FMS

Fluid Management Systems

Automated One Step Solid Phase Extraction and Concentration

PowerPrep SPE

Solid Phase Extraction

PowerPrep SPE

Automated One Step Solid Phase Extraction and Concentration

The PowerPrep SPE automated One Step Extraction and Concentration System is built by design to simplify, improve and increase your productivity by automating the manual steps in your sample preparation process. The PowerPrep SPE system replaces older techniques, Liquid-Liquid Extraction and outdated semi-automated instruments and automates existing manual SPE techniques.

Reduces Errors:
One Step SPE and Concentration saves on labor costs, solvent usage and increases your sample throughput

Fully Automated:
Hyphenates the entire Sample Prep Process, Extraction Drying and Concentration steps into One Step

High Speed:
The Fastest Automated Sample Processing Available for SPE Cartridges and Columns

Versatile:
Handles a wide range of sample sizes and all matrix types

Efficient:
Uses all SPE Cartridge and Column sizes

Compliant:
Complies with existing methods that require vacuum, positive pressure pumping for the precise delivery of sample and solvents

Easy Documentation:
Programs and Stores an Unlimited Amount of Methods and Runs

Sample Sizes 2ml to 8L

Automated fast flow sample processing

Run up to 6 Samples simultaneously, up to 30 Samples

Vacuum for fast loading of large volume samples

Positive Pressure for loading small volume samples

Nitrogen Drying

Dispense up to 6 solvents using an HPLC pump to deliver precise volumes and flow rates for conditioning and elution

Automatic Sample bottle rinse

Concentrates samples up to 250ml directly to a GC Vial

Expandable from 1 to 6 modules

Program and Run up to 5 different methods/sample matrices

sequentially

Easy to use software

INDUSTRIES

Agricultural

Clinical

Environmental

Chemical Products

Food and Beverage

Pharmaceutical and Natural

Products

PetroChemical

PRINCIPALS of OPERATION

The PowerPrep SPE is the only SPE system to combine Extraction, Drying and Concentration into one step; providing a truly automated total sample prep solution for the laboratory. Simply load samples onto the PowerPrep SPE system and start the system. This triggers the automated extraction to process, after the sample is loaded onto the SPE cartridge, the drying step is accomplished using Nitrogen eliminating the manual drying techniques used for drying extracts. The analytes of interest are eluted directly into the PowerVap Concentrator where the concentration process automatically brings the extract to final volume directly to an autosampler vial for analysis. Automating these processes into one step eliminates human error and contamination that can be inadvertently introduced when each of these steps is done individually resulting in the fastest and best possible results.

Modular design for easy maintenance

The PowerPrep SPE system uses positive pressure pumping for precise and accurate delivery of conditioning, washing and elution solvents.

The Sample Processing Module is designed to use all standard formats of SPE cartridges and columns that are on the market today. For guaranteed results, especially when dealing with low limits of detection, we recommend the FMS pre-packed columns and cartridges. Sample Processing Modules can be easily swapped out to perform cleanup column chemistries allowing the lab to multipurpose the PowerPrep for automating other sample prep processes.

Expandable from 1 to 6 modules

Program and run up to 5 different methods per module sequentially.

Automatic Sample bottle rinse.
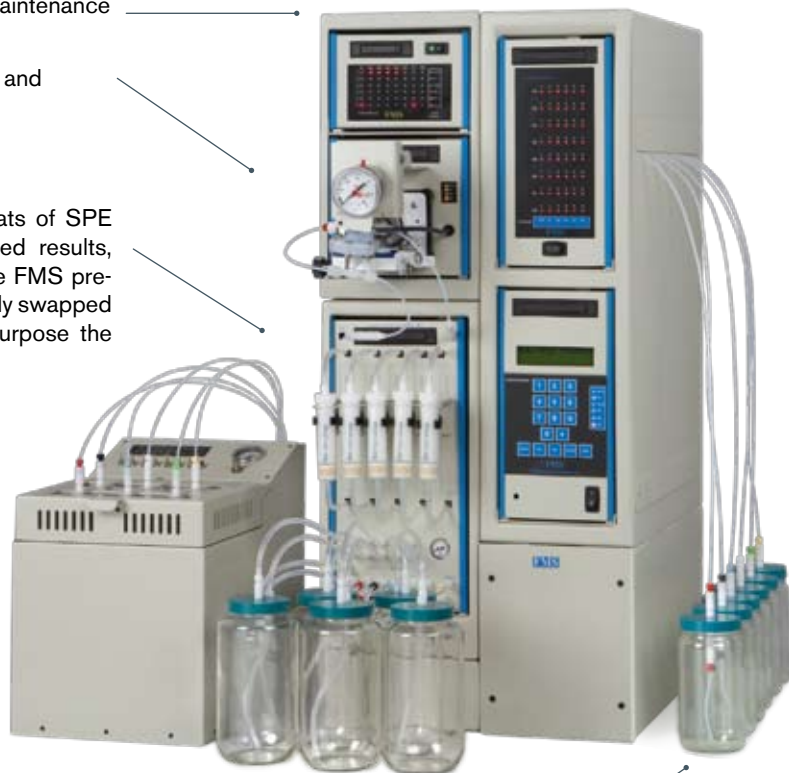
The PowerPrep SPE is specifically designed to isolate analytes of interest from a wide variety of liquid matrices such as urine, blood, water, milk, beverages. Sample sizes range from 2ml to 8L and uses the same bottle the sample was collected in. Sample loading rates are programmable.

