SiliaPrep™

Silica-Based SPE Cartridges and Well Plates

SILICYCLE Inc.
UltraPure SILICA GELS

SiliaPrep™ SPE Cartridges and Well Plates

Using SiliaPrep SPE Cartridges and Well Plates guarantees the following benefits:

- Choice of a wide variety of SiliaBond high-quality functionalized silica gels.
- Very good separation (*tight particle size distribution and no fines*).
- High recovery and yield.
- Less time and solvent required for conditioning the sorbent.
- Reproducible flow rates from lot-to-lot.
- Excellent packing and storage qualities.

SiliaPrep Solid-Phase Extraction *SPE* Cartridges and Well Plates

Solid-phase extraction (*SPE*) is designed for rapid sample preparation and purification prior to chromatographic analysis. You can optimize your SPE protocols by using SiliCycle SiliaPrep SPE Cartridges and Well Plates.

SiliCycle offers products to meet your specific purification needs. SiliaPrep products are available in different formats including SPE cartridges and 48- & 96-well plates, with different sorbents (*SiliaFlash and SiliaBond*), and in bed weights up to 10 grams (*>10 g are also available in SiliaSep OT formats*)

The well plates are used in high throughput drug discovery and screening, metabolic pharmacokinetic applications, and for automated methods such as a multiprobe approach.

By using SiliaPrep products you will generate higher purity samples and reduce the number of false positives in your screening, giving you higher quality data. SiliaPrep cartridges are packed with fines-free SiliaFlash silica gel sorbents.

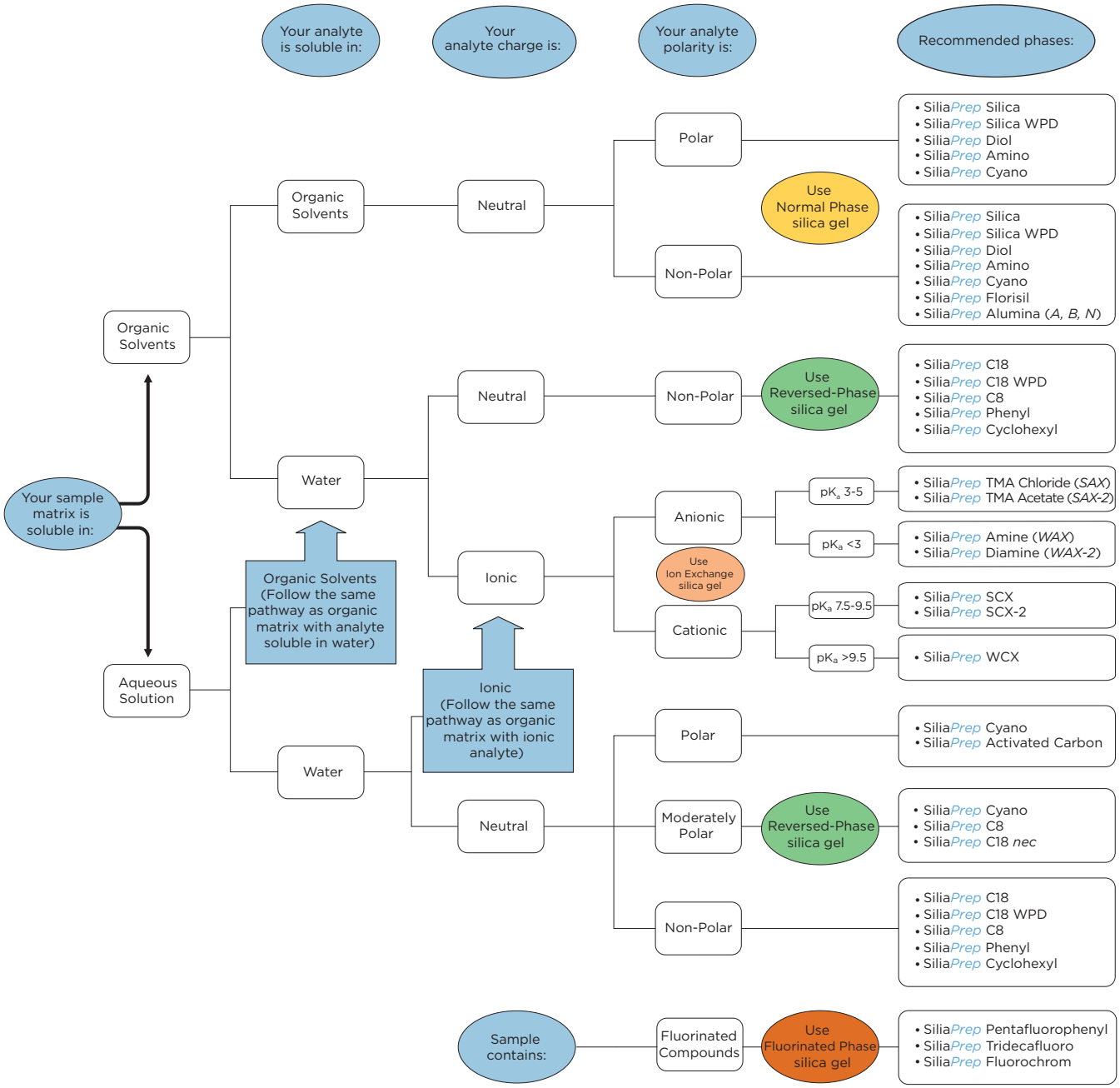
Sorbent Specifications

SiliaPrep products are packed with SiliCycle's SiliaFlash *UltraPure* silica gels to provide superior performance for all types of applications. This is due to the narrow particle size distribution and high purity. Although the standard products included in this catalog are made of SiliaFlash F60 (*40-63 µm, 60 Å*), custom products are available with any type of silica (*irregular, spherical and IMPAQ, etc, in various pore and particle sizes*) offered in our catalog or website and in any format on a custom order basis. Contact us for more information.

Plastic Device Specifications

Standard SiliaPrep cartridges are made with flanged polypropylene (*PP*) tubes and 20 µm polyethylene (*PE*) frits. Other plastic materials (*Teflon®, HDPE, etc.*), frit porosity (*10 µm*), and cartridge rim's (*flangeless*) are available on a custom order basis.

