

Believe it when you see it

STRATA[®]X PRO

A Rapid Solid Phase Extraction Solution

- **New Polymeric Sorbent with Matrix Removal Technology**
- Reduce Protocol Time by at Least 40 % with 3-Step and 2-Step SPE
- High Recoveries Without Conditioning or Equilibration



Revision: 0

PHEN-RUO-00088

Архангельск (8182)63-90-72
Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89

Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81




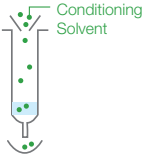


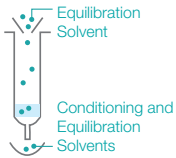


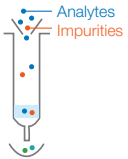
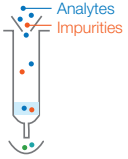
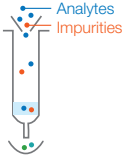



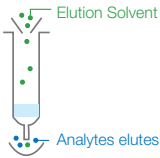
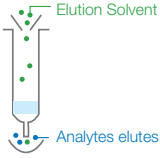

Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16

Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13

Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

New Polymeric Sorbent

Strata-X PRO offers improved and rugged polymeric sorbent performance combined with matrix removal technology for a revolutionary solution. With a faster SPE method, it results in at least 40% reduction in time on your SPE protocol. Less steps with no conditioning or equilibration creates a fast SPE method without losing out on the importance of SPE: cleaning up your samples.



Traditional SPE	STRATA[®]X PRO	STRATA[®]X PRO
		
<p>1 CONDITION</p> 		
<p>2 EQUILIBRATE</p> 	<p style="text-align: center;">NO CONDITION OR EQUILIBRATION STEPS!</p> 	
<p>3 LOAD SAMPLE</p> 	<p>1 LOAD SAMPLE</p> 	<p>1 LOAD SAMPLE</p> 
<p>4 WASH IMPURITIES</p> 	<p>2 WASH IMPURITIES</p> 	
<p>5 ELUTE ANALYTES</p> 	<p>3 ELUTE ANALYTES</p> 	<p>2 RINSE</p> 

Reduce method time by at least 40% with no decrease in recovery or compromising cleanliness of injections!

Faster and Quicker Methods

Strata®-X PRO also improves on traditional SPE by implementing straightforward recommended methods that will work with most extractions, and optimization is only optional. This helps to save even more time in the lab and get you back to the things you really want to be doing. Like asking yourself, is a narwhal real? Yes, and now so is Strata-X PRO.

Sorbent Properties

SPE Mechanism	Analyte Functional Group	Sorbent Functional Group
Reversed Phase	R- hydrocarbon  aromatic	R- hydrocarbon  aromatic

So unreal it's real.



Load
500 µL Pre-treated sample/buffer* (1:1)
Apply 2-5" Hg vacuum until liquid is no longer visible above top frit

Wash
600 µL 5 % Methanol in Water

Elute
600 µL 0.1 % Formic acid in Acetonitrile/Methanol (90:10)
Apply 2-5" Hg vacuum for 1 minute



Load
1 mL Pre-treated sample/0.1 % Formic acid in Acetonitrile (1:4)
Apply 5" Hg vacuum until all tubes or wells have cleared

Elute
75 µL Water/0.1 % Formic acid in Acetonitrile (1:4)
Apply 5" Hg vacuum until all tubes or wells have cleared

*Select a buffer that maximizes the hydrophobicity of the analytes. For example, if an analyte is basic, dilute with a base.

Methods are written for 30 mg/1 mL tube; adjust based on sorbent size.