Dispense up to 6 solvents using an Positive Pressure pump to deliver precise volumes and flow rates for conditioning and elution.

A Vacuum or Positive Pressure pump is used to load samples onto the SPE cartridges and columns at an unprecedented speed; it easily handles clean and tough sample matrices.

The PowerVap Concentrator is a dry waterless system which is programmable and can preheat as well as ramp up to final temperature. It automatically senses the extract being delivered to the vessel, starts Nitrogen blow down and shuts off Nitrogen when the final volume is achieved.

Concentrates samples up to 250ml directly to a GC Vial.

Specifications

PowerVap	PowerPrep SPE
Dimensions: 7"W x 13"D x 12"H	**Dimensions:** 15"W x 18"D x 35"H
Weight: 20 lbs.	**Weight:** 130 lbs.
Gas Requirements: Nitrogen - 20 PSI minimum	**Gas Requirements:** Nitrogen - 20 PSI minimum
Electrical Input: 110/220 Volts, 50/60 HZ	**Vacuum Requirements:** 25"Hg minimum
Controller: PC based	**Pump:** Piston Displacement
Bath: Dry	**Flow rate:** 0.2 to 15ml/minute
	Electrical Input: 110/220 Volts, 50/60 HZ
	Controller: PC based

Unattended Total Sample Prep produces Excellent Results

Serum Samples

- **60 Minutes** — SPE Extraction & Drying
- **Power-Prep Clean-Up** — **120 Minutes**
- **45 Minutes** — Power Vap Concentration
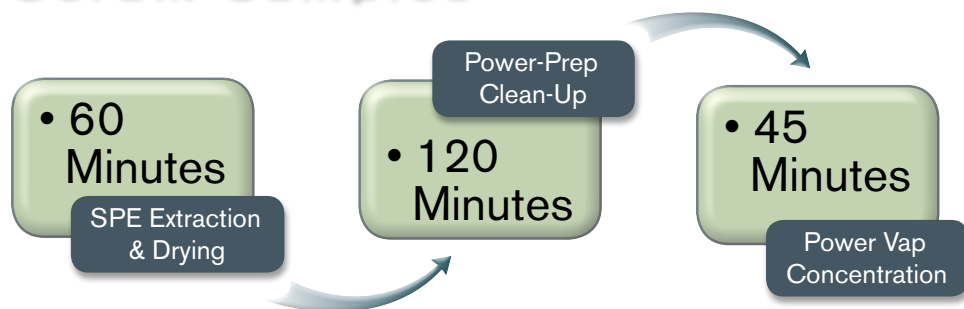
Dioxins In serum – Unattended Total Sample Prep time = 225 minutes

Water Samples

- **50 Minutes** — SPE Extraction & Drying
- **Power Vap Concentration** — **15 Minutes**
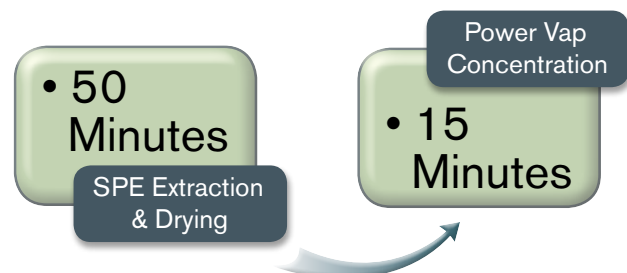
PCB's in water – Unattended Total Sample Prep time = 65 minutes

Dioxins in Serum

Compound Dioxins	Amount Spiked	Percentage Recovery
2378D	.25 ng	72%
12378D	.25 ng	72%
123478D	.6 ng	74%
123678D	.6 ng	71%
123789D	.6 ng	72%
123678D	.6 ng	66%
1234679D	.6 ng	66%
OCDD	1.25 ng	44%
Furans	**Amount Spiked**	**Percentage Recovery**
2378F	.25 ng	70%
12378F	.25 ng	72%
23478F	.25 ng	73%
123478F	.625 ng	67%
123678F	.625 ng	68%
123789F	.625 ng	67%
234678F	.625 ng	66%
1234678F	.625 ng	58%
1234789F	.625 ng	58%
OCDF	1.25 ng	45%
OCDF	1.25 ng	45%
Coplanar PCB's	**Amount Spiked**	**Percentage Recovery**
3344P	.25 ng	62%
3445P	.25 ng	54%
33445P	.36 ng	64%
334455P	.48 ng	65%

