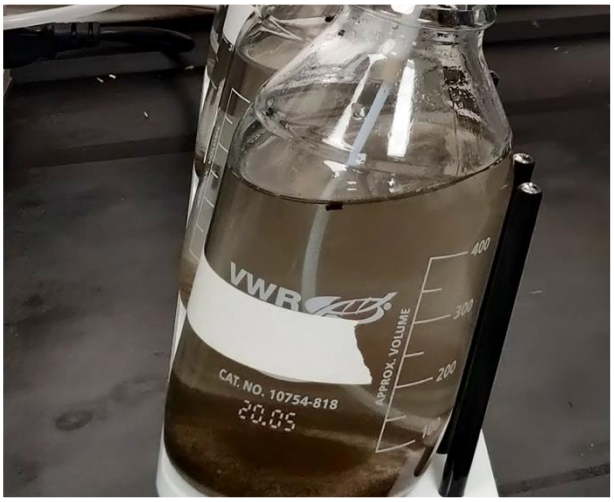
APPLICATION

Environmental Samples

Water

Drinking, Surface, Waste

PFAS, PAHs, PCBs, EPHs, Pesticides, Herbicides, Drugs



Sea Water Samples
Extracted by the Presto

Waste Water Samples
Extracted by the Presto

Soil, Solids & Biosolids

Extract clean up of PFAS, EPHs, PPCPs

SAMPLE LOADING OPTIONS

Highly flexible

The Default Volume-Matrix Plus option, Presto's standard sample loading option, speeds up sample loading and can perform automated rinsing of up to 1L bottles of any kind. Separate rinsing and loading lines allow for handling of samples with high turbidity and particulate levels.

Default ADD-001

Flexible design for efficient loading and rinsing of up to 1L sample bottles. High tolerance to sample particulates.

ADD-002

PFAS and applications that require automated rinsing of up to 250mL bottles.

For automated rinsing of up to 250mL bottles. Common HDPE and PP bottles can be loaded up-side down using the MOD-004 sample bottle rack to allow easy handling and maximum sample transfer.

Contact us for customization options

FEATURES

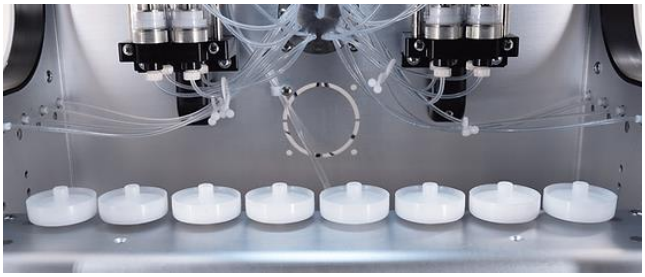
Efficient. Simple. Robust

8-CHANNEL SYSTEM

The Presto processes 8 samples up to 4L in parallel. All samples have individual regulation of flow and pressure. Our patented multi-channel valve has separate flow paths for each sample to remove cross-contamination.

SPE CARTRIDGE AND DISKS

Compatible with 6/12/20mL SPE cartridges and PromoChrom Mini-disks without the need for extra adapters. Custom adapters can be made for other sizes. Add MOD-003 if using 47mm SPE disks.



FRACTION COLLECTION

The default fraction collection tray comes with 1 row for 15mL tubes and 1 row for 50mL tubes. Customizations available for sizes between 1.5mL HPLC vials and 60mL ASE tubes and up to 6 rows.

AUTOMATIC BOTTLE RINSE

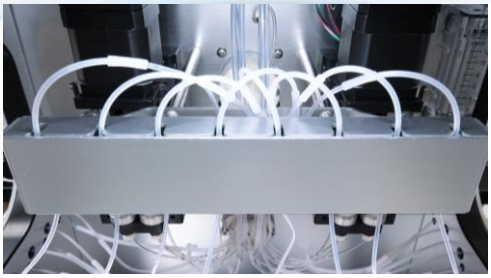
Using the default configuration or with MOD-004, the Presto can rinse the sample containers using solvents and add the rinsate back to the SPE cartridges to improve recovery. This feature can also be used for cleaning sample lines after each extraction.