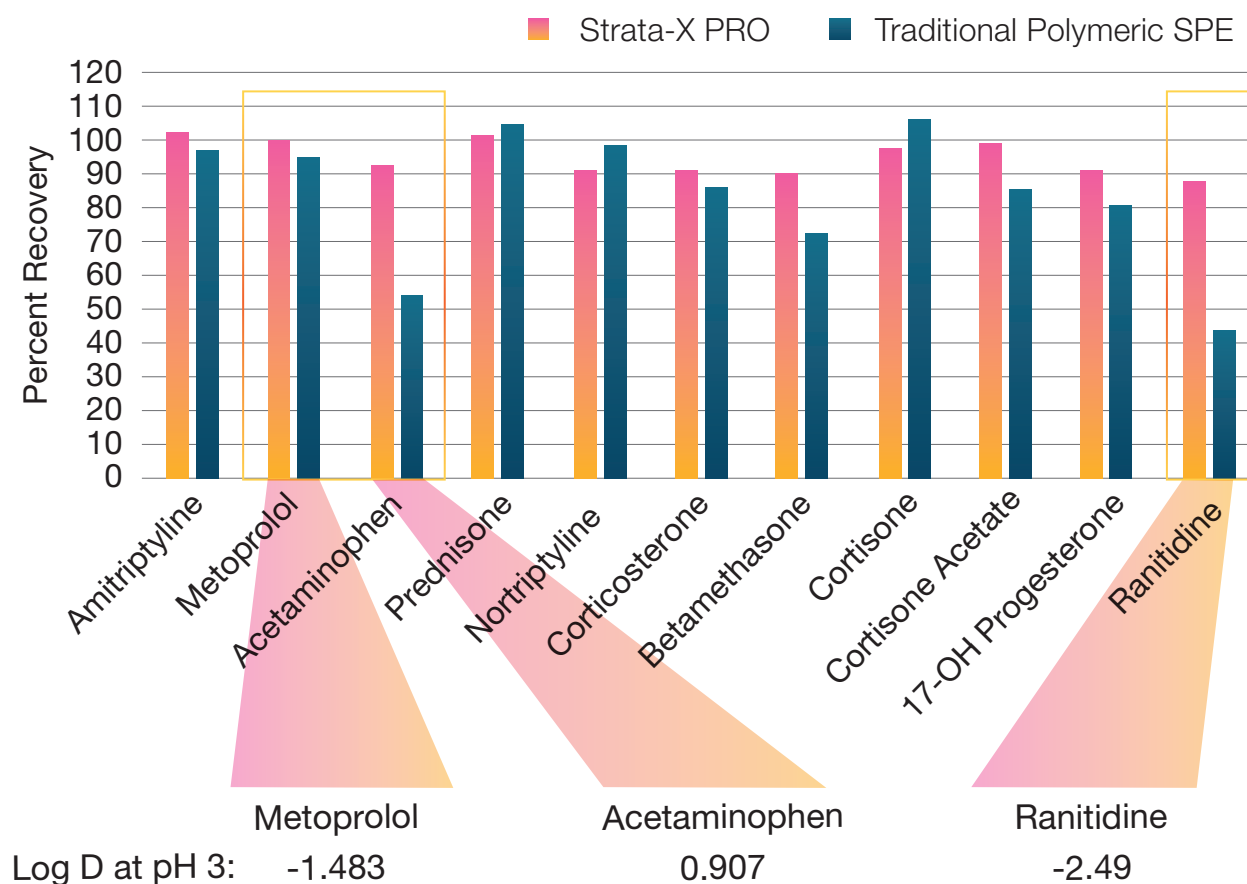
Cleaner Extractions

With a brand new polymeric sorbent and less interferences from the matrix to ruin results and cause issues with your LC column or mass spec, Strata-X PRO works to eliminate phospholipids and harmful particulates in the sample while targeting analytes. For a **panel of acids, neutrals, and bases from plasma**, Strata-X PRO provides high recoveries, especially for the polar analytes, and less matrix effects that could result in ion suppression or enhancement when compared to traditional polymeric SPE.

SPE Protocol

- 96-Well Plate:** Strata-X PRO, 30 mg/well
- Part No.:** 8E-S536-TGA
- Load:** 400 μ L Plasma/0.1 % Formic acid in Water (1:1)
- Wash:** 1 mL 5 % Methanol in Water
- Dry:** 1 minute at 5" Hg
- Elute:** 1 mL 0.1 % Formic acid in Acetonitrile/Methanol (90/10)
- Dry Down:** 1 minute at 5" Hg
- Reconstitute:** 200 μ L 5 % Methanol in Water

Recovery from Human Plasma



For extremely polar analytes, Strata-X PRO provides higher recoveries!

Cleaner Extractions *(cont'd)*

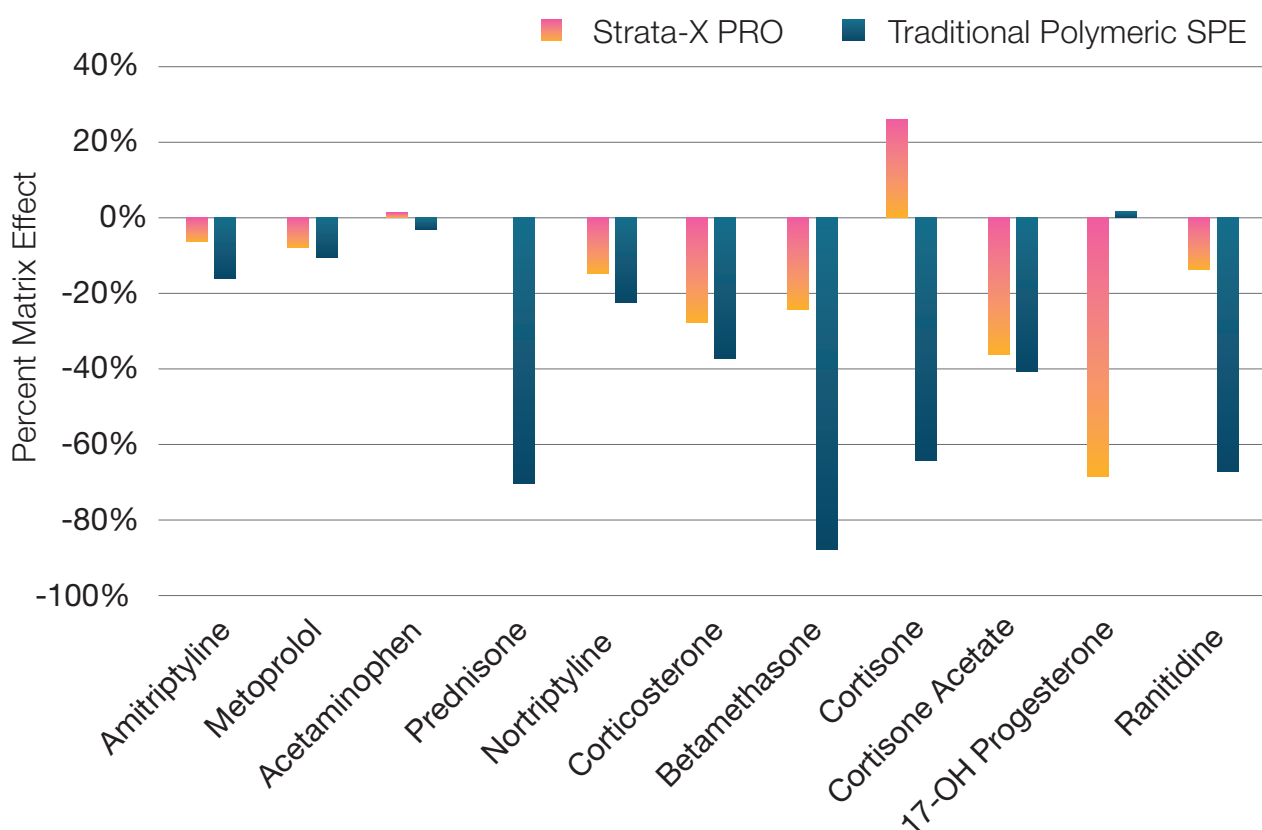
Matrix components, especially phospholipids, will have a negative impact on overall LC analyses and can even degrade system components over time. It's important to use solutions such as Strata-X PRO to ensure these interferences are removed!

% RSD of Recovery

Analyte Name	Strata-X PRO	Traditional Polymeric SPE
Amitriptyline	3.80	4.68
Metoprolol	4.70	4.17
Acetaminophen	4.05	6.87
Prednisone	6.54	14.01
Nortriptyline	6.63	5.65
Corticosterone	10.78	18.70
Betamethasone	18.52	34.64
Cortisone	4.95	11.18
Cortisone Acetate	9.42	13.92
17-OH Progesterone	12.52	9.21
Ranitidine	8.50	16.10

Consistently high recoveries, with less variation between samples and less matrix effects using Strata-X PRO.