PCB's in Water

Congener	Amount Spiked ug/ml	Percent Recovery
BZ #1	1	91%
BZ #5	1	92%
BZ #18	1	90%
BZ #31	1	91%
BZ #44	1	90%
BZ #52	1	90%
BZ # 66	1	91%
BZ # 87	1	91%
BZ # 101	1	91%
BZ # 110	1	92%
BZ # 138	1	90%
BZ # 141	1	106%
BZ # 151	1	90%
BZ # 153	1	91%
BZ # 170	1	90%
BZ # 180	1	92%
BZ # 183	1	92%
BZ # 187	1	91%
BZ # 206	1	88%
TCMX	1	87%

Pesticides in Water

Compound	Average Recovery	Spike Amount (ug/L)
TCMX	70%	0.1
Alpha-BHC	82%	0.1
Beta-BHC	94%	0.1
Gamma-BHC	83%	0.1
Delta-BHC	99%	0.1
Heptachlor	83%	0.1
Aldrin Heptachlor	80%	0.1
Expoxide	90%	0.1
Gamma-Chlordane	81%	0.1
Endosulfan I	88%	0.1
Alpha-Chlordane	83%	0.1
Dieldrin	86%	0.1
4,4' -DDE	84%	0.1
Endrin	71%	0.1
Endosulfan II	91%	0.1
4,4'-DDD	82%	0.1
Endrin Aldehyde	119%	0.1
Endosulfan Sulfate	95%	0.1
4,4'-DDT	96%	0.1
Endrin Ketone	111%	0.1
Methoxychlor	93%	0.1
Deca-PCB	77%	0.1

Dioxins in Water

Compound	Amount Spiked ng/L	Percent Recovery
2,3,7,8-TCDD	0.25	68%
1,2,3,7,8-PeCDD	0.25	99%
1,2,3,4,7,8-HxCDD	0.6	105%
1,2,3,6,7,8-HxCDD	0.6	109%
1,2,3,7,8,9-HxCDD	0.6	102%
1,2,3,4,6,7,8-HpCDD	0.6	71%
1,2,3,4,6,7,9-HpCDD	0.6	71%
OCDD	1.25	65%
2,3,7,8-TCDF	0.25	76%
1,2,3,7,8-PeCDF	0.25	99%
2,3,4,7,8- PeCDF	0.25	85%
1,2,3,4,7,8-HxCDF	0.62	103%
1,2,3,6,7,8-HxCDF	0.62	100%
1,2,3,7,8,9-HxCDF	0.62	100%
2,3,4,6,7,8-HxCDF	0.62	106%
1,2,3,4,6,7,8-HpCDF	0.62	95%
1,2,3,4,6,7,9-HpCDF	0.62	95%
OCDF	1.25	64%
3,3',4,4'-TCB	0.25	93%
3,4,4',5-TCB	0.25	90%
3,3'4,4',5-PeCB	0.36	102%
3,3',4,4',5,5'-HxCB	0.48	107%

Applications

Automated Sample Preparation

For the analysis of

Agricultural
Clinical
Environmental
Chemical Products
Food and Beverage
Pharmaceutical and Natural
Products
PetroChemical

Consumables

Part Number	Description
SPE-BT1	SPE Sample Bottle 1L
SPE-BTRC	SPE Sample Bottle Rinse Cap
SPE-ADP-1	SPE 1ml Cartridge Adapter
SPE-ADP-3	SPE 3ml Cartridge Adapter
SPE-ADP-6	SPE 6ml Cartridge Adapter
SPE-ADP-20	SPE 20ml Cartridge Adapter
SPE -ADP-35	SPE 35ml Cartridge Adapter
SPE-PRE-20	SPE Pre-filter cartridge
SPE-CAR1-C18	SPE Cartridge 1 gram C18
SPE-CAR5-C18	SPE Cartridge 5 gram C18
SPE-CAR1-DVB	SPE Cartridge 1 gram DVB
SPE-CAR5-DVB	SPE Cartridge 5 gram DVB

Part Number	Description
TFE-TUB-071GR	Teflon Tubing Assembly Flanged any color, 7"
TFE-TUB-09IGR	Teflon Tubing Assembly Flanged any color, 9"
TFE-TUB-16IGR	Teflon Tubing Assembly Flanged any color, 16"
TFE-TUB-24IGR	Teflon Tubing Assembly Flanged any color, 24"
PVAP-TUB-200M	Evaporator Glass Tubes
PVAP-TUB-200M-GC	Evaporator Glass Tubes Standard - GC
PVAP-UNI-TFZ Tefzel	GC Vial union