Product Selection Guide by Sample Properties



« I had a difficult time purifing a compound having a basic center by the conventional chromatography on silica gel. Then, I could purify the compound quickly and cleanly with the SiliaPrep SCX cartridge. »

Sangdon Han, Ph.D. from Arena Pharmaceuticals, San Diego, CA, USA

Product Selection Guide by Manufacturer

Product Selection Guide by Manufacturer

SiliCycle SiliaPrep	SiliCycle Part Number	Agilent Bond Elut®	Biotage Isolute®	Macherey-Nagel Chromabond®
Non Polar Phases				
SiliaPrep C18 *nec* (23 %)	SPE-R30130B-xxx		C18	
SiliaPrep C18 (17 %)	SPE-R31930B-xxx	C18	C18 (EC)	C18 ec
SiliaPrep C18 *nec* (17 %)	SPE-R35530B-xxx	C18 OH		C18
SiliaPrep C18 WPD	SPE-R33229G-xxx		MFC18	C18 ec f
SiliaPrep C8	SPE-R31030B-xxx		C8 (EC)	
SiliaPrep C8 *nec*	SPE-R31130B-xxx		C8	C8
SiliaPrep Cyclohexyl	SPE-R61530B-xxx	CH	CH (EC)	C_6H_{11}ec
SiliaPrep Phenyl	SPE-R34030B-xxx	PH	PH (EC)	C_6H_5
Polar Phases				
SiliaPrep Silica	SPE-R10030B-xxx	SI	SI	SiOH
SiliaPrep Silica WPD	SPE-R10029G-xxx			
SiliaPrep Cyano	SPE-R38030B-xxx	Cyano	CN (EC)	CN
SiliaPrep Diol *nec*	SPE-R35030B-xxx	Diol (2OH)[b]	DIOL	OH
SiliaPrep Florisil	SPE-AUT-0014-xxx	Florisil	FL	Florisil
SiliaPrep Florisil PR	SPE-AUT-0015-xxx			
SiliaPrep Alumina Acidic	SPE-AUT-0053-xxx	Alumina A (AL-A)	AL-A	Alox A
SiliaPrep Alumina Neutral	SPE-AUT-0054-xxx	Alumina N (AL-N)	AL-N	Alox N
SiliaPrep Alumina Basic	SPE-AUT-0055-xxx	Alumina B (AL-B)	AL-B	Alox B
Ion Exchange Phases				
SiliaPrep SAX *nec*	SPE-R66530B-xxx	SAX[b]	SAX	SB
SiliaPrep SAX-2 *nec*	SPE-R66430B-xxx	PRS[b]	PE-AX	
SiliaPrep SCX	SPE-R60530B-xxx	SCX[b]	SCX-3[b]	SA
SiliaPrep SCX-2	SPE-R51230B-xxx		SCX-2[b]	PSA
SiliaPrep WAX	SPE-R52030B-xxx	NH_2[b]	NH_2	NH_2
SiliaPrep Diamine (*WAX-2*)	SPE-R49030B-xxx	PSA[b]	Diamino	Diamino
SiliaPrep WCX	SPE-R70030B-xxx	CBA	CBA[b]	PCA
Mixed-Mode and Specialty Phases				
SiliaPrep C8/SAX-2 *nec*	SPM-R026630B-xxx	Certify II	HAX	
SiliaPrep SCX-2/SAX *nec*	SPM-R802830B-xxx	AccuCAT		
SiliaPrep CleanDRUG	SPEC-R651230B-xxx	Certify[b]	HCX[d]	Drug 1
SiliaPrep CleanENVI	SPEC-R31930B-xxx			C18 PAH
SiliaPrep Activated Carbon	SPE-AUT-0110-xxx	Carbon		
SiliaPrep DL AC/WAX	SP2-R11098-xxx			
SiliaPrep DL AC/Diamine	SP2-R11007-xxx			
SiliaPrep PCB *nec*	SP2-R00650030B-xxx			SA/SiOH

[a] Mallinkrodt Baker, [b] Non-endcapped, [c] Endcapped, [d] Ion exchange phase is non-endcapped xxx = Formats

Avantor Performance Material[a] Bakerbond®	Phenomenex Strata®	Supelco Discovery® and SupelClean®	Thermo Scientific HyperSep	Waters Sep-Pak®
Octadecyl (C18)	C18-E	DSC-18 and ENVI-18	C18	tC18
Light Load Octadecyl	C18-U			
	C18-T			C18
Octyl (C8)	C8	DSC-8 and ENVI-8	C8	C8
Cyclohexyl (C_6H_{11})				
Phenyl (C_6H_5)	Phenyl	DSC-Ph and LC-Ph	Phenyl	
Silica gel (SiOH)	Silica (Si-1)	Silica	Silica	
				Silica
Cyano (CN)	Cyano (CN)[b]	DSC-CN and LC-CN	Cyano	Cyanopropyl
Diol (COHCOH)		DSC-Diol and LC-Diol	Diol	Diol[b]
Florisil (Mg_2SiO_3)		ENVI-Florisil	Florisil	Florisil
	Florisil (FL-PR)			
		LC-Alumina-A		Alumina A
Alumina Neutral	Alumina-N (AL-N)	LC-Alumina-N		Alumina N
		LC-Alumina-B		Alumina B
Quaternary Amine	SAX[b]	DSC-SAX and LC-SAX	SAX	Accell Plus QMA
Aromatic Sulfonic Acid	SCX[b]	DSC-SCX and LC-SCX	SCX	
Amino (NH_2)	NH_2/WAX[b]	DSC-NH_2 and LC-NH_2[b]	Aminopropyl	Aminopropyl
Diamino (NH_2NH)		PSA		PSA
Carboxylic Acid (COOH)	WCX[b]	DSC-WCX & LC-WCX		Accell Plus CM
	Screen-A	DSC-MCAX	Verify AX	
			Verify CX	
		ENVI-Carb		AC2
		ENVI-Carb/NH_2		Carbon Black/Amino
		ENVI-CarbII/PSA		Carbon Black/PSA

All SiliCycle products are endcapped unless noted by « nec » (*non-endcapped*)

Standard Method Development Procedure

Solid-phase extraction methodology will vary depending on the sorbent (*normal, reversed, ion exchange*). Here, we propose generic methods for each mode based on sample and sorbent properties. However, procedures can be slightly different from one sample to another.