Matrix Effects



Increased Sensitivity

Due to matrix removal technology, Strata-X PRO shows increased sensitivity with increased phospholipid removal when compared to traditional SPE. Strata-X PRO excels with providing an enhanced SPE solution and an increase in sensitivity by reducing ion suppression, another reason why you just have to see it to believe it.

Strata-X PRO

- Cartridge:** Strata-X PRO, 30 mg/1 mL
- Part No.:** 8B-S536-TAK
- Load:** 600 µL Plasma/0.1 % Formic acid in Water (1:1)
- Wash:** 600 µL 30 % Methanol in Water
- Elute:** 600 µL 0.1 % Formic acid in Acetonitrile/Methanol (90:10)

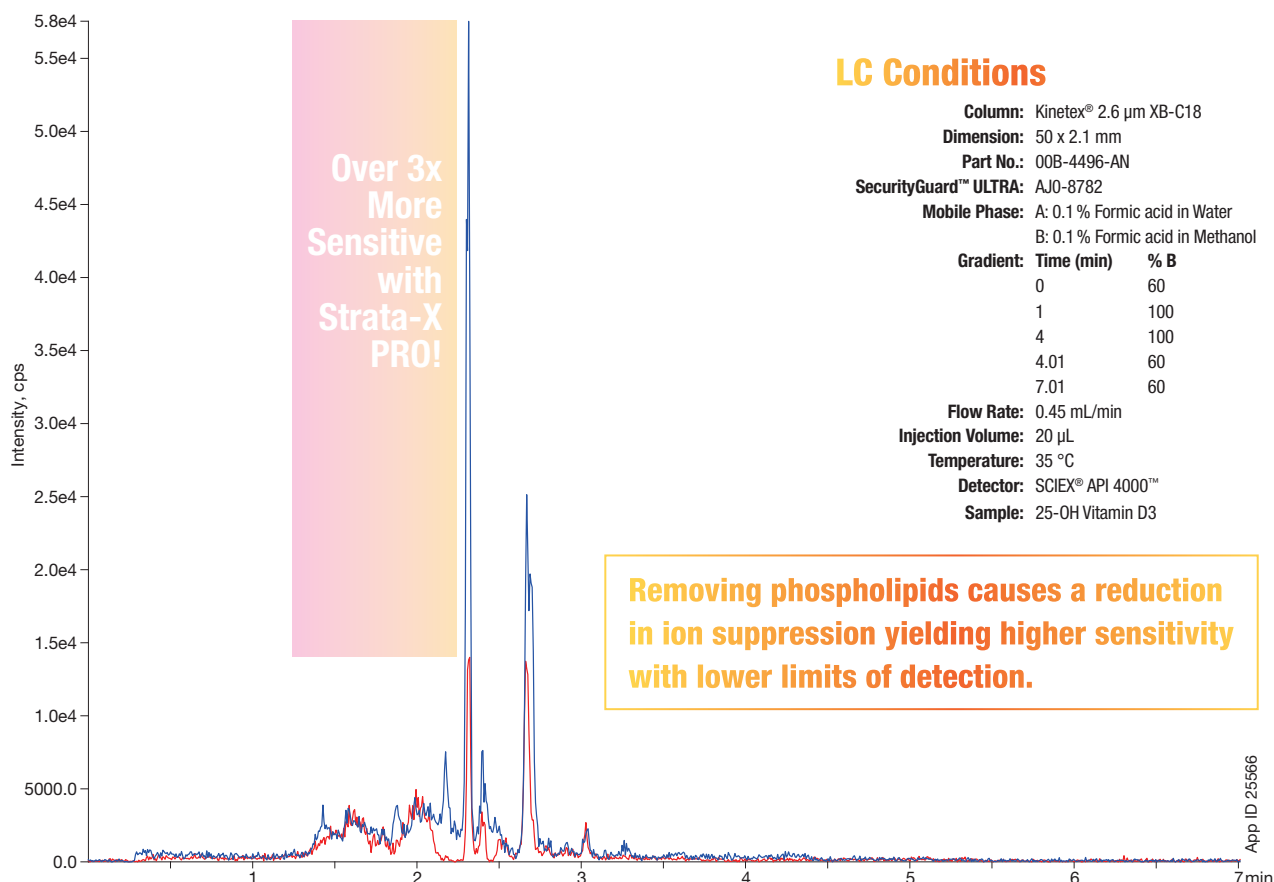


Polymeric SPE

- Condition:** 600 µL Methanol ①
- Equilibrate:** 600 µL Water ②
- Load:** 600 µL Plasma/0.1 % Formic acid in Water (1:1)
- Wash:** 600 µL 30 % Methanol in Water
- Elute:** 600 µL 0.1 % Formic acid in Acetonitrile/Methanol (90:10)

2 more steps!

Comparison of Sensitivity Between Polymeric SPE and Strata-X PRO for 25-OH Vitamin D3



LC Conditions

- Column:** Kinetex[®] 2.6 µm XB-C18
- Dimension:** 50 x 2.1 mm
- Part No.:** 00B-4496-AN
- SecurityGuard™ ULTRA:** AJ0-8782
- Mobile Phase:** A: 0.1 % Formic acid in Water
B: 0.1 % Formic acid in Methanol
- Gradient:**

Time (min)	% B
0	60
1	100
4	100
4.01	60
7.01	60
- Flow Rate:** 0.45 mL/min
- Injection Volume:** 20 µL
- Temperature:** 35 °C
- Detector:** SCIEX[®] API 4000™
- Sample:** 25-OH Vitamin D3

Better Response

So unreal
it's real

In only a 2-step SPE method, Strata[®]-X PRO shows **high removal of pigments** that's comparable with the step laden QuEChERS technique that's commonly used to clean-up food and environmental samples. QuEChERS tends to require many steps within the extraction and clean-up portions. In addition, Strata-X PRO also shows improvement to the graphitized carbon black (GCB) QuEChERS for the **extraction of planar pesticides**.

