

General Methods

STEP 1: Sample Pre-treatments

Opiates Healthcare Opiates	<p>Option 1: Acid Hydrolysis</p> <ol style="list-style-type: none"> To each 2 mL urine sample, add 500 µL of concentrated Hydrochloric acid. Heat at 90 °C for 2 hours, then allow to cool for 5 minutes. For GC analysis only, add 150 µL of 10 % Methoxyamine in water. Vortex and heat for 30 minutes at 60 °C. Add 1 mL of 500 mM Sodium acetate buffer (pH 4.0). Add 1 mL of 6 N Potassium hydroxide then vortex. Centrifuge for 5 minutes at 5000 rpm, verify that pH is between 4.0 and 6.0. <p>Option 2: Enzymatic Hydrolysis</p> <ol style="list-style-type: none"> To each 2 mL urine sample, add 1000 µL of β-glucuronidase solution (contains 5000 F units/mL Patella vulgata in 100 mM Acetate buffer, pH 5.0) and vortex. Hydrolyze for 3 hours at 60 °C then allow sample to cool for 5 minutes. For GC analysis only, add 150 µL of 10 % Methoxyamine in water. Vortex and heat for 30 minutes at 60 °C. Add 1000 µL of 100 mM Phosphate buffer (pH 6.0), verify that pH is between 5.5 and 6.5. Centrifuge for 5 minutes at 5000 rpm and discard pellet.
6-MAM Benzodiazepines	To each 2 mL urine sample, add 1000 µL of β-glucuronidase solution (contains 5000 F units/mL Patella vulgata in 100 mM Acetate buffer, pH 5.0) and vortex. Hydrolyze for 3 hours at 60 °C. Let cool and add 1000 µL of 100 mM Phosphate buffer (pH 6.0). Verify that pH is between 5.5 and 6.5. Centrifuge for 5 minutes at 5000 rpm and discard pellet.
PCP Cocaine Metabolites Methadone Propoxyphene Barbiturates	To each 2 mL urine sample, add 2 mL of 100 mM Sodium acetate buffer (pH 5.0) then vortex. Verify that pH is between 4.0 and 6.0.
Amphetamines	To each 2 mL urine sample, add 1000 µL of 100 mM Phosphate buffer (pH 6.0) and 1000 µL of 0.35 M Sodium periodate. Vortex and incubate at room temperature for 25 minutes. Verify that the pH is between 5.5 and 6.5.
Marijuana Metabolites	To each 2 mL urine sample, add 100 µL of 11.8 N Potassium hydroxide. Vortex then incubate at 60 °C for 20 minutes. Cool and add ~450 µL glacial acetic acid then vortex. Verify that the pH is between 4.0 and 6.0.

STEP 3: Analyze Extracts

After extraction, analyze your results on a Zebron™ ZB-Drug-1 GC column or a Kinetex® 1.7 µm, 2.6 µm or 5 µm Biphenyl or C18 HPLC/UHPLC column.

 Phenomenex products are available worldwide.

STEP 2: Protocols

Strata-X-Drug B

	1	2	3
	Opiates, 6-MAM, PCP, Amphetamines, Methadone, Healthcare Opiates, and Propoxyphene*	Marijuana Metabolites	Cocaine Metabolites
Condition	Not Required		
Load	Pre-treated urine sample	Pre-treated urine sample	Pre-treated urine sample
Wash 1	2 mL of 100 mM Sodium acetate buffer (pH 5.0)	2 mL of 100 mM Sodium acetate buffer (pH 5.0)	2 mL of 0.1 N Hydrochloric acid
Wash 2	2 mL Methanol	2 mL of Acetonitrile:100 mM Sodium acetate buffer (pH 5.0) (30:70)	2 mL Methanol
Dry	10 minutes under full vacuum	15 minutes under full vacuum	10 minutes under full vacuum
Elute	2 mL of Ethyl acetate: Isopropanol: Ammonium hydroxide (70:20:10)	2 mL of Ethyl acetate:Isopropanol (85:15)	2 mL of Ethyl acetate:Isopropanol: Ammonium hydroxide (70:20:10)
* Opiates, 6-MAM, PCP, Amphetamines, Methadone, Healthcare Opiates, and Propoxyphene can be extracted simultaneously or separately using the same SPE methodology.			
Methods are written for 60 mg/6 mL Strata-X-Drug B; however they can be scaled to accommodate smaller or larger sample sizes and sorbent masses.			

Strata-X-Drug N

	1	2
	Barbiturates	Benzodiazepines
Condition	Not Required	
Load	Pre-treated urine sample	Pre-treated urine sample
Wash 1	2 mL of 0.1 N Hydrochloric acid (HCl)	2 mL of Acetonitrile:Water (20:80)
Wash 2	2x 2 mL of Methanol: 0.1 N HCl (30:70)	—
Dry	10 minutes under full vacuum	10 minutes under full vacuum
Elute	2 mL of Ethyl acetate:Isopropanol (85:15)	2 mL of Ethyl acetate:Isopropanol (85:15)
Methods are written for 100 mg/6 mL Strata-X-Drug N; however they can be scaled to accommodate smaller or larger sample sizes and sorbent masses.		

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Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)
Screen-C GF	200	500
Screen-C	55	70
Screen-A	55	70
ABW	55	70
PAH	Proprietary	Proprietary
Melamine	Proprietary	Proprietary
Sodium Sulfate	N/A	N/A
FL-PR (Florisil®)	170	300
EPH	200	Proprietary

Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)
Strata-X	85	800
Strata-X-C	85	800
Strata-X-CW	85	800
Strata-X-A	85	800
Strata-X-AW	85	800
SDP-L	100	260
Strata-XL	100	500
Strata-XL-C	100	520
Strata-XL-CW	100	520
Strata-XL-A	100	520
Strata-XL-AW	100	520
Strata-X-Drug B	100	520
Strata-X-Drug N	100	520
Strata-X-Drug	100	520
Strata-XL	33	800
Strata-XL-C	33	800
Strata-XL-CW	33	800
Strata-XL-A	33	800
Strata-XL-AW	33	800
Strata-XL	85	800
Strata-XL-C	85	800
Strata-XL-CW	85	800
Strata-XL-A	85	800
Strata-XL-AW	85	800
Strata-XL	260	500
Strata-XL-C	260	500
Strata-XL-CW	260	500
Strata-XL-A	260	500
Strata-XL-AW	260	500
Strata-XL	Proprietary	Proprietary
Strata-XL-C	Proprietary	Proprietary
Strata-XL-CW	Proprietary	Proprietary
Strata-XL-A	Proprietary	Proprietary
Strata-XL-AW	Proprietary	Proprietary
Strata-XL	Proprietary	Proprietary

Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)
C18-E	70	500
C18-U	70	500
C18-T	140	300
C8	55	500
Phenyl	55	500
CN	55	500
NH	55	500
WCX	55	500
SAX	55	500
Si-1 (Silica)	65	550
C18-E	70	500
C18-U	70	500
C18-T	140	300
C8	55	500
Phenyl	55	500
CN	55	500
NH	55	500
WCX	55	500
SAX	55	500
Si-1 (Silica)	65	550

Traditional

Available Strata® and Strata-X Sorbents: Material Characteristics

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for choosing Strata®-X-Drug
Solid Phase Extraction (SPE) Products



General Methods



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- Argentina
- Australia
- Austria
- Azerbaijan
- The Bahamas
- Bangladesh
- Barbados
- Belarus
- Belgium
- Bolivia
- Bosnia and Herzegovina
- Brazil
- Bulgaria
- Canada
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- Cyprus
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