Standard Method Development Procedure

Procedure Step	Reversed-Phase	Ion Exchange Phase	Normal Phase
Analyte properties	Non-polar, uncharged or neutralized, hydrophobic	Ionized or charged	Slightly to moderately polar, uncharged
Matrix sample properties	Organic solvents and aqueous (*buffer*)	Aqueous (*buffer*) and pH-ajusted solutions	Organic solvents
Conditioning step	Water-miscible organic solvents	Water-miscible organic solvents or aqueous buffered solution	Sample solvent or methanol
Sample loading	Dissolve analyte in highly polar solvents	Dissolve analyte in highly polar solvents	Dissolve analyte in low polar solvents
Washing	Aqueous or buffered solution and polar solvents	Aqueous solutions containing salts	Non-polar solvents
Elution	Polar or non-polar organic solvents	Polar solvents, may contain acids or bases	Mixture of non-polar (*5 - 50%*) and polar solvents

Suggested Elution Solvents

Reversed-Phase	Polarity	Ion Exchange Phase	Polarity	Normal Phase
THF Acetone Ethyl Acetate Acetonitrile Methanol	Low ↓ High	For complete ionization, sample should be adjusted 2 pH units above or below the analyte pKa. pH can be used to neutralize analyte or sorbent. Use 2% strong acid or base in acetonitrile or methanol.	Low ↓ High	Hexane CH_2Cl_2 THF Acetone Acetonitrile

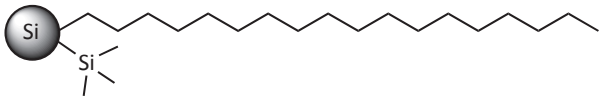
SiliaPrep Reversed-Phases

Description

SiliaPrep C18

SiliCycle recently developed an innovative C18 phase characterized by a homogeneous coverage of the silane on the surface. This strongly hydrophobic and non-polar sorbent is used to extract acidic, neutral and basic compounds from aqueous solutions, various organic compounds from water, and drugs and metabolites from physiological fluids.

C18



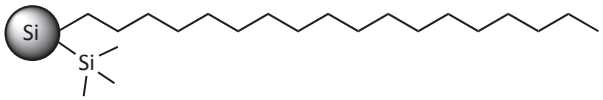
- SiliCycle Sorbent Number: R31930B
- Loading: 17% C
- Endcapping: Yes
- Silica type: 60 Å, 500 m^2/g, 40 - 63 µm

Description

SiliaPrep C18 WPD

This strongly hydrophobic, non-polar and high-loading capacity sorbent is similar to SiliaPrep C18 but can accommodate larger molecules and untreated matrices.

C18 WPD



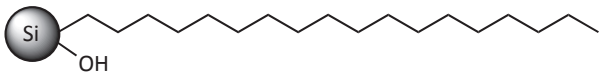
- SiliCycle Sorbent Number: R33229G
- Loading: 13% C
- Endcapping: Yes
- Silica type: 125 Å, 300 m^2/g, 37 - 55 µm

Description

SiliaPrep C18 *nec*

This strongly hydrophobic and non-polar sorbent is similar to SiliaPrep C18, but presents higher retention and polar selectivity for basic compounds. Unreacted surface OH's can be used for soft condition catch and release purification of glucoronides.

C18 *nec*



- SiliCycle Sorbent Number: R35530B
- Loading: 17 %C
- Endcapping: No
- Silica type: 60 Å, 500 m^2/g, 40 - 63 µm

Silia*Prep* Reversed-Phases C18

Silia*Prep* Reversed-Phases C18 SPE Formats

Formats	Qty/Box	Silia*Prep* C18	Silia*Prep* C18 WPD	Silia*Prep* C18 *nec*
Silia*Prep* SPE Cartridges				
1 mL/50 mg	100	SPE-R31930B-01B	SPE-R33229G-01B	SPE-R35530B-01B
1 mL/100 mg	100	SPE-R31930B-01C	SPE-R33229G-01C	SPE-R35530B-01C
3 mL/200 mg	50	SPE-R31930B-03G	SPE-R33229G-03G	SPE-R35530B-03G
3 mL/500 mg	50	SPE-R31930B-03P	SPE-R33229G-03P	SPE-R35530B-03P
6 mL/500 mg	50	SPE-R31930B-06P	SPE-R33229G-06P	SPE-R35530B-06P
6 mL/1 g	50	SPE-R31930B-06S	SPE-R33229G-06S	SPE-R35530B-06S
6 mL/2 g	50	SPE-R31930B-06U	SPE-R33229G-06U	SPE-R35530B-06U
12 mL/2 g	20	SPE-R31930B-12U	SPE-R33229G-12U	SPE-R35530B-12U
25 mL/5 g*	20	SPE-R31930B-20X	SPE-R33229G-20X	SPE-R35530B-20X
Silia*Prep* Large Reservoir Volume SPE Cartridges				
10 mL/200 mg	50	SPC-R31930B-10G	SPC-R33229G-10G	SPC-R35530B-10G
10 mL/500 mg	50	SPC-R31930B-10P	SPC-R33229G-10P	SPC-R35530B-10P
Mini-Silia*Prep* SPE Cartridges				
500 mg	50	SPS-R31930B-P	SPS-R33229G-P	SPS-R35530B-P
1,000 mg	50	SPS-R31930B-S	SPS-R33229G-S	SPS-R35530B-S
Silia*Prep* 96-Well Plates				
2 mL/50 mg	1	96W-R31930B-B	96W-R33229G-B	96W-R35530B-B
2 mL/100 mg	1	96W-R31930B-C	96W-R33229G-C	96W-R35530B-C

*Commercialized under Silia*Sep* OT branding

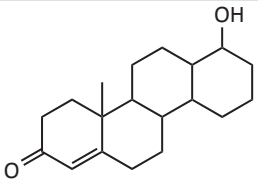
Forensic

Determination of Testosterone in Human Urine

General Procedure

1. Mini-Silia*Prep* C18 WPD (*PN: SPS-R33229G-P*) was conditioned with 5 mL of methanol and 5 mL of H_2O.
2. The urine sample (*2 mL*) was then slowly aspirated through the cartridge.
3. Cartridge was washed with 5 mL of H_2O and 5 mL of hexane.
4. Analyte was eluted with 5 mL of methanol.
5. The sample was evaporated under a nitrogen stream for 30 min at 40˚C.
6. The analyte was derivatized using 800 µL of Girard-P (*100 mM ammonium acetate buffer, pH 4.2*) and 200 µL of methanol maintained at room temperature for 12 h.
7. Quantification was done using LC-MS/MS apparatus.