Accessories

Sample Prep Modules to add versatility to your existing system

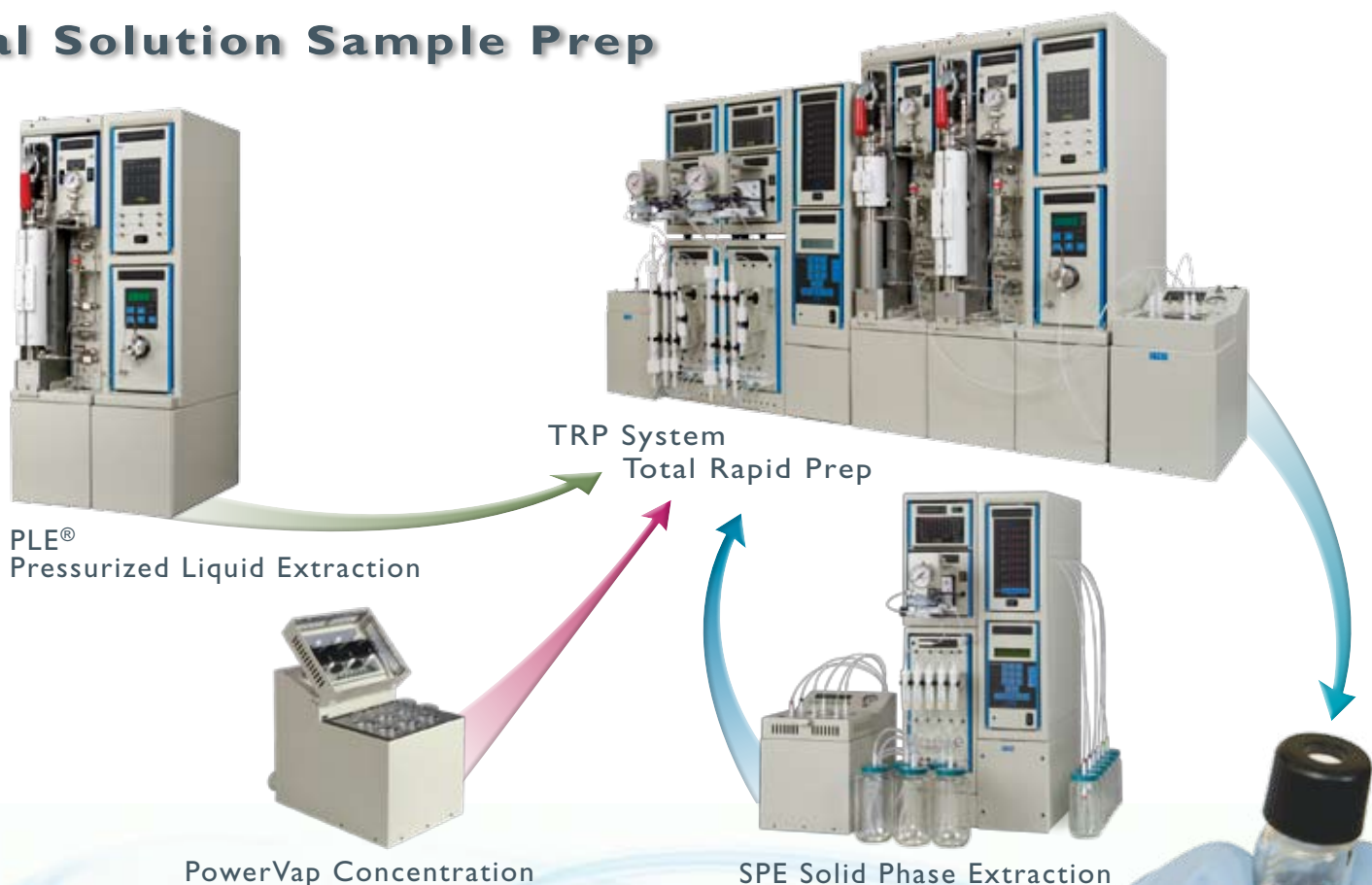PAH/EPH Cleanup and Fractionation Valve & column holder module (for 5 samples)

Multicolumn Cleanup Valve and Column holder module (for 1 sample)

SPE Valve and Cleanup Holder Module for (5 samples)

Sample Prep Expansion Module to increase your throughput

SPE 5 Sample Expansion Module (add the capability of running up to 30 samples)

Total Solution Sample Prep

PLE®
Pressurized Liquid Extraction

TRP System
Total Rapid Prep

PowerVap Concentration

SPE Solid Phase Extraction

580 Pleasant Street Watertown, MA 02472
www.fmsenvironmental.com   **617-393-2396**