



# SiliaPrep<sup>TM</sup>

## Silica-Based SPE Cartridges and Well Plates



Distributed by

**Greyhound Chromatography and Allied Chemicals**  
6 Kelvin Park, Birkenhead, Merseyside CH41 1LT United Kingdom  
Tel: +44 (0)151 649 4000 Fax: +44 (0)151 649 4001  
sales@greyhoundchrom.com



[www.greyhoundchrom.com](http://www.greyhoundchrom.com)

# 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.
- Excellent 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 screenings, giving you higher quality data. SiliaPrep cartridges are packed with fines-free SiliaFlash silica gel sorbents.

### Sorbent Specifications

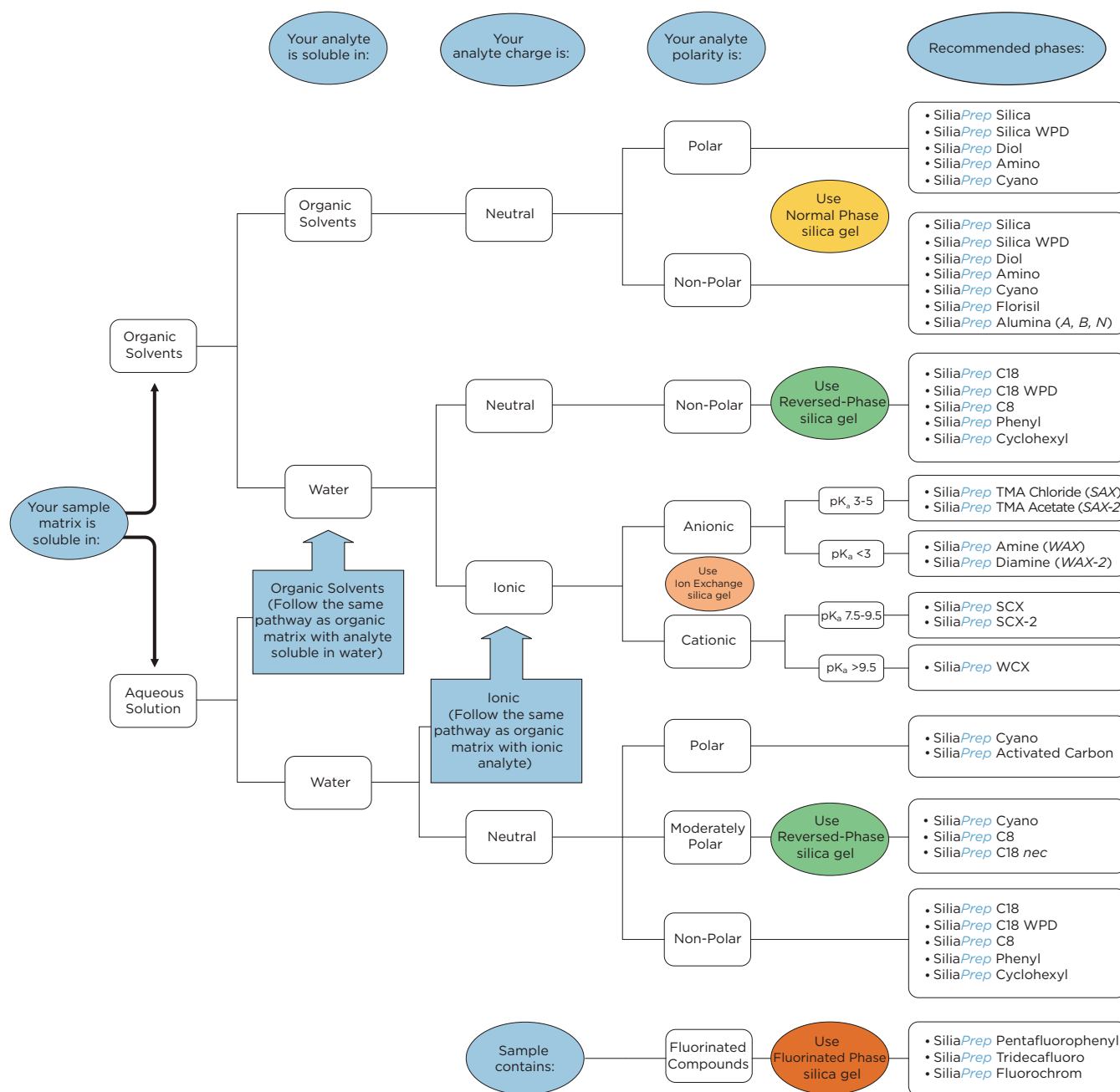
SiliaPrep products are packed with SiliCycle's SiliaFlash UltraPure silica gels to provide superior performance for all types of applications. This is due to the narrow particle size distribution and high purity. Although the standard products included in this catalog are made of SiliaFlash F60 (40-63  $\mu\text{m}$ , 60  $\text{\AA}$ ), 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  $\mu\text{m}$  polyethylene (PE) frits. Other plastic materials (*Teflon®, HDPE, etc.*), frit porosity (10  $\mu\text{m}$ ), and cartridge rim's (*flangeless*) are available on a custom order basis.