Testosterone Recovery

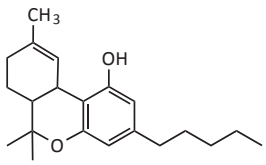
Testosterone	Recovery (%)[a]	
	lot #1	lot #2
	94 ± 2	96 ± 1

[a]Mean Recovery n = 3, 250 ng/mL

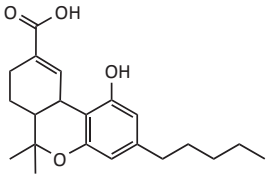
Forensic

Δ⁹-Tetrahydrocannabinol in Human Plasma

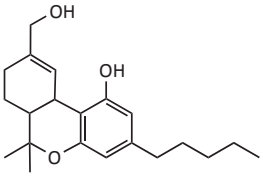
SiliaPrep C18 3 mL/500 mg
SiliCycle PN: SPE-R31930B-03P



Δ⁹-Tetrahydrocannabinol (THC)



11-nor-9-Carboxy-Δ⁹-Tetrahydrocannabinol (THC-COOH)



11-nor-9-Hydroxy-Δ⁹-Tetrahydrocannabinol (THC-OH)

Sample Preparation
- Mix 250 µL of plasma with 1 mL of phosphate buffer (*0.1M pH 6.0*)

Conditioning Step
- 3 mL of MeOH, 3 mL of HCl 1M and 3 mL of H_2O

Loading Step
- Pass the treated sample through the cartridge

Washing Step
- 2 mL of H_2O
- 1 mL of acetic acid 1M
- 2 mL of of (*20/80*) MeOH/H_2O (*v/v*)

Elution Step
- 3 mL of of (*50/50*) CH_2Cl_2/Acetone (*v/v*)

Evaporation Step
- Evaporate under a stream of nitrogen (*10 min at 40°C*)

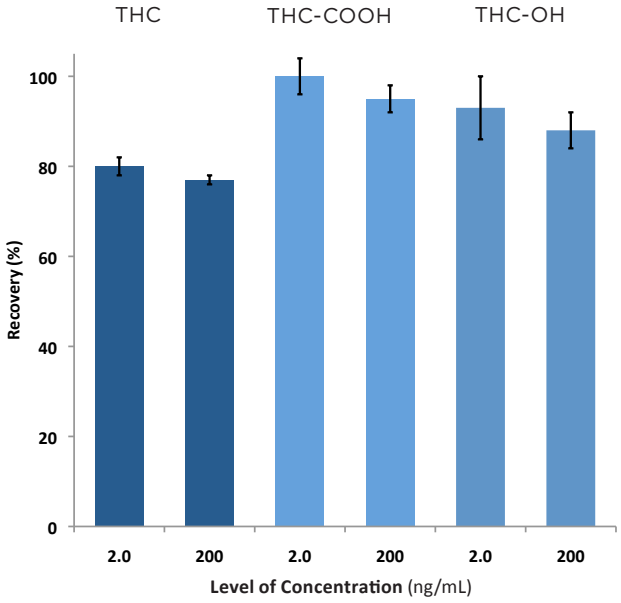
Derivatization Step
- Mix under vortex 100 µL of carbonate buffer 0.1M with 200 µL of dansyl chloride solution for 1 min (*1 mg/mL in acetone*)
- Incubate 40 min at 40°C

Liquid-liquid Extraction
- Add 2 mL of 1-chlorobutane
- Centrifugate at 3000 rpm for 5 min

Flash/Freeze Recuperation Step
- Flash/freeze the excess of water from the organic phase in a bath of dry ice/acetone for 3 min

Reconstitution Step
- Evaporate under a stream of nitrogen (*10 min at 40°C*)
- Reconstitute with 200 µL of (*80/20*) ACN/H_2O, 0.1% formic acid (*v/v*)

Recovery Results (*n = 6*)



Chromatographic Conditions:

Column: SiliaChrom dt C18, 2.5 µm
Column Size: 3.0 x 30 mm
SiliCycle PN: H141802E-H030
Mobile Phase: MPA: 1 mM ammonium formate in (*10/90*) H_2O/ACN, 0.1% formic acid (*v/v*)
MPB: 1 mM ammonium formate in (*90/10*) H_2O/ACN, 0.1% formic acid (*v/v*)
Temperature: 23°C
Flow Rate: 1.000 mL/min
Detector: Sciex API 3000
Turbo Ion Spray Heater Gas Flow: 8,000 cc/min
Turbo Ion Spray Heater Temperature: 325° C, ESI⁺, MRM SCAN
Injection Volume: 5 µL

Gradient

Time (min)	MPA (%)	MPB (%)
0	10	90
1.00	10	90
1.01	0	100
3.50	0	100
3.51	10	90
5.00	10	90

Silia*Prep* Reversed-Phases

Description

Silia*Prep* C8 and **Silia*Prep* C8 *nec***

A moderately hydrophobic and non-polar sorbent used to extract extremely non-polar compounds. This phase is more selective than Silia*Prep* C18 for big compounds such as PAH, vitamin D, and oils as well as greasy compounds.

- SiliCycle Sorbent Number: R31030B and R31130B (*nec*)
- Loading: 12% C
- Endcapping: Yes (*R31030B*) and No (*R31130B*)
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

Description

Silia*Prep* Phenyl

A moderately hydrophobic and non-polar sorbent used to extract non-polar compounds with different selectivities through π-π interactions including aromatic compounds and other non-polar phases.

- SiliCycle Sorbent Number: R34030B
- Loading: 9% C
- Endcapping: Yes
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

Description

Silia*Prep* Cyano

A moderately polar sorbent used as a normal phase (*less polar compared to silica*) to extract acidic, basic and neutral compounds from aqueous solutions. It is also used as a reversed-phase (*less hydrophobic than C8 and C18*).