SPE Protocol

Cartridge: Strata-X PRO, 30 mg/1 mL

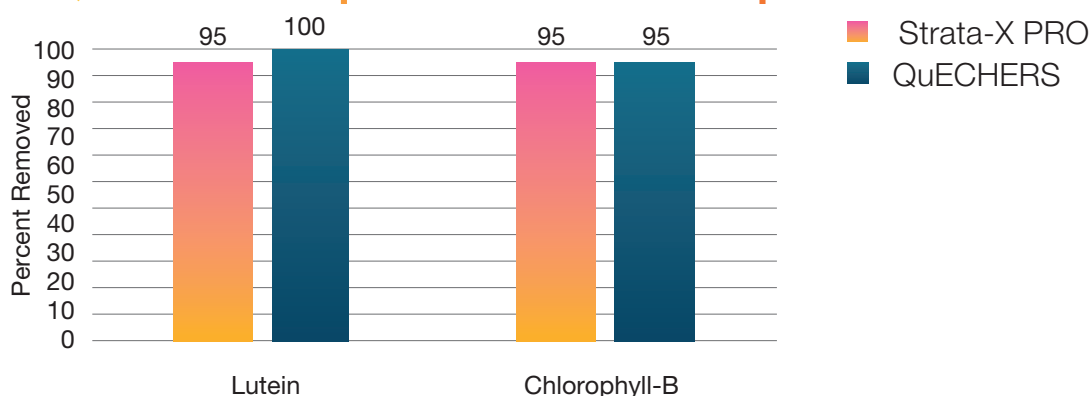
Part No.: 8B-S536-TAK

Load: 300 µL Acetonitrile/Acetic acid (99:1) was spiked with 450 µg/mL of lutein and 180 µg/mL of chlorophyll B

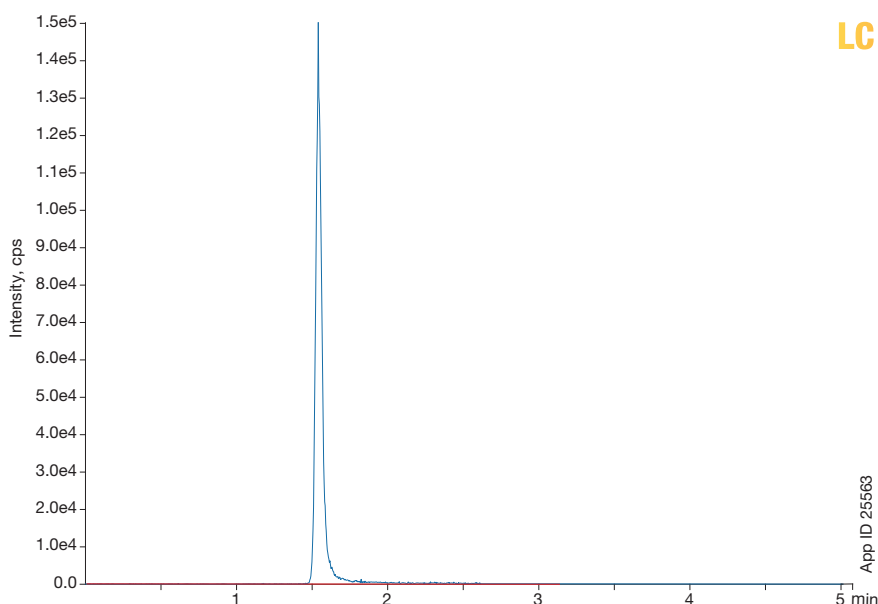
Wash: 25 µL Acetonitrile/Acetic acid (99:1)

**In only 2-Steps
pigments are removed!**

Pigment Removal Comparison between the QuEChERS Technique and Strata-X PRO 2-Step SPE



Thiabendazole on Strata-X PRO vs GCB



LC Conditions

Column: Luna[®] Omega 3 µm PS C18
Dimension: 50 x 2.1 mm
Part No.: 00B-4758-AN
SecurityGuard™: AJ0-7605
Mobile Phase: A: 0.1 % Formic acid in Water
 B: 0.1 % Formic acid in Methanol
Gradient:

Time (min)	% B
0	5
3	95
3.01	5
5.01	5

Flow Rate: 0.5 mL/min
Injection Volume: 5 µL
Temperature: 40 °C
Detector: SCIEX[®] API 4000™

App ID 25563

SPE Method	Strata-X PRO	GCB
Recovery of Thiabendazole	100 %	0.4 %

High Recoveries

Strata-X PRO shows high recoveries for the extraction of **peptides from plasma** when compared to two different types of ion-exchange polymeric sorbents: WCX and SAX. This is accomplished with a shorter, more effective protocol. This method improves upon the Strata-X PRO standard method to use TFA to increase recovery of peptides and show a better comparison for the ion-exchange sorbents.

SPE Protocol

Strata-X PRO

Microelution 96-Well Plate: Strata-X PRO, 2 mg/well
Part No.: 8M-S536-4GA
Load: 400 µL Plasma/4 % Phosphoric acid in Water (1:1)
Wash: 200 µL Water
Elute: 2x 25 µL of TFA/Acetonitrile/Water (1:74:25)

50% reduction in the protocol time!

Polymeric WCX and SAX 96-Well Microelution Plates

Condition: 200 µL Methanol ①
Equilibrate: 200 µL Water ②
Load: 400 µL Plasma/4 % Phosphoric acid in Water (1:1)
Wash 1: 200 µL 5 % Ammonium hydroxide in Water
Wash 2: 200 µL 20 % Acetonitrile in Water ③
Elute: 2x 25 µL of TFA/Acetonitrile/Water (1:74:25)

3 more steps

LC Conditions

Column: Luna[®] Omega 3 µm PS C18
Dimension: 50 x 2.1 mm
Part No.: 00B-4758-AN
SecurityGuard™: AJ0-7605
Mobile Phase: A: 0.1 % Formic acid in Water
 B: 0.1 % Formic acid in Methanol