# Product Selection Guide by Sample Properties



« I had a difficult time purifying 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 |                        |                              |                    |                                   |
|---|------------------------|------------------------------|--------------------|-----------------------------------|
| SiliaCycle SiliaPrep                    | SiliaCycle Part Number | Agilent Bond Elut®           | Biotage Isolute®   | Macherey-Nagel Chromabond®        |
| <b>Non Polar Phases</b>                 |                        |                              |                    |                                   |
| SiliaPrep C18 <i>nec</i> (23 %)         | SPE-R30130B-xxx        |                              | C18                |                                   |
| SiliaPrep C18 (17 %)                    | SPE-R31930B-xxx        | C18                          | C18 (EC)           | C18 ec                            |
| SiliaPrep C18 <i>nec</i> (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 <i>nec</i>                 | SPE-R31130B-xxx        |                              | C8                 | C8                                |
| SiliaPrep Cyclohexyl                    | SPE-R61530B-xxx        | CH                           | CH (EC)            | C <sub>6</sub> H <sub>11</sub> ec |
| SiliaPrep Phenyl                        | SPE-R34030B-xxx        | PH                           | PH (EC)            | C <sub>6</sub> H <sub>5</sub>     |
| <b>Polar Phases</b>                     |                        |                              |                    |                                   |
| 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 <i>nec</i>               | SPE-R35030B-xxx        | Diol (2OH) <sup>b</sup>      | 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                            |
| <b>Ion Exchange Phases</b>              |                        |                              |                    |                                   |
| SiliaPrep SAX <i>nec</i>                | SPE-R66530B-xxx        | SAX <sup>b</sup>             | SAX                | SB                                |
| SiliaPrep SAX-2 <i>nec</i>              | SPE-R66430B-xxx        | PRS <sup>b</sup>             | PE-AX              |                                   |
| SiliaPrep SCX                           | SPE-R60530B-xxx        | SCX <sup>b</sup>             | SCX-3 <sup>b</sup> | SA                                |
| SiliaPrep SCX-2                         | SPE-R51230B-xxx        |                              | SCX-2 <sup>b</sup> | PSA                               |
| SiliaPrep WAX                           | SPE-R52030B-xxx        | NH <sub>2</sub> <sup>b</sup> | NH <sub>2</sub>    | NH <sub>2</sub>                   |
| SiliaPrep Diamine (WAX-2)               | SPE-R49030B-xxx        | PSA <sup>b</sup>             | Diamino            | Diamino                           |
| SiliaPrep WCX                           | SPE-R70030B-xxx        | CBA                          | CBA <sup>b</sup>   | PCA                               |
| <b>Mixed-Mode and Specialty Phases</b>  |                        |                              |                    |                                   |
| SiliaPrep C8/SAX-2 <i>nec</i>           | SPM-R026630B-xxx       | Certify II                   | HAX                |                                   |
| SiliaPrep SCX-2/SAX <i>nec</i>          | SPM-R802830B-xxx       | AccuCAT                      |                    |                                   |
| SiliaPrep CleanDRUG                     | SPEC-R651230B-xxx      | Certify <sup>b</sup>         | HCX <sup>d</sup>   | 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 <i>nec</i>                | SP2-R00650030B-xxx     |                              |                    | SA/SiOH                           |