CONTINUOUS PUMPS

Dedicated continuous pumps are utilized for sample loading. load 1L of samples in just 10 to 20 mins using our SPE Mini-disk or other SPE disks. The resilient pumps offer maximum efficiency and particulate resistance.

Empty Line Detection

Alerts users to premature sample depletion due to clogging, leakage, or tubing issues and automatically stops sample loading on affected channels



INTUITIVE TOUCH INTERFACE

The Presto comes with a resistive touch screen interface that works even under wet conditions. There is no need for an external computer. Sample selection and method editing can be intuitively performed in just a few steps. When running, the screen highlights the current step being run and displays its processed volume and remaining time.

POSITIVE PRESSURE

The Presto system uses positive pressure to achieve controlled flow rates and prevent sorbent drying when delivering samples and solvents. Liquids are much less likely to build up in SPE cartridges than vacuum-based systems.

NITROGEN DRYING

Nitrogen drying of sorbent material can be programmed into the methods. Drying duration can be time-controlled or until the user wishes to resume next steps.

PRESSURE MONITORING AND FLOW CORRECTION

Presto regulates each pump to match desired flow rate when loading samples with high particulate content. This operates within a safe pressure ceiling to ensure maximum efficiency without putting stress on the hardware.

If excessive clogging is detected, the system reduces flow rate accordingly. In the event that the lines or cartridges are completely clogged, an alarm will sound and the instrument will pause for the user to step in.

AUTO-RECOVERY AND LOGGING

The powerful software keeps track of extraction step performed and can allow users to resume during disruptions such as power failure. Up to 7 days of logs can also be viewed or retrieved.

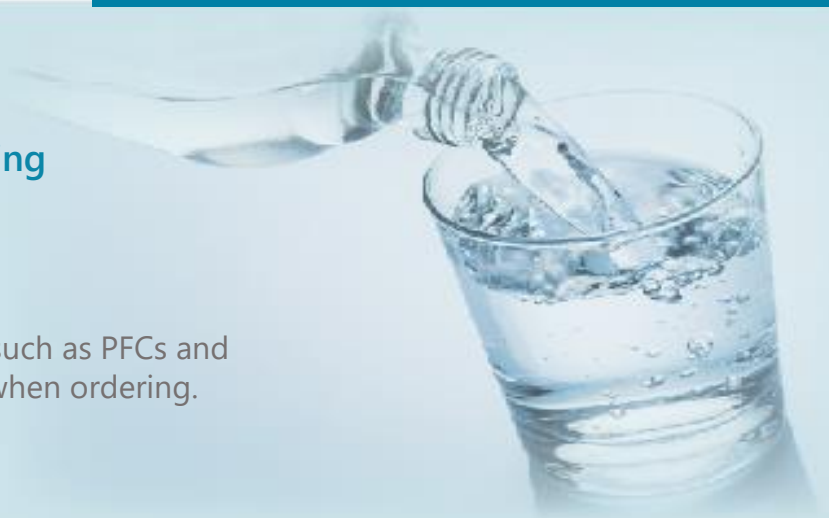
2 WASTE OUTLETS

Sample and solvent waste can be separated on the system for labs that require special treatment of organic, halogenic or acidic waste. This also prevents waste bottles from filling up too quickly.