Gradient	Time (min)	% B
	0	5
	3	95
	4	95
	4.01	5
	6	5

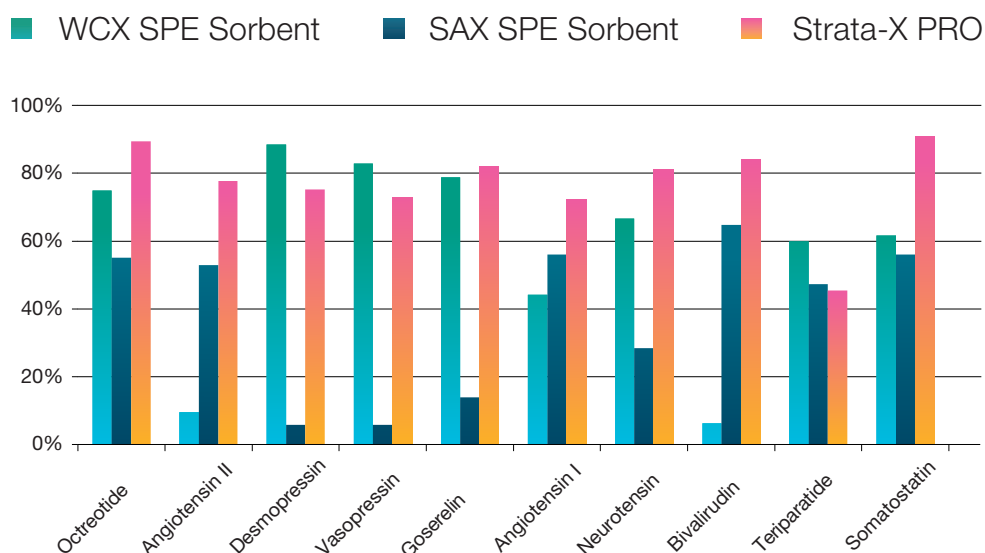
Flow Rate: 0.6 mL/min
Injection Volume: 5 µL
Temperature: 40 °C
Detector: SCIEX[®] API 4000™



So good you'll think it's made up

High Recoveries (cont'd)

Recovery of Peptides from Plasma



% Recovery and % CVs of Peptides Using 3 Types of SPE Sorbent

Peak No.	Analyte Name	Strata-X PRO		Polymeric WCX		Polymeric SAX	
		% Recovery	% CV	% Recovery	% CV	% Recovery	% CV
1	Octreotide	89.5	9.6	75	5.6	55	6.2
2	Angiotensin II	77.8	13.4	10	12.6	53	2.3
3	Desmopressin	75.2	10.8	89	6.2	6	26.1
4	Vasopressin	72.9	10.2	83	6.5	6	15.6
5	Goserelin	82.1	7.8	79	5.6	14	11.9
6	Angiotensin I	72.2	11.2	44	9.5	56	4.3
7	Neurotensin	80.9	11.7	67	5.7	28	12.7
8	Bivalirudin	84.0	13.2	6	30.2	65	3.3
9	Teriparatide	45.5	16.0	60	17.9	47	3.0
10	Somatostatin	90.9	25.0	62	6.5	56	6.4

Ultra-Quick 2-Step Clean-Up

When working with milk as a matrix, phospholipids from milk fat must be removed to reduce any ion suppression that could occur during LC-MS/MS analysis **for veterinary drugs**. To overcome these obstacles, Strata-X PRO, offers an even faster, 2-step sample preparation method to remove phospholipids prior to MS analysis. This shows an improved solution over traditional protein precipitation methods and other types of SPE, due to greater clean-up efficiency while maintaining a rapid and fast workflow time.

SPE Protocol

Pre-treatment

To 1 mL of milk add 3 mL of 0.2% Formic acid in Acetonitrile/Methanol (90:10) and mix or vortex for 15-20 seconds. Centrifuge for 5 minutes at 10,000 RPM and collect supernatant.

Cartridge: Strata-X PRO, 60 mg/ 3 mL

Part No.: 8B-S536-UBJ

Load: Pass the pre-treated sample through the SPE cartridge and collect

Dry: Evaporate the extract to dryness under a gentle stream of nitrogen at room temperature

Reconstitute: The dried sample in 1 mL of initial mobile phase (0.1% Formic acid in Water/0.1% Formic acid in Methanol (95:5)) spiked with deuterated internal standard.

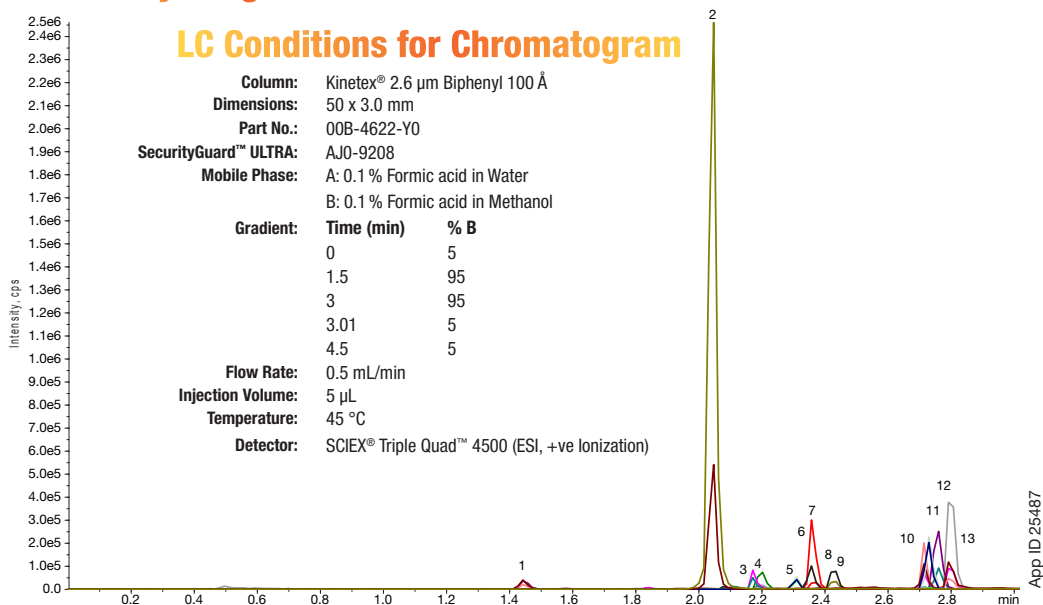
% Recovery and % CVs for Veterinary Drugs from Milk Using Strata-X PRO

Peak No.	Analyte Name	Retention Time (min)	% Recovery	% CV	Q1	Q3
1	Sulfaguanidine	1.48	46	5	215	156.1
2	Lincomycin	2.07	92	5	407.1	126
3	Sulfadiazine	2.19	38	7	251	156
4	Cephapirin	2.22	76	7	424	292.1
5	Sulfamerazine	2.32	44	5	265.1	155.8
6	Sulfamethoxazole	2.36	53	13	254.1	156.1
7	Sulfamethizole	2.36	45	8	271.1	92
8	Cefalexin	2.39	66	4	348.2	174.2
9	Sulfamethazine	2.44	59	13	279.1	186.1
10	Cortisone	2.72	83	8	361.2	163.2
11	Cortisol	2.73	95	6	363.4	120.9
12	β -methasone	2.76	97	3	393.4	355.2
13	Prednisolone	2.81	92	10	361.2	147.2

So good you'll think it's made up.