<sup>a</sup> Mallinkrodt Baker, <sup>b</sup> Non-encapped, <sup>c</sup> Encapped, <sup>d</sup> Ion exchange phase is non-encapped xxx = Formats



| Avantor Performance Material <sup>®</sup><br>Bakerbond <sup>®</sup> | Phenomenex<br>Strata <sup>®</sup> | Supelco<br>Discovery <sup>®</sup> and SupelClean <sup>®</sup> | Thermo Scientific<br>HyperSep | Waters<br>Sep-Pak <sup>®</sup> |
|---|-----------------------------------|---|-------------------------------|--------------------------------|
| 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 <sub>6</sub> H <sub>11</sub> )                        |                                   |   |                               |                                |
| Phenyl (C <sub>6</sub> H <sub>5</sub> )                             | Phenyl                            | DSC-Ph and LC-Ph  | Phenyl                        |                                |
| Silica gel (SiOH)   | Silica (Si-I)                     | Silica  | Silica                        | Silica                         |
| Cyano (CN)  | Cyano (CN) <sup>b</sup>           | DSC-CN and LC-CN  | Cyano                         | Cyanopropyl                    |
| Diol (COHCOH)   |                                   | DSC-Diol and LC-Diol  | Diol                          | Diol <sup>b</sup>              |
| Florisil (Mg <sub>2</sub> SiO <sub>3</sub> )                        |                                   | 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 <sup>b</sup>                  | DSC-SAX and LC-SAX  | SAX                           | Accell Plus QMA                |
| Aromatic Sulfonic Acid  | SCX <sup>b</sup>                  | DSC-SCX and LC-SCX  | SCX                           |                                |
| Amino (NH <sub>2</sub> )  | NH <sub>2</sub> /WAX <sup>b</sup> | DSC-NH <sub>2</sub> and LC-NH <sub>2</sub> <sup>b</sup>       | Aminopropyl                   | Aminopropyl                    |
| Diamino (NH <sub>2</sub> NH)  |                                   | PSA   |                               | PSA                            |
| Carboxylic Acid (COOH)  | WCX <sup>b</sup>                  | DSC-WCX & LC-WCX  |                               | Accell Plus CM                 |
|   | Screen-A                          | DSC-MCAX  | Verify AX                     |                                |
|   |                                   |   | Verify CX                     |                                |
|   |                                   | ENVI-Carb   |                               | AC2                            |
|   |                                   | ENVI-Carb/NH <sub>2</sub>                                     |                               | 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                                      |
| <b>Analyte properties</b>             | Non-polar, uncharged or neutralized, hydrophobic | Ionized or charged   | Slightly to moderately polar, uncharged           |
| <b>Matrix sample properties</b>       | Organic solvents and aqueous ( <i>buffer</i> )   | Aqueous ( <i>buffer</i> ) and pH-adjusted solutions          | Organic solvents                                  |
| <b>Conditioning step</b>              | Water-miscible organic solvents                  | Water-miscible organic solvents or aqueous buffered solution | Sample solvent or methanol                        |
| <b>Sample loading</b>                 | Dissolve analyte in highly polar solvents        | Dissolve analyte in highly polar solvents                    | Dissolve analyte in low polar solvents            |
| <b>Washing</b>                        | Aqueous or buffered solution and polar solvents  | Aqueous solutions containing salts                           | Non-polar solvents                                |
| <b>Elution</b>                        | 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<br>Acetone<br>Ethyl Acetate<br>Acetonitrile<br>Methanol | Low<br>↓<br>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<br>↓<br>High | Hexane<br>CH <sub>2</sub> Cl <sub>2</sub><br>THF<br>Acetone<br>Acetonitrile |



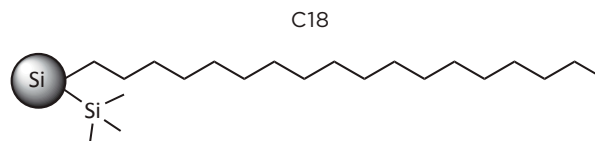


## SiliaPrep Reversed-Phases

### 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.

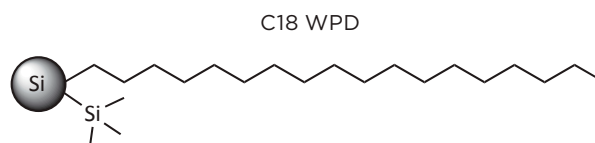


- SiliCycle Sorbent Number: R31930B
- Loading: 17% C
- Endcapping: Yes
- Silica type: 60 Å, 500 m<sup>2</sup>/g, 40 - 63 μm