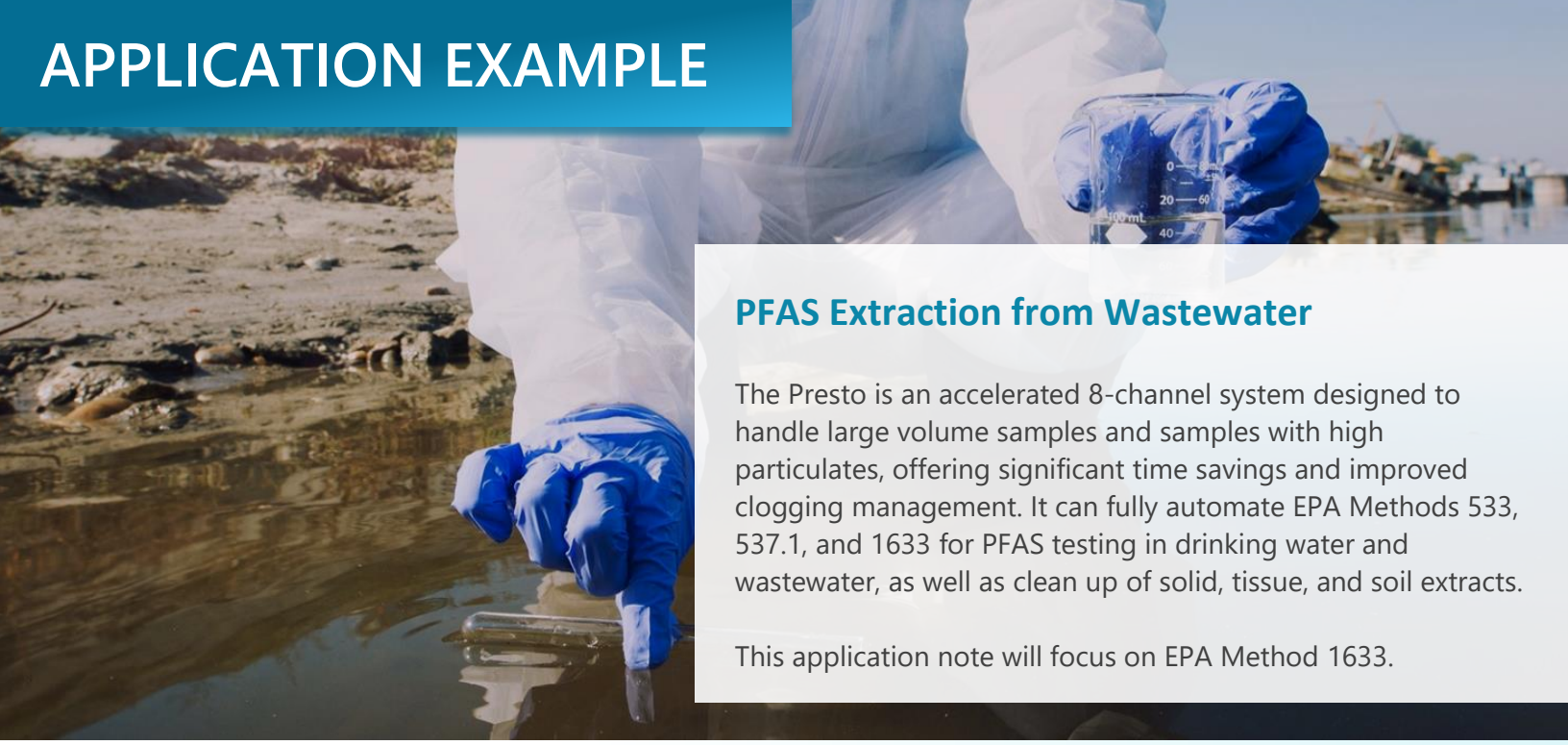
MINIMAL TEFLON OPTION

- Validated for low background
- Non-PTFE solvent and sample tubing

A widely tested and proven solution
for applications that are sensitive to Teflon (such as PFCs and PFAS in drinking water). Request MOD-005 when ordering.



APPLICATION EXAMPLE



PFAS Extraction from Wastewater

The Presto is an accelerated 8-channel system designed to handle large volume samples and samples with high particulates, offering significant time savings and improved clogging management. It can fully automate EPA Methods 533, 537.1, and 1633 for PFAS testing in drinking water and wastewater, as well as clean up of solid, tissue, and soil extracts.

This application note will focus on EPA Method 1633.

The following summarizes a typical Presto method for 250mL samples following EPA Method 1633. ADD-002 add-on is used for optimized rinsing and shaking of the sample bottles. Solvent 2 = H2O, Solvent 3 = 0.3M formic acid, Solvent 4 = 1:1 0.1M formic acid/MeOH, Solvent 5 = 1% Basic MeOH. Waste 1 and Waste 2 are used for aqueous and organic waste respectively. Fractions are collected into fraction 1.