Ultra-Quick 2-Step Clean-Up *(cont'd)*

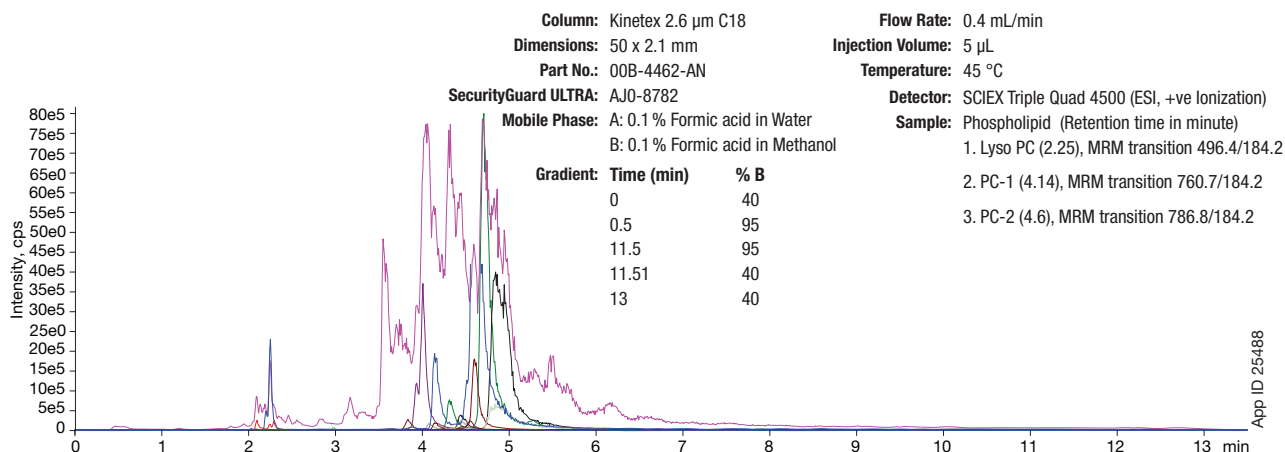
Veterinary Drugs from Milk



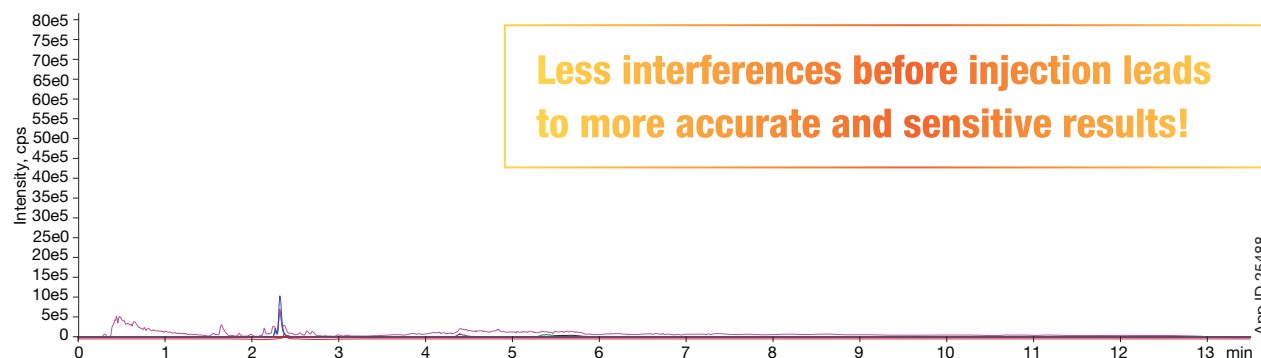
Comparative Phospholipid Trace of Clean-Up Methods

Phospholipid Trace After Protein Precipitation

LC Conditions for Phospholipid Comparison



Phospholipid Trace After Strata®-X PRO Extraction



Simplified Methods

- **Barbiturates**
- **Analgesics**
- **Opiates**
- **Benzodiazepines**

Using a generic method to **extract multiple panels** is another way Strata-X PRO excels. While the different panels of analytes are highlighted to show the ease of method development, changing the wash solvent could further optimize the method and provide even cleaner results. Using a stronger percent of organic in the wash will provide even cleaner results.

SPE Protocol

96-Well Plates: Strata-X PRO, 30 mg/well

Part No.: 8E-S536-TGA

Load: 400 µL Human serum/1 % Formic acid in Water (1:1)

Wash: 600 µL 5 % Methanol in Water

Dry: 2-3 minutes @ 5" Hg

Elute: 600 µL 0.1 % Formic acid in Acetonitrile/Methanol (90:10)

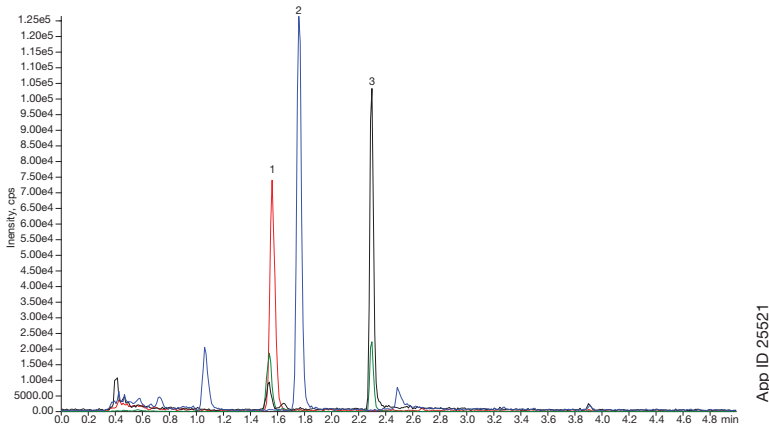
Dry Down: Under a gentle stream of Nitrogen at 40 °C to dryness