### 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.

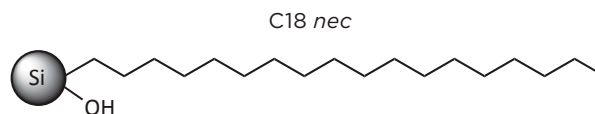


- SiliCycle Sorbent Number: R33229G
- Loading: 13% C
- Endcapping: Yes
- Silica type: 125 Å, 300 m<sup>2</sup>/g, 37 - 55 μm

### 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 glucuronides.



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



## SiliaPrep Reversed-Phases C18

| SiliaPrep Reversed-Phases C18 SPE Formats              |         |                 |                   |                   |
|--|---------|-----------------|-------------------|-------------------|
| Formats  | Qty/Box | SiliaPrep C18   | SiliaPrep C18 WPD | SiliaPrep C18 nec |
| <b>SiliaPrep SPE Cartridges</b>                        |         |                 |                   |                   |
| 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   |
| <b>SiliaPrep Large Reservoir Volume SPE Cartridges</b> |         |                 |                   |                   |
| 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   |
| <b>Mini-SiliaPrep SPE Cartridges</b>                   |         |                 |                   |                   |
| 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     |
| <b>SiliaPrep 96-Well Plates</b>                        |         |                 |                   |                   |
| 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 SiliaSep OT branding

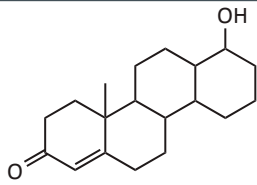


Forensic

## Determination of Testosterone in Human Urine

### General Procedure

1. Mini-SiliaPrep C18 WPD (PN: SPS-R33229G-P) was conditioned with 5 mL of methanol and 5 mL of H<sub>2</sub>O.
2. The urine sample (2 mL) was then slowly aspirated through the cartridge.
3. Cartridge was washed with 5 mL of H<sub>2</sub>O 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   | Testosterone Recovery     |        |
|--|---------------------------|--------|
|  | Recovery (%) <sup>a</sup> |        |
|  | lot #1                    | lot #2 |
|  | 94 ± 2                    | 96 ± 1 |

<sup>a</sup>Mean Recovery n = 3, 250 ng/mL





## $\Delta^9$ -Tetrahydrocannabinol in Human Plasma

SiliaPrep C18 3 mL/500 mg

SiliCycle PN: SPE-R31930B-03P

### Sample Preparation

- Mix 250  $\mu$ L 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<sub>2</sub>O

### Loading Step

- Pass the treated sample through the cartridge

### Washing Step

- 2 mL of H<sub>2</sub>O
- 1 mL of acetic acid 1M
- 2 mL of (20/80) MeOH/H<sub>2</sub>O (v/v)

### Elution Step

- 3 mL of (50/50) CH<sub>2</sub>Cl<sub>2</sub>/Acetone (v/v)

### Evaporation Step

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

### Derivatization Step

- Mix under vortex 100  $\mu$ L of carbonate buffer 0.1M with 200  $\mu$ L 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

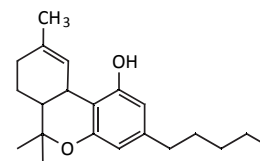
- Flash/freeze the excess of water from the organic phase in a bath of dry ice/acetone for 3 min

### Reconstitution Step

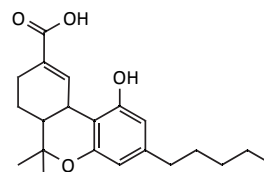
- Evaporate under a stream of nitrogen (10 min at 40°C)
- Reconstitute with 200  $\mu$ L of (80/20) ACN/H<sub>2</sub>O, 0.1% formic acid (v/v)

### Chromatographic Conditions:

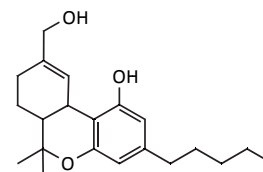
Column: SiliaChrom dt C18, 2.5  $\mu$ m  
 Column Size: 3.0 x 30 mm  
 SiliCycle PN: H141802E-H030  
 Mobile Phase: MPA: 1 mM ammonium formate in (10/90) H<sub>2</sub>O/ACN, 0.1% formic acid (v/v)  
 MPB: 1 mM ammonium formate in (90/10) H<sub>2</sub>O/ACN, 0.1% formic acid (v/v)  
 Temperature: 23°C  
 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<sup>+</sup>, MRM SCAN  
 Injection Volume: 5  $\mu$ L