- SiliCycle Sorbent Number: R38030B
- Loading: 7% C
- Endcapping: Yes
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

Silia*Prep* Reversed-Phases SPE Formats

Formats	Qty/Box	Silia*Prep* C8	Silia*Prep* C8 *nec*	Silia*Prep* Phenyl	Silia*Prep* Cyano
Silia*Prep* SPE Cartridges					
1 mL/50 mg	100	SPE-R31030B-01B	SPE-R31130B-01B	SPE-R34030B-01B	SPE-R38030B-01B
1 mL/100 mg	100	SPE-R31030B-01C	SPE-R31130B-01C	SPE-R34030B-01C	SPE-R38030B-01C
3 mL/200 mg	50	SPE-R31030B-03G	SPE-R31130B-03G	SPE-R34030B-03G	SPE-R38030B-03G
3 mL/500 mg	50	SPE-R31030B-03P	SPE-R31130B-03P	SPE-R34030B-03P	SPE-R38030B-03P
6 mL/500 mg	50	SPE-R31030B-06P	SPE-R31130B-06P	SPE-R34030B-06P	SPE-R38030B-06P
6 mL/1 g	50	SPE-R31030B-06S	SPE-R31130B-06S	SPE-R34030B-06S	SPE-R38030B-06S
6 mL/2 g	50	SPE-R31030B-06U	SPE-R31130B-06U	SPE-R34030B-06U	SPE-R38030B-06U
12 mL/2 g	20	SPE-R31030B-12U	SPE-R31130B-12U	SPE-R34030B-12U	SPE-R38030B-12U
25 mL/5 g*	20	SPE-R31030B-20X	SPE-R31130B-20X	SPE-R34030B-20X	SPE-R38030B-20X
Silia*Prep* Large Reservoir Volume SPE Cartridges					
10 mL/200 mg	50	SPC-R31030B-10G	SPC-R31130B-10G	SPC-R34030B-10G	SPC-R38030B-10G
10 mL/500 mg	50	SPC-R31030B-10P	SPC-R31130B-10P	SPC-R34030B-10P	SPC-R38030B-10P
Silia*Prep* 96-Well Plates					
2 mL/50 mg	1	96W-R31030B-B	96W-R31130B-B	96W-R34030B-B	96W-R38030B-B
2 mL/100 mg	1	96W-R31030B-C	96W-R31130B-C	96W-R34030B-C	96W-R38030B-C

*Commercialized under Silia*Sep* OT branding

SiliaPrep Normal Phases

Description

SiliaPrep Silica

The most polar sorbent, which presents a slightly acidic character and is used to extract various compounds from non-polar solvents through hydrogen bonding.

- SiliCycle Sorbent Number: R10030B
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

Description

SiliaPrep Silica WPD

The Silica WPD sorbent is used for the same application as the Silica sorbent but can accommodate larger molecules and untreated matrices.

- SiliCycle Sorbent Number: R10029G
- Silica Type: 125 Å, 300 m^2/g, 37 - 55 µm

Description

SiliaPrep Diol *nec*

Moderate polar sorbent presenting neutral character used to extract polar compounds from non-polar solvents and structural isomers. Alternative to silica when the acidic character is problematic.

- SiliCycle Sorbent Number: R35030B
- Loading: 8% C
- Endcapping: No
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

SiliaPrep Normal Phases SPE Formats

Formats	Qty/Box	SiliaPrep Silica	SiliaPrep Silica WPD	SiliaPrep Diol *nec*
SiliaPrep SPE Cartridges				
1 mL/50 mg	100	SPE-R10030B-01B	SPE-R10029G-01B	SPE-R35030B-01B
1 mL/100 mg	100	SPE-R10030B-01C	SPE-R10029G-01C	SPE-R35030B-01C
3 mL/200 mg	50	SPE-R10030B-03G	SPE-R10029G-03G	SPE-R35030B-03G
3 mL/500 mg	50	SPE-R10030B-03P	SPE-R10029G-03P	SPE-R35030B-03P
6 mL/500 mg	50	SPE-R10030B-06P	SPE-R10029G-06P	SPE-R35030B-06P
6 mL/1 g	50	SPE-R10030B-06S	SPE-R10029G-06S	SPE-R35030B-06S
6 mL/2 g	50	SPE-R10030B-06U	SPE-R10029G-06U	SPE-R35030B-06U
12 mL/2 g	20	FLH-R10030B-15U	FLH-R10029G-15U	SPE-R35030B-12U
25 mL/5 g*	20	FLH-R10030B-25X	FLH-R10029G-25X	SPE-R35030B-20X
SiliaPrep Large Reservoir Volume SPE Cartridges				
10 mL/200 mg	50	SPC-R10030B-10G	SPC-R10029G-10G	SPC-R35030B-10G
10 mL/500 mg	50	SPC-R10030B-10P	SPC-R10029G-10P	SPC-R35030B-10P
Mini-SiliaPrep SPE Cartridges				
500 mg	50	SPS-R10030B-P	SPS-R10029G-P	SPS-R35030B-P
1,000 mg	50	SPS-R10030B-S	SPS-R10029G-S	SPS-R35030B-S
SiliaPrep 96-Well Plates				
2 mL/50 mg	1	96W-R10030B-B	96W-R10029G-B	96W-R35030B-B
2 mL/100 mg	1	96W-R10030B-C	96W-R10029G-C	96W-R35030B-C

*Commercialized under SiliaSep OT branding

Silia*Prep* Normal Phases

Description

Silia*Prep* Florisil and **Silia*Prep* Florisil PR**

A polar sorbent (MgO_3Si) presenting a basic character used to extract non-polar to moderately polar compounds from non-polar solvents. The magnesium ion allows retention of chlorinated pesticides, polychlorinated biphenyl (*PCB's*) and polysaccharides.

- SiliCycle Sorbent Number: AUT-0014
  AUT-0015 (*PR*)
- Florisil Type: 75 - 150 µm
- Florisil PR Type: 150 - 200 µm

Description

Silia*Prep* Alumina-Acidic, **Neutral** and **Basic**

Alumina can present either cationic, neutral and acidic character. It is used in a similar fashion as for the Silia*Prep* Silica. The difference is that Alumina is more stable at high pH than silica. These sorbents present favorable retention of aromatic compounds, aliphatic amines and compounds containing electronegative functions.