Steps Programmed on Presto

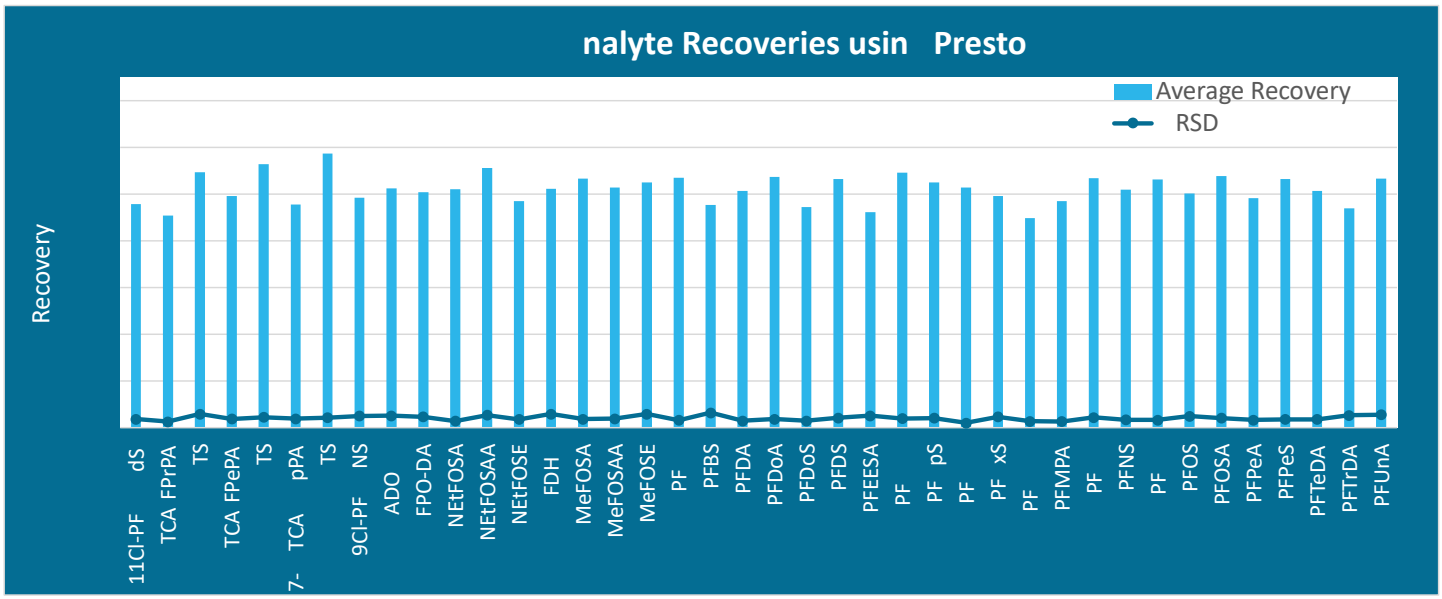
Action	Inlet 1	Inlet 2	Flow	Volume	Description
Elute W2	Solvent 5		10	15 mL	Pre-condition with 15mL 1% Basic MeOH at 10mL/min
Elute W1	Solvent 3		10	5 mL	Wash with 5mL 0.3M formic acid at 10mL/min
Add Samp+ W1	Sample		15	250 mL	Load 250mL of sample at 15mL/min
Rinse	Solvent 2	Air (20%)	70	2.5 mL	Rinse bottles with H_2O and pass rinsate through SPE cartridges. Using 20% air to maximize rinse coverage. Equivalent rinse volume is 10mL to match method prescription.
Add Samp W1	Sample		10	5 mL	
Rinse	Solvent 2	Air (20%)	70	5 mL	
Add Samp W1	Sample		10	5 mL	
Rinse	Solvent 2	Air (20%)	70	5 mL	
Add Samp W1	Sample		10	5 mL	
Shake	Time based			20 s	Shake bottles to remove droplets from walls
Rinse	Solvent 4	Air (20%)	70	1.3 mL	