$\Delta^9$ -Tetrahydrocannabinol (THC)

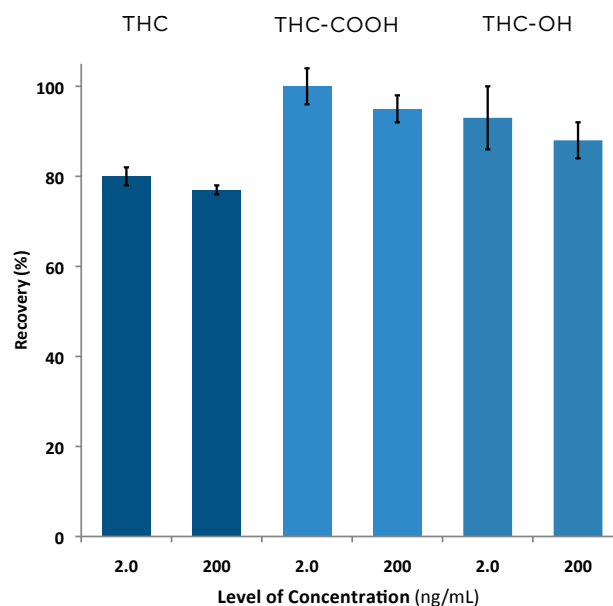


11-nor-9-Carboxy- $\Delta^9$ -Tetrahydrocannabinol (THC-COOH)



11-nor-9-Hydroxy- $\Delta^9$ -Tetrahydrocannabinol (THC-OH)

### Recovery Results (n = 6)



| 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      |

## SiliaPrep Reversed-Phases

### Description

#### SiliaPrep C8 and SiliaPrep C8 nec

A moderately hydrophobic and non-polar sorbent used to extract extremely non-polar compounds. This phase is more selective than SiliaPrep C18 for large 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<sup>2</sup>/g, 40 - 63 µm

### Description

#### SiliaPrep Phenyl

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

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

### Description

#### SiliaPrep 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<sup>2</sup>/g, 40 - 63 µm

### SiliaPrep Reversed-Phases SPE Formats

| Formats  | Qty/Box | SiliaPrep C8    | SiliaPrep C8 nec | SiliaPrep Phenyl | SiliaPrep Cyano |
|--|---------|-----------------|------------------|------------------|-----------------|
| <b>SiliaPrep SPE Cartridges</b>                        |         |                 |                  |                  |                 |
| 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 |
| <b>SiliaPrep Large Reservoir Volume SPE Cartridges</b> |         |                 |                  |                  |                 |
| 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 |
| <b>SiliaPrep 96-Well Plates</b>                        |         |                 |                  |                  |                 |
| 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 SiliaSep 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<sup>2</sup>/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<sup>2</sup>/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<sup>2</sup>/g, 40 - 63 µm

SiliaPrep Normal Phases SPE Formats

| Formats  | Qty/Box | SiliaPrep Silica | SiliaPrep Silica WPD | SiliaPrep Diol <i>nec</i> |
|--|---------|------------------|----------------------|---------------------------|
| <b>SiliaPrep SPE Cartridges</b>                        |         |                  |                      |                           |
| 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           |
| <b>SiliaPrep Large Reservoir Volume SPE Cartridges</b> |         |                  |                      |                           |
| 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           |
| <b>Mini-SiliaPrep SPE Cartridges</b>                   |         |                  |                      |                           |
| 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             |
| <b>SiliaPrep 96-Well Plates</b>                        |         |                  |                      |                           |
| 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

## SiliaPrep Normal Phases

### Description

#### SiliaPrep Florisil and SiliaPrep 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  $\mu m$
- Florisil PR Type: 150 - 200  $\mu m$

### Description

#### SiliaPrep Alumina-Acidic, Neutral and Basic

Alumina can present either cationic, neutral and acidic character. It is used in a similar fashion as for the SiliaPrep 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  $\mu m$