- SiliCycle Sorbent Number: Acidic: AUT-0053
  Neutral: AUT-0054, Basic: AUT-0055
- Alumina Type: 60 Å, 0.9 g/mL, 50 - 200 µm

Silia*Prep* Normal Phases SPE Formats

Formats	Qty/Box	Silia*Prep* Florisil	Silia*Prep* Florisil PR	Silia*Prep* Acidic Alumina	Silia*Prep* Neutral Alumina	Silia*Prep* Basic Alumina
Silia*Prep* SPE Cartridges						
1 mL/50 mg	100	SPE-AUT-0014-01B	SPE-AUT-0015-01B	SPE-AUT-0053-01B	SPE-AUT-0054-01B	SPE-AUT-0055-01B
1 mL/100 mg	100	SPE-AUT-0014-01C	SPE-AUT-0015-01C	SPE-AUT-0053-01C	SPE-AUT-0054-01C	SPE-AUT-0055-01C
3 mL/200 mg	50	SPE-AUT-0014-03G	SPE-AUT-0015-03G	SPE-AUT-0053-03G	SPE-AUT-0054-03G	SPE-AUT-0055-03G
3 mL/500 mg	50	SPE-AUT-0014-03P	SPE-AUT-0015-03P	SPE-AUT-0053-03P	SPE-AUT-0054-03P	SPE-AUT-0055-03P
6 mL/500 mg	50	SPE-AUT-0014-06P	SPE-AUT-0015-06P	SPE-AUT-0053-06P	SPE-AUT-0054-06P	SPE-AUT-0055-06P
6 mL/1 g	50	SPE-AUT-0014-06S	SPE-AUT-0015-06S	SPE-AUT-0053-06S	SPE-AUT-0054-06S	SPE-AUT-0055-06S
6 mL/2 g	50	SPE-AUT-0014-06U	SPE-AUT-0015-06U	SPE-AUT-0053-06U	SPE-AUT-0054-06U	SPE-AUT-0055-06U
12 mL/2 g	20	SPE-AUT-0014-12U	SPE-AUT-0015-12U	SPE-AUT-0053-12U	SPE-AUT-0054-12U	SPE-AUT-0055-12U
25 mL/5 g*	20	SPE-AUT-0014-20X	SPE-AUT-0015-20X	SPE-AUT-0053-20X	SPE-AUT-0054-20X	SPE-AUT-0055-20X
Silia*Prep* Large Reservoir Volume SPE Cartridges						
10 mL/200 mg	50	SPC-AUT-0014-10G	SPC-AUT-0015-10G	SPC-AUT-0053-10G	SPC-AUT-0054-10G	SPC-AUT-0055-10G
10 mL/500 mg	50	SPC-AUT-0014-10P	SPC-AUT-0015-10P	SPC-AUT-0053-10P	SPC-AUT-0054-10P	SPC-AUT-0055-10P
Mini-Silia*Prep* SPE Cartridges						
500 mg	50	SPS-AUT-0014-P	SPS-AUT-0015-P	SPS-AUT-0053-P	SPS-AUT-0054-P	SPS-AUT-0055-P
1,000 mg	50	SPS-AUT-0014-S	SPS-AUT-0015-S	SPS-AUT-0053-S	SPS-AUT-0054-S	SPS-AUT-0055-S
Silia*Prep* 96-Well Plates						
2 mL/50 mg	1	96W-AUT-0014-B	96W-AUT-0015-B	n/a	n/a	n/a
2 mL/100 mg	1	96W-AUT-0014-C	96W-AUT-0015-C	n/a	n/a	n/a

*Commercialized under Silia*Sep* OT branding

SiliaPrep Ion Exchange Phases

Description

SiliaPrep TMA Chloride *nec* (*Si-SAX*)

Strong anion exchanger sorbent positively charged under all conditions. Used to extract acidic molecules (pK_a *3 - 5*).

- SiliCycle Sorbent Number: R66530B
- Loading: 1.1 mmol/g
- Endcapping: No
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

Description

SiliaPrep TMA Acetate *nec* (*Si-SAX-2*)

Strong anion exchanger (*low-selectivity acetate counter ion*) sorbent positively charged under all conditions. Used to extract acidic molecules (pK_a *3 - 5*).

- SiliCycle Sorbent Number: R66430B
- Loading: 1.0 mmol/g
- Endcapping: No
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

Description

SiliaPrep Amine (*Si-WAX*)

A weak anion exchanger used instead of a strong anion exchanger for strong anions, thus avoiding irreversible retention (*acidic molecules* $pK_a < 3$). This sorbent is utilized in different applications such as the separation of peptides, drugs and metabolites from physiological fluids, poly- and monosaccharides and structural isomers.

- SiliCycle Sorbent Number: R52030B
- Loading: 1.6 mmol/g
- Endcapping: Yes
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

SiliaPrep Ion Exchange Phases SPE Formats

Formats	Qty/Box	SiliaPrep TMA Chloride *nec*	SiliaPrep TMA Acetate *nec*	SiliaPrep Amine
SiliaPrep SPE Cartridges				
1 mL/50 mg	100	SPE-R66530B-01B	SPE-R66430B-01B	SPE-R52030B-01B
1 mL/100 mg	100	SPE-R66530B-01C	SPE-R66430B-01C	SPE-R52030B-01C
3 mL/200 mg	50	SPE-R66530B-03G	SPE-R66430B-03G	SPE-R52030B-03G
3 mL/500 mg	50	SPE-R66530B-03P	SPE-R66430B-03P	SPE-R52030B-03P
6 mL/500 mg	50	SPE-R66530B-06P	SPE-R66430B-06P	SPE-R52030B-06P
6 mL/1 g	50	SPE-R66530B-06S	SPE-R66430B-06S	SPE-R52030B-06S
6 mL/2 g	50	SPE-R66530B-06U	SPE-R66430B-06U	SPE-R52030B-06U
12 mL/2 g	20	SPE-R66530B-12U	SPE-R66430B-12U	SPE-R52030B-12U
*25 mL/5 g	20	SPE-R66530B-20X	SPE-R66430B-20X	SPE-R52030B-20X
SiliaPrep Large Reservoir Volume SPE Cartridges				
10 mL/200 mg	50	SPC-R66530B-10G	SPC-R66430B-10G	SPC-R52030B-10G
10 mL/500 mg	50	SPC-R66530B-10P	SPC-R66430B-10P	SPC-R52030B-10P
Mini-SiliaPrep SPE Cartridges				
500 mg	50	SPS-R66530B-P	SPS-R66430B-P	SPS-R52030B-P
1,000 mg	50	SPS-R66530B-S	SPS-R66430B-S	SPS-R52030B-S
SiliaPrep 96-Well Plates				
2 mL/50 mg	1	96W-R66530B-B	96W-R66430B-B	96W-R52030B-B
2 mL/100 mg	1	96W-R66530B-C	96W-R66430B-C	96W-R52030B-C

*Commercialized under SiliaSep OT branding

SiliaPrep Ion Exchange Phases

Description

SiliaPrep Tosic Acid (*Si-SCX*)

Strong cation exchanger sorbent positively charged under all conditions. Used to extract basic molecules (pK_a *7 - 10*).