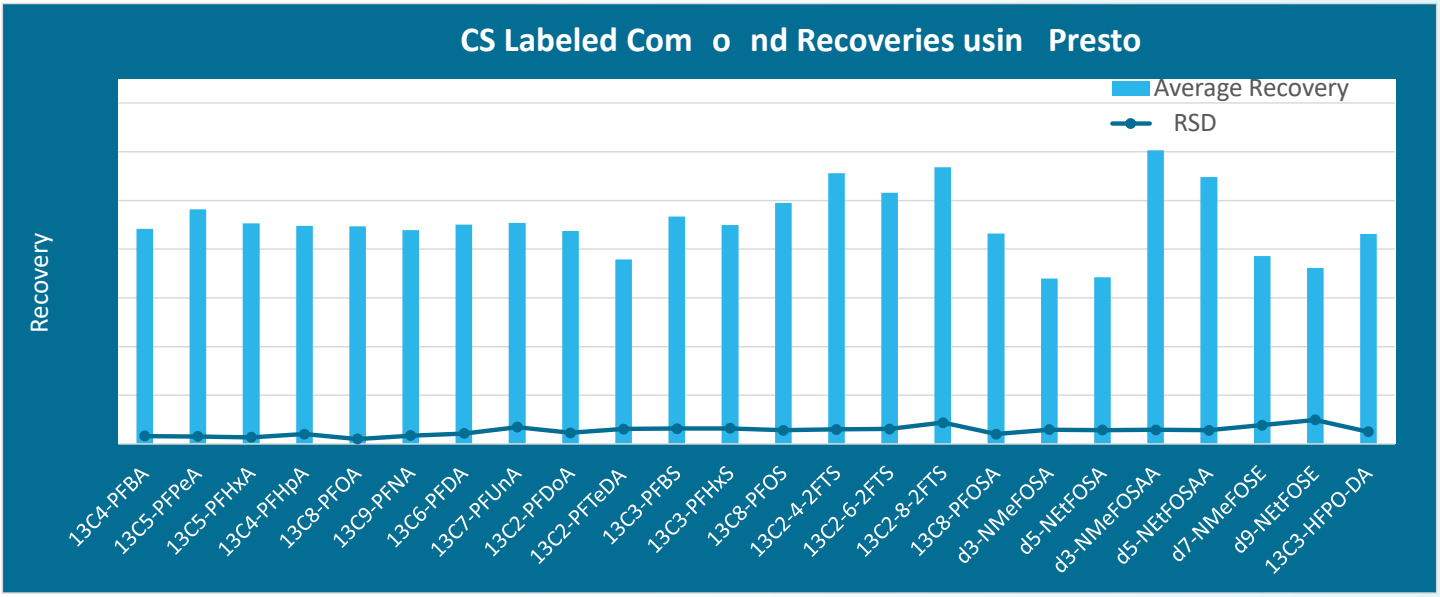
Add Samp W2	Sample		10	3 mL	Rinse bottles with 1:1 0.1M formic acid/MeOH and pass rinsate through SPE cartridges. Using 20% air to maximize rinse coverage. Equivalent rinse volume is 5mL to match method prescription.
Rinse	Solvent 4	Air (20%)	70	5 mL	
Add Samp W2	Sample		10	5 mL	
Shake	Time based			20 s	Shake bottles to remove droplets from walls
Air-Purge W2	Air		5	3 mL	Purge liquid from solvent lines
Add Samp W2	Air		5	5 mL	Purge liquid from sample lines
Blow N2	Time Based			1 min	Dry cartridges for 1min using Nitrogen
Rinse	Solvent 5	(Air 20%)	70	1.3 mL	Rinse bottles with 1% Basic MeOH and collect rinsate through SPE cartridges into fraction 1. Using 20% air to maximize rinse coverage. Equivalent rinse volume is 5mL to match method prescription.
Collect 1	Sample		5	3 mL	
Rinse	Solvent 5	(Air 20%)	70	5 mL	
Collect 1	Sample		5	5 mL	
Shake	Time based			10 s	Shake bottles to remove droplets from walls
Collect 1	Sample		5	5 mL	Collect remaining 1% Basic MeOH in fluid lines into fraction 1

Good and Consistent Recoveries

Below are the analyte and labeled compound recovery results from Maryland DOH who Beta-Tested the Presto for EPA 1633, showcasing excellent analyte recoveries with low %RSD. By running the extraction at 15 mL/min, it was able to reduce the extraction of 8 x 250 mL samples from 105 minutes to around 50 minutes.