SiliaPrep Normal Phases SPE Formats

| Formats  | Qty/Box | SiliaPrep Florisil | SiliaPrep Florisil PR | SiliaPrep Acidic Alumina | SiliaPrep Neutral Alumina | SiliaPrep Basic Alumina |
|--|---------|--------------------|-----------------------|--------------------------|---------------------------|-------------------------|
| <b>SiliaPrep SPE Cartridges</b>                        |         |                    |                       |                          |                           |                         |
| 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        |
| <b>SiliaPrep Large Reservoir Volume SPE Cartridges</b> |         |                    |                       |                          |                           |                         |
| 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        |
| <b>Mini-SiliaPrep SPE Cartridges</b>                   |         |                    |                       |                          |                           |                         |
| 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          |
| <b>SiliaPrep 96-Well Plates</b>                        |         |                    |                       |                          |                           |                         |
| 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 SiliaSep 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:  $\geq 1.01$  mmol/g (or meq/g)
- Endcapping: No
- Silica Type: 60 Å, 500 m<sup>2</sup>/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:  $\geq 0.71$  mmol/g (or meq/g)
- Endcapping: No
- Silica Type: 60 Å, 500 m<sup>2</sup>/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 used 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:  $\geq 1.20$  mmol/g (or meq/g)
- Endcapping: Yes
- Silica Type: 60 Å, 500 m<sup>2</sup>/g, 40 - 63 µm

### SiliaPrep Ion Exchange Phases SPE Formats

| Formats  | Qty/Box | SiliaPrep TMA Chloride <i>nec</i> | SiliaPrep TMA Acetate <i>nec</i> | SiliaPrep Amine |
|--|---------|-----------------------------------|----------------------------------|-----------------|
| <b>SiliaPrep SPE Cartridges</b>                        |         |                                   |                                  |                 |
| 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 |
| <b>SiliaPrep Large Reservoir Volume SPE Cartridges</b> |         |                                   |                                  |                 |
| 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 |
| <b>Mini-SiliaPrep SPE Cartridges</b>                   |         |                                   |                                  |                 |
| 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   |
| <b>SiliaPrep 96-Well Plates</b>                        |         |                                   |                                  |                 |
| 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 Tonic 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:  $\geq 0.54$  mmol/g (or meq/g)
- Endcapping: Yes
- Silica Type: 60 Å, 500 m<sup>2</sup>/g, 40 - 63  $\mu$ m

### 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:  $\geq 0.63$  mmol/g (or meq/g)
- Endcapping: Yes
- Silica Type: 60 Å, 500 m<sup>2</sup>/g, 40 - 63  $\mu$ m

### 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:  $\geq 0.92$  mmol/g (or meq/g)
- Endcapping: Yes
- Silica Type: 60 Å, 500 m<sup>2</sup>/g, 40 - 63  $\mu$ m

### SiliaPrep Ion Exchange Phases SPE Formats

| Formats  | Qty/Box | SiliaPrep Tonic Acid | SiliaPrep Propylsulfonic Acid | SiliaPrep Carboxylic Acid |
|--|---------|----------------------|-------------------------------|---------------------------|
| <b>SiliaPrep SPE Cartridges</b>                        |         |                      |                               |                           |
| 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           |
| <b>SiliaPrep Large Reservoir Volume SPE Cartridges</b> |         |                      |                               |                           |
| 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           |
| <b>Mini-SiliaPrep SPE Cartridges</b>                   |         |                      |                               |                           |
| 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             |
| <b>SiliaPrep 96-Well Plates</b>                        |         |                      |                               |                           |
| 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<sup>2</sup>/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<sup>2</sup>/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<sup>2</sup>/g, 40 - 63 µm



### SiliaPrep Mixed-Mode and Specialty Phases SPE Formats

| Formats  | Qty/Box | SiliaPrep C8/SAX-2 | SiliaPrep SCX-2/SAX | SiliaPrep PCB <i>nec</i> |
|--|---------|--------------------|---------------------|--------------------------|
| <b>SiliaPrep SPE Cartridges</b>                        |         |                    |                     |                          |
| 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-R802830B-12U    | n/a                      |
| 25 mL/5 g*   | 20      | SPM-R661230B-20X   | SPM-R802830B-20X    | n/a                      |
| <b>SiliaPrep Large Reservoir Volume SPE Cartridges</b> |         |                    |                     |                          |
| 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



## SiliaPrep CleanDRUG

### Description

#### SiliaPrep CleanDRUG

SiliaPrep CleanDRUG is designed to extract specific analytes with more reproducibility and efficacy 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<sup>2</sup>/g, 40 - 63 µm