- SiliCycle Sorbent Number: R60530B
- Loading: 0.8 mmol/g
- Endcapping: Yes
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

Description

SiliaPrep Propylsulfonic Acid (*Si-SCX-2*)

Strong cation exchanger sorbent positively charged under all conditions. Used to extract basic molecules (pK_a *7 - 10*).

- SiliCycle Sorbent Number: R51230B
- Loading: 1.0 mmol/g
- Endcapping: Yes
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

Description

SiliaPrep Carboxylic Acid (*Si-WCX*)

A weak cation exchanger sorbent used to extract strong basic compounds (pK_a *> 9*).

- SiliCycle Sorbent Number: R70030B
- Loading: 1.6 mmol/g
- Endcapping: Yes
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

SiliaPrep Ion Exchange Phases SPE Formats

Formats	Qty/Box	SiliaPrep Tosic Acid	SiliaPrep Propylsulfonic Acid	SiliaPrep Carboxylic Acid
SiliaPrep SPE Cartridges				
1 mL/50 mg	100	SPE-R60530B-01B	SPE-R51230B-01B	SPE-R70030B-01B
1 mL/100 mg	100	SPE-R60530B-01C	SPE-R51230B-01C	SPE-R70030B-01C
3 mL/200 mg	50	SPE-R60530B-03G	SPE-R51230B-03G	SPE-R70030B-03G
3 mL/500 mg	50	SPE-R60530B-03P	SPE-R51230B-03P	SPE-R70030B-03P
6 mL/500 mg	50	SPE-R60530B-06P	SPE-R51230B-06P	SPE-R70030B-06P
6 mL/1 g	50	SPE-R60530B-06S	SPE-R51230B-06S	SPE-R70030B-06S
6 mL/2 g	50	SPE-R60530B-06U	SPE-R51230B-06U	SPE-R70030B-06U
12 mL/2 g	20	SPE-R60530B-12U	SPE-R51230B-12U	SPE-R70030B-12U
25 mL/5 g*	20	SPE-R60530B-20X	SPE-R51230B-20X	SPE-R70030B-20X
SiliaPrep Large Reservoir Volume SPE Cartridges				
10 mL/200 mg	50	SPC-R60530B-10G	SPC-R51230B-10G	SPC-R70030B-10G
10 mL/500 mg	50	SPC-R60530B-10P	SPC-R51230B-10P	SPC-R70030B-10P
Mini-SiliaPrep SPE Cartridges				
500 mg	50	SPS-R60530B-P	SPS-R51230B-P	SPS-R70030B-P
1,000 mg	50	SPS-R60530B-S	SPS-R51230B-S	SPS-R70030B-S
SiliaPrep 96-Well Plates				
2 mL/50 mg	1	96W-R60530B-B	96W-R51230B-B	96W-R70030B-B
2 mL/100 mg	1	96W-R60530B-C	96W-R51230B-C	96W-R70030B-C

*Commercialized under SiliaSep OT branding

SiliaPrep Mixed-Mode and Specialty Phases

Description

SiliaPrep C8/SAX-2 *nec*

Mixed-mode sorbent designed to extract or isolate acidic and neutral drugs and metabolites from physiological fluids.

- SiliCycle Sorbent Number: R661230B
- Loading: 11% C
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

Description

SiliaPrep SCX-2/SAX *nec*

This mixed-mode sorbent is typically used for the separation of acidic and basic molecules from non-ionizable molecules.

- SiliCycle Sorbent Number: R802830B
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

Description

SiliaPrep PCB *nec*

This special phase is specially designed for extraction of PCB's from waste oil (*hexane extract*).

- SiliCycle Sorbent Number: R00650030B
- Endcapping: No
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

Energy

SiliaPrep Mixed-Mode and Specialty Phases SPE Formats

Formats	Qty/Box	SiliaPrep C8/SAX-2	SiliaPrep SCX-2/SAX	SiliaPrep PCB nec
SiliaPrep SPE Cartridges				
1 mL/50 mg	100	SPM-R661230B-01B	SPM-R802830B-01B	n/a
1 mL/100 mg	100	SPM-R661230B-01C	SPM-R802830B-01C	n/a
3 mL/200 mg	50	SPM-R661230B-03G	SPM-R802830B-03G	n/a
3 mL/500 mg	50	SPM-R661230B-03P	SPM-R802830B-03P	n/a
6 mL/500 mg	50	SPM-R661230B-06P	SPM-R802830B-06P	n/a
6 mL/1 g	50	SPM-R661230B-06S	SPM-R802830B-06S	SP2-R00650030B-06S
6 mL/2 g	50	SPM-R661230B-06U	SPM-R802830B-06U	n/a
12 mL/2 g	20	SPM-R661230B-12U	SPM-R8028230B-12U	n/a
25 mL/5 g*	20	SPM-R661230B-20X	SPM-R802830B-20X	n/a
SiliaPrep Large Reservoir Volume SPE Cartridges				
10 mL/200 mg	50	SPC-R661230B-10G	SPC-R802830B-10G	n/a
10 mL/500 mg	50	SPC-R661230B-10P	SPC-R802830B-10P	n/a

*Commercialized under SiliaSep OT branding

Silia*Prep* CleanDRUG

Description

Silia*Prep* CleanDRUG

Silia*Prep* CleanDRUG is designed to extract specific analytes with more reproducibility and efficiency when using sensitive detectors. This product was developed, tested, and quality controlled for drugs of abuse applications.

- SiliCycle Sorbent Number: R651230B
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

Easy SPE Method for Drugs of Abuse Determination in Human Urine

Forensic

General Procedure

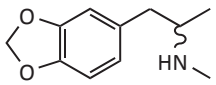
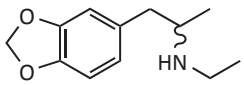
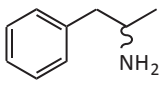
1. Sample (*0.5 mL*) is mixed with 2.5 mL of aqueous H_2SO_4 (*0.1 M*).
2. Silia*Prep* CleanDRUG (*3 mL/200 mg cartridges*) is conditioned with 2 column volumes of methanol, then 2 column volumes of aqueous H_2SO_4 (*0.1 M*).
3. Slowly force or aspirate the sample of urine through the cartridge.
4. Wash the cartridge with 3 mL of phosphate buffer (*KH_2PO_4/K_2HPO_4 pH = 7.0*), then with 3 mL of aqueous H_2SO_4 (*0.1 M*), and finally with 3 mL of methanol.
5. Analyte is eluted with 2 x 3 mL of aqueous NH_4OH (*5% v/v*).
6. Sample is evaporated under a nitrogen stream and, reconstituted with distilled water and methanol (*9:1 v/v*). Finally, the quantification is done using LC-MS apparatus.