Reconstitute: 200 µL 0.1 % Formic acid in water/0.1 % Formic acid in Methanol

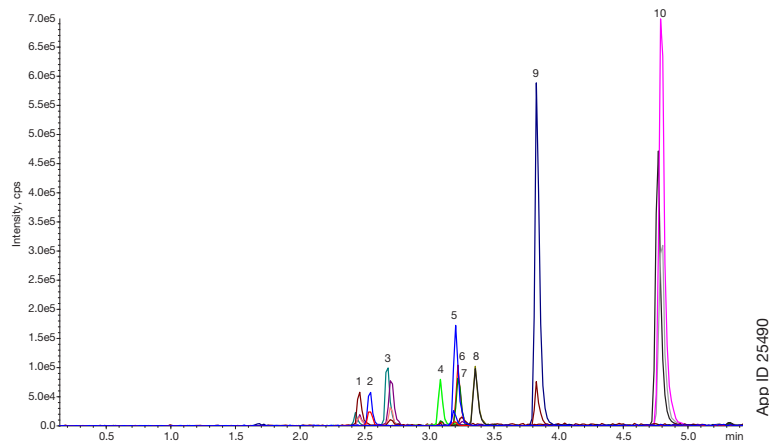
Analyte	RT (min)	% Recovery	% CV
1. Phenobarbital	1.56	91	3.4
2. Butalbital	1.76	103	2.3
3. Secobarbital	2.3	98	2.1
1. Morphine	2.43	68	3.8
2. Oxymorphone	2.54	80	8.6
3. Hydromorphone	2.67	75	10.5
4. Naloxone	3.09	83	3.9
5. 6-MAM	3.2	77	7
6. Codeine	3.2	70	9
7. Oxycodone	3.36	64	0.6
8. Hydrocodone	3.41	73	3.2
9. Norfentanyl	3.83	57	3.2
10. Fentanyl	4.78	79	3.9
1. Meprobamate	3.73	70	9.2
2. Tramadol	3.9	71	5.1
3. Carisoprodol	4.3	66	9.6
4. Norbuprenorphine	4.3	70	8.4
5. Buprenorphine	4.7	60	1.6
1. Lorazepam	4.74	61	19.5
2. Oxazepam	4.86	45	14.1
3. α-Hydroxy alprazolam	5	60	14.2
4. Nordiazepam	5.05	63	13
5. Temazepam	5.19	66	6.5
6. Alprazolam	5.26	50	5
7. Diazepam	5.44	68	8

Simplified Methods *(cont'd)*

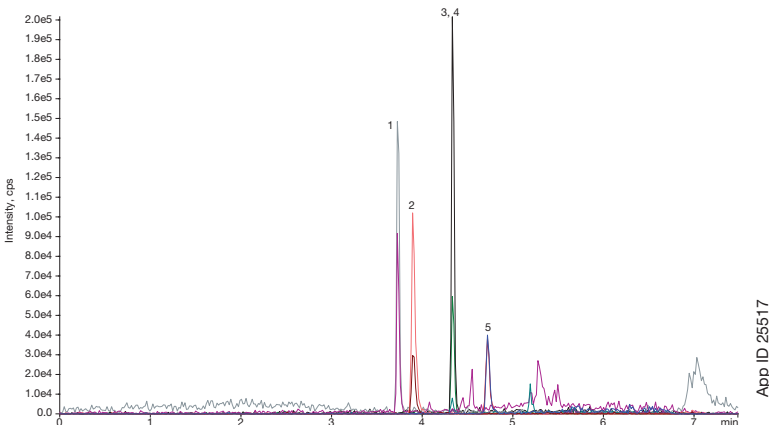
Strata-X PRO displays high sensitivity with less matrix effects for multiple panels of analytes with diverse properties and reduces phospholipids in the sample. In a comparison with a traditional protein precipitation method to clean up serum, Strata-X PRO removes the phospholipids to provide a cleaner background for more sensitive results and less maintenance to the MS.