## Easy SPE Method for Drugs of Abuse Determination in Human Urine

### General Procedure

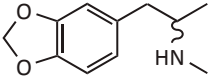
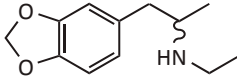
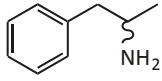
1. Sample (0.5 mL) is mixed with 2.5 mL of aqueous H<sub>2</sub>SO<sub>4</sub> (0.1 M).
2. SiliaPrep CleanDRUG (3 mL/200 mg cartridges) is conditioned with 2 column volumes of methanol, then 2 column volumes of aqueous H<sub>2</sub>SO<sub>4</sub> (0.1 M).
3. Slowly force or aspirate the sample of urine through the cartridge.
4. Wash the cartridge with 3 mL of phosphate buffer (KH<sub>2</sub>PO<sub>4</sub>/K<sub>2</sub>HPO<sub>4</sub> pH = 7.0), then with 3 mL of aqueous H<sub>2</sub>SO<sub>4</sub> (0.1 M), and finally with 3 mL of methanol.
5. Analyte is eluted with 2 x 3 mL of aqueous NH<sub>4</sub>OH (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.

### SiliaPrep CleanDRUG SPE Formats

| Formats                         | Qty/Box | SiliaPrep Product Number |
|---------------------------------|---------|--------------------------|
| <b>SiliaPrep SPE Cartridges</b> |         |                          |
| 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 SiliaSep OT branding

### Drugs of Abuse Recovery

| Drugs                     |  |  |  |
|---------------------------|---|--|---|
| Recovery (%) <sup>a</sup> | 96  | 98   | 99  |

<sup>a</sup>Mean Recovery n = 2, 10 ng/mL to 100 ng/mL



# Fentanyl and Norfentanyl in Urine

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

## Sample Preparation

- Spike 200  $\mu\text{L}$  of urine and 600  $\mu\text{L}$  of sodium acetate in  $\text{H}_2\text{O}$  (100 mM, pH 6.0) with 40  $\mu\text{L}$  of internal standard (fentanyl- $d_5$  and norfentanyl- $d_5$ , 200 ng/mL in MeOH)

## Conditioning Step

- 1 mL of MeOH, 1 mL of  $\text{H}_2\text{O}$  and 1 mL of sodium acetate in  $\text{H}_2\text{O}$  (100 mM, pH 6.0)

## Loading Step

- Pass the treated sample through the cartridge

## Washing Step

- 1 mL of  $\text{H}_2\text{O}$
- 1 mL of MeOH

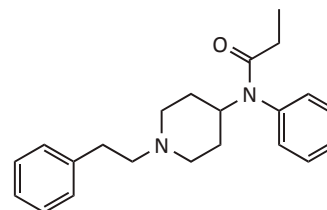
## Elution Step

- 1 mL of (78/20/2) EtOAc/IPA/ $\text{NH}_4\text{OH}$  (v/v)

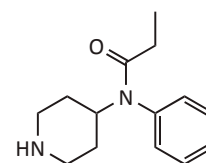
## Spotting Step\*

- Spot 2  $\mu\text{L}$  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<sup>+</sup>

### 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 $\rightarrow$ 188 | 22 | 120    |
| Fentanyl- $d_5$    | 342 $\rightarrow$ 188 | 22 | 120    |
| Norfentanyl        | 233 $\rightarrow$ 150 | 15 | 85     |
| Norfentanyl- $d_5$ | 238 $\rightarrow$ 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<sup>2</sup>/g, 40 - 63 µm



### Easy SPE Method of Pesticides Determination from Drinking Water

#### 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 |
|---------------------------------|---------|--------------------------|
| <b>SiliaPrep SPE Cartridges</b> |         |                          |
| 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 | Structure                               | Recovery (%) <sup>a</sup> |
|------------|---|---------------------------|
| Atrazine   | <chem>CC1=NC(=NC(=N1)N)N</chem>         | 95                        |
| Simazine   | <chem>CC1=NC(=NC(=N1)N)N</chem>         | 96                        |
| Alachlor   | <chem>CC1=CC=C(C=C1)N(C)C(=O)CCl</chem> | 86                        |

<sup>a</sup>Mean Recovery n = 2, 10 ng/mL to 100 ng/mL