Analyte and Labeled Compound Recoveries using Presto for EPA 1633





The use of continuous pumps and higher flow rates can achieve more than 50% time savings for 250 mL samples when running EPA Method 1633.

PRESTO

No. of Samples	Up to 8 in parallel
No. of fractions	2
No. of waste channels	2
No. of solvents	7
Sample volume	0.5 – 4000 mL
Fraction volume	Up to 50 mL
SPE cartridge	1/3/6 mL or 6/12/20 mL
Flow rate	0.5 – 100 mL/min (min. 15 mL/min for samples)
Fluid delivery	Positive pressure
Display	7″ resistive touch
No. of methods	100
Method actions	Cartridge pre-condition/soak/wash, add sample, elution, sample bottle rinsing, sample bottle shaking, sample line cleaning, air purge, solvent mixing, nitrogen dry, pause
Dimensions	35 cm x 53 cm x 56 cm
Weight	18 kg
Power	1.5 A @ 24 VDC

Customizations

Minimal-Teflon Option

Replaces all PTFE solvent and sample lines

Fraction Rack

Default rack holds 1 row of 15mL and 1 row of 50mL centrifuge tubes. Customizable for 1.5mL HPLC vials up to 60mL ASE vials and up to 6 rows

SPE Cartridge Adapters

Default system works with 1/3/6 mL or 6/12/20 mL cartridges. Can be customized for sizes up to 70mL

ACCESSORIES

ADD-002 (Automated bottle rinsing for PFAS)

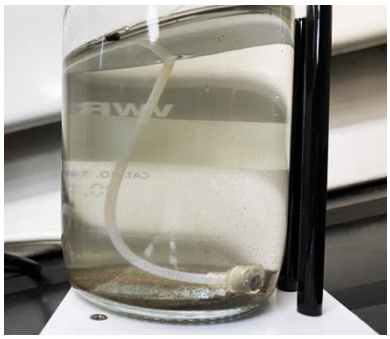
Up to 250mL plastic bottles can be loaded up-side down using the ADD-002 sample bottle rack to allow rinsing and maximum sample transfer. Comes with built-in resonators for maximum rinse coverage, water droplet removal and desorption of sticky compounds. 64cm total width with ADD-002

ADD-003 (Disk kit for 47mm SPE disks)

Includes disk rack and holders for 47mm SPE disks. Can be used interchangeably with SPE cartridges.

Anti-clogging tips (For samples with large particulates)

Serves as the primary solution to prevent larger sample particulates from entering the system. Analytes trapped in filters can be automatically recovered after loading. Options are available for ADD-002 caps or open sample lines.



Anti-clogging frits (For samples with fine particulates)

Serves as the primary solution to prevent larger sample particulates from entering the system. Analytes trapped in filters can be automatically recovered after loading. Options are available ADD-002 caps or open sample lines.

Mini-disks (Efficient sample extraction)

SPE Mini-disks allow for high flow rates and improved clogging resistance compared to SPE cartridges. Compared to 47-mm SPE disks, Mini-disks require less solvents for activation and elution.

Ordering Info

Part No.	Description
Presto	8-channel Presto with default Volume-Matrix Plus, 24V power supply, touch screen stylus pen, solvent bottle adapters, 2 tilt racks, 8 integrated sample lines for loading/rinsing, 2 sample line hangers and user manual
ADD-003	Disk kit for 47mm disks, includes disk rack and 8 disk holders
ADD-002	Sample bottle rack for rinsing up to 250mL bottles. Includes 2 racks with built-in resonators and 8 bottle rinsing adapters
MINIMAL TEFLON OPTION	Minimal-Teflon option for PFAS applications
ADD-00C	Ceramic valve upgrade for highly-corrosive applications with significant salt and/or acid content
Anti-clogging solutions	Refer to www.promochrom.com/consumables
SPE Mini-disks	Refer to www.promochrom.com/mini-disks

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TECHNOLOGIES

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