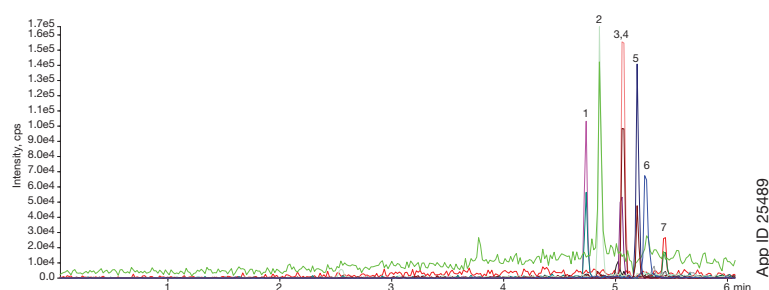
Barbiturates



Opiates



Analgesics

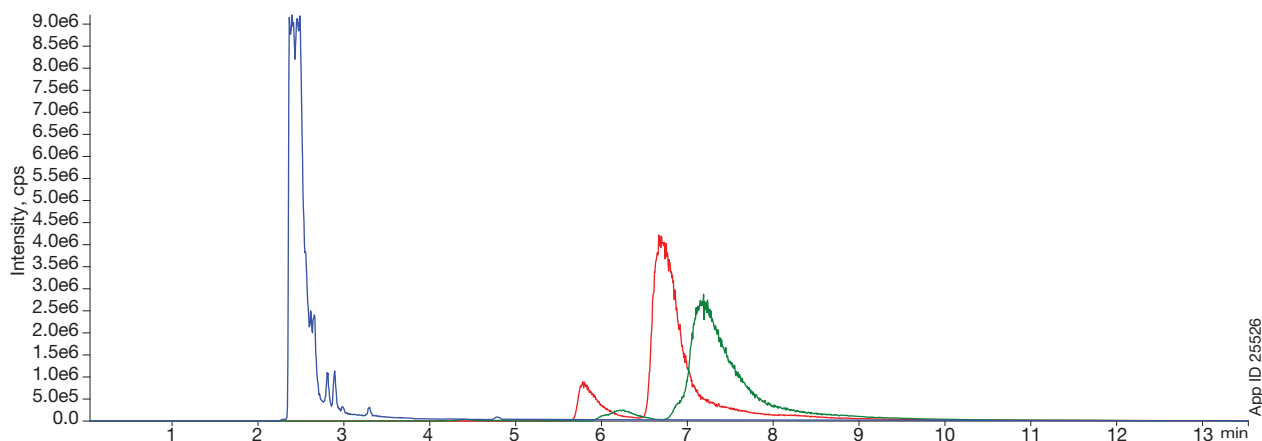


Benzodiazepines

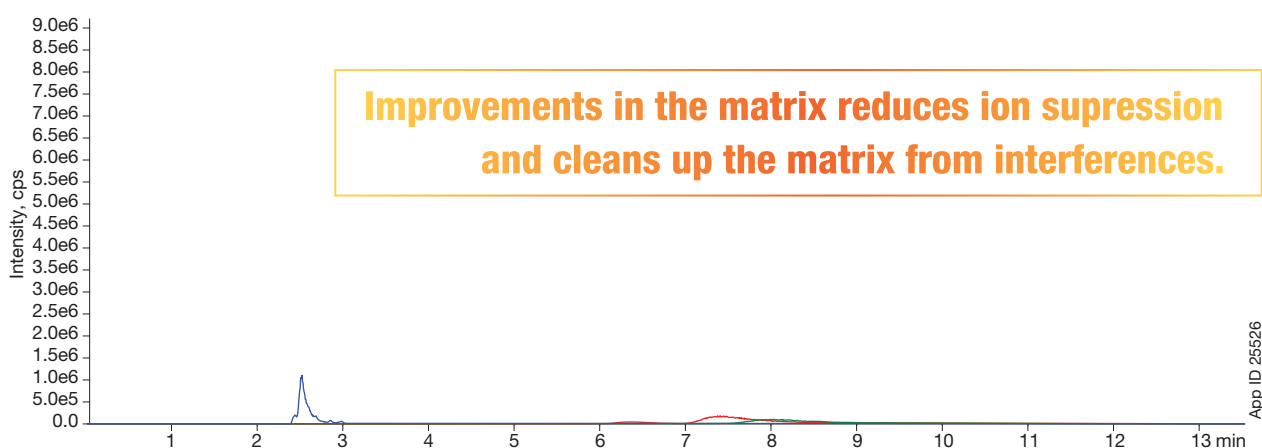
Simplified Methods *(cont'd)*

Comparative Phospholipid Trace of Clean-up Methods

Phospholipid Trace of Human Serum Sample After Protein Precipitation



Phospholipid Trace of Human Serum Sample After Strata-X PRO Extraction






LC Conditions for Phospholipid Comparison

- Column:** Kinetex[®] 2.6 μm C18
- Dimensions:** 50 x 2.1 mm
- Part No.:** 00B-4462-AN
- SecurityGuard™ ULTRA:** AJO-8782
- Mobile Phase:** A: 0.1 % Formic acid in Water
B: 0.1 % Formic acid in Methanol
- Gradient:**

Time (min)	% B
0	40
0.5	95
15.5	95
15.51	40
17	40
- Flow Rate:** 0.4 mL/min
- Injection Volume:** 5 μL
- Temperature:** 30 °C
- Detector:** SCIEX[®] Triple Quad™ 4500
- Sample:** Phospholipid (Retention time in minute)
 1. Lyso PC (2.4), MRM transition 496.4/184.2
 2. PC-1 (6.7), MRM transition 760.7/184.2
 3. PC-2 (7.2), MRM transition 786.8/184.2

Ordering Information

Strata®-X PRO SPE

Format	Sorbent Mass	Part Number	Unit
Tube			
	10 mg	8B-S536-AAK	1 mL (100/box)
	30 mg	8B-S536-TAK	1 mL (100/box)
	30 mg	8B-S536-TBJ	3 mL (50/box)
	60 mg	8B-S536-UBJ	3 mL (50/box)
	200 mg	8B-S536-FBJ	3 mL (50/box)
	100 mg	8B-S536-ECH	6 mL (30/box)
	200 mg	8B-S536-FCH	6 mL (30/box)
	500 mg	8B-S536-HCH	6 mL (30/box)
96-Well Plate			
	10 mg/well	8E-S536-AGA	ea
	30 mg/well	8E-S536-TGA	ea
	60 mg/well	8E-S536-UGA	ea
96-Well Microelution Plate			
	2 mg/well	8M-S536-4GA	ea

Round Well Collection Plates (polypropylene)

Part No.	Well Bottom	Well Volume	Unit	Suggested Sealing Mats
AH0-7279	Round	1 mL	50/pk	AH0-8631 AH0-8632
AH0-8636	Round	2 mL	50/pk	AH0-8633 AH0-8634

Square Well Collection Plates (polypropylene)

Part No.	Well Bottom	Well Volume	Unit	Suggested Sealing Mats
AH0-7192	Conical	350 µL	50/pk	AH0-8597 AH0-8598 AH0-8199 AH0-7195
AH0-7193	Conical	1 mL	50/pk	AH0-8597 AH0-8598 AH0-8199 AH0-7195
AH0-7194	Conical	2 mL	50/pk	AH0-8597 AH0-8598 AH0-8199 AH0-7195
AH0-8635	Round-Conical	2 mL	50/pk	AH0-8597 AH0-8598 AH0-8199 AH0-7195

Round Well Collection Plate (Low Bind)

Part No.	Well Bottom	Well Volume	Unit	Suggested Sealing Mats
AH1-7036	Conical	2 mL	120/pk	AH0-8633 AH0-8634

Round Well Sealing Mats

Part No.	Description	Material	Unit
AH0-8631	Pierceable, 7 mm diameter	Silicone	50/pk
AH0-8632	Pre-Slit, 7 mm diameter	Silicone	50/pk
AH0-8633	Pierceable, 8 mm diameter	Silicone	50/pk
AH0-8634	Pre-Slit, 8 mm diameter	Silicone	50/pk
AH0-7362	Sealing Tap Pad	—	10/pk

Square Well Sealing Mats

Part No.	Description	Material	Unit
AH0-8597	Pierceable	Silicone	50/pk
AH0-8598	Pre-Slit	Silicone	50/pk
AH0-8199	Pierceable	Santoprene™	100/pk
AH0-7195	Pierceable	Ethylene Vinyl Acetate (EVA)	50/pk
AH0-7362	Sealing Tap Pad	—	10/pk

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Астрахань (8512)99-46-04
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