Silia*Prep* CleanDRUG SPE Formats

Formats	Qty/Box	Silia*Prep* Product Number
Silia*Prep* SPE Cartridges		
1 mL/50 mg	100	SPEC-R651230B-01B
1 mL/100 mg	100	SPEC-R651230B-01C
3 mL/200 mg	50	SPEC-R651230B-03G
3 mL/500 mg	50	SPEC-R651230B-03P
6 mL/500 mg	50	SPEC-R651230B-06P
6 mL/1 g	50	SPEC-R651230B-06S
6 mL/2 g	50	SPEC-R651230B-06U
12 mL/2 g	20	SPEC-R651230B-12U
25 mL/5 g*	20	SPEC-R651230B-20X

*Commercialized under Silia*Sep* OT branding

Drugs of Abuse Recovery

Drugs	 MDMA	 MDEA	 Amphetamine
Recovery (%)[a]	96	98	99

[a]Mean Recovery n = 2, 10 ng/mL to 100 ng/mL

Forensic

Fentanyl and Norfentanyl in Urine

SiliaPrep CleanDRUG 1 mL/100 mg
SiliCycle PN: SPEC-R651230B-01C

Sample Preparation
- Spike 200 µL of urine and 600 µL of sodium acetate in H_2O (*100 mM, pH 6.0*) with 40 µL of internal standard (*fentanyl-d_5 and norfentanyl-d_5, 200 ng/mL in MeOH*)

Conditioning Step
- 1 mL of MeOH, 1 mL of H_2O and 1 mL of sodium acetate in H_2O (*100 mM, pH 6.0*)

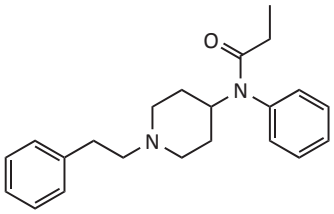
Loading Step
- Pass the treated sample through the cartridge

Washing Step
- 1 mL of H_2O
- 1 mL of MeOH

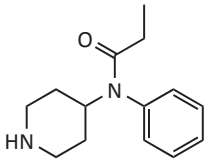
Elution Step
- 1 mL of of (*78/20/2*) EtOAc/IPA/NH_4OH (*v/v*)

Spoting Step*
- Spot 2 µL in a LazWell™ plate

*Organic phase can be evaporated and reconstituted



Fentanyl



Norfentanyl

LDTD-MS/MS Conditions:

Detector: Phytronix LDTD System on Thermo Vantage Mass Spectrometer
Gas Flow: 3 L/min
Mode: MRM, ESI^+

Laser Pattern

Time (s)	Power (%)
0	0
2.0	0
5.0	45
7.0	45
7.1	0
8.0	0

MRM Transition

Drug	MRM Transition	CE	S-Lens
Fentanyl	337 → 188	22	120
Fentanyl-d5	342 → 188	22	120
Norfentanyl	233 → 150	15	85
Norfentanyl-d5	238 → 155	15	85

Accuracy and Precision Results

Parameters	Fentanyl			Norfentanyl		
	QC Low	QC Med	QC High	QC Low	QC Med	QC High
Concentration (ng/mL)	25	100	500	25	100	500
N	12	12	12	12	12	12
Mean (ng/mL)	26.38	95.25	481.44	37.58	93.17	489.69
% RSD	2.0	3.9	1.4	15.6	8.1	6.2
% Nominal	105.5	95.2	96.3	110.3	93.2	97.9

SiliaPrep CleanENVI

Description

SiliaPrep CleanENVI

SiliaPrep CleanENVI is designed for typical environmental samples such as PAH's, PCB's, herbicides and herbicides from water or waste water.

- SiliCycle Sorbent Number: R31930B
- Silica Type: 60 Å, 500 m^2/g, 40 - 63 µm

Easy SPE Method of Pesticides Determination from Drinking Water

Environment Food

General Procedure

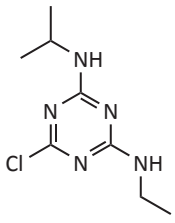
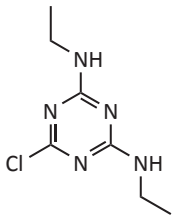
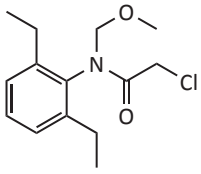
1. SiliaPrep CleanENVI (*6 mL/500 mg cartridge*) is conditioned with 2 column volumes of methanol, then 2 column volumes of distilled water.
2. Slowly force or aspirate 10 mL of drinking water through the cartridge.
3. Wash the cartridge with 2 column volumes of distilled water (*2 x 5 mL*).
4. Analyte is eluted with 2 x 3 mL acetone.
5. Sample is evaporated under a nitrogen stream and, reconstituted with distilled water and methanol (*1:1 v/v*). Finally, the quantification is done using LC-MS apparatus.

SiliaPrep CleanENVI SPE Formats

Formats	Qty/Box	SiliaPrep Product Number
SiliaPrep SPE Cartridges		
1 mL/50 mg	100	SPEC-R31930B-01B
1 mL/100 mg	100	SPEC-R31930B-01C
3 mL/200 mg	50	SPEC-R31930B-03G
3 mL/500 mg	50	SPEC-R31930B-03P
6 mL/500 mg	50	SPEC-R31930B-06P
6 mL/1 g	50	SPEC-R31930B-06S
6 mL/2 g	50	SPEC-R31930B-06U
12 mL/2 g	20	SPEC-R31930B-12U
25 mL/5 g*	20	SPEC-R31930B-20X

*Commercialized under SiliaSep OT branding

Pesticides Recovery

Pesticides	 Atrazine	 Simazine	 Alachlor
Recovery (%)[a]	95	96	86

[a]Mean Recovery n = 2, 10 ng/mL to 100 ng/mL