

**roQ**  
QuEChERS Kits

# A Quicker and Easier

Sample Preparation Choice

FOOD AND ENVIRONMENTAL ANALYSIS



**phenomenex**  
...breaking with tradition<sup>SM</sup>

1

## What is QuEChERS?

QuEChERS is a Sample Preparation Technique for:

- Complex sample matrices
- Wide range of compounds (typically pesticides)
- Food and environmental samples

2

## What does it stand for?

“Quick Easy Cheap Effective Rugged Safe” (QuEChERS)

3

## How does it help me?

QuEChERS is a simplified 2 step sample preparation process that:

- Significantly reduces sample preparation time
- Is simple, inexpensive, and easy to use
- And is effective and rugged at extracting and cleaning samples for a wide range of compounds

For more details visit  
[www.phenomenex.com/roQ](http://www.phenomenex.com/roQ)

guarantee

If roQ QuEChERS Kits do not perform as well or better than your current QuEChERS product, return the product with comparative data within 45 days for a FULL REFUND.

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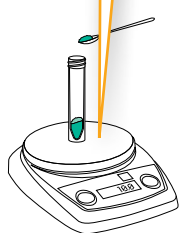
# How Does roQ™ QuEChERS Work?

## STEP 1

### Extraction\*



Blend fruits or vegetables to be analyzed.



Easily Weigh Out Samples

Weigh blended sample.

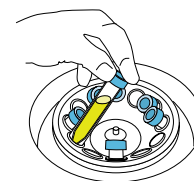


No Mess Salt Packets

Add salts and acetonitrile.



Shake tube for 1 minute.



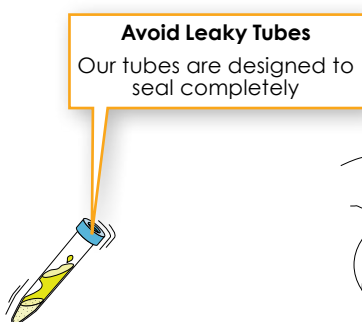
Centrifuge tube for 5 minutes.

## STEP 2

### Clean Up/dSPE\*\*



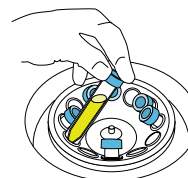
Add supernatant from extraction procedure into a roQ dSPE tube.



Avoid Leaky Tubes

Our tubes are designed to seal completely

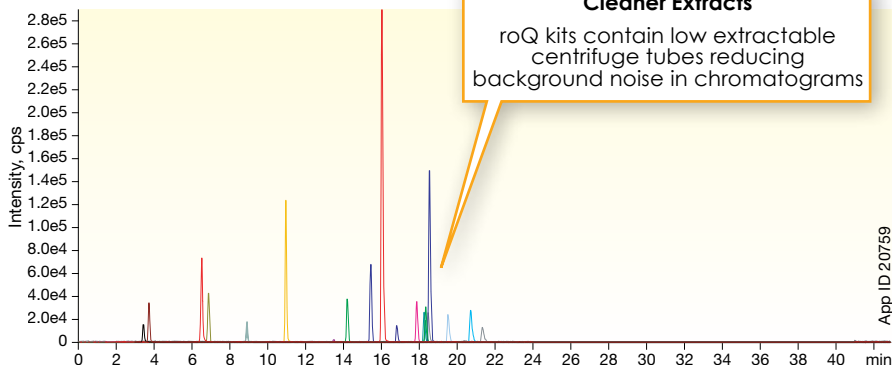
Shake dSPE tube for 30 seconds.



Centrifuge dSPE tube for 5 minutes.

## STEP 3

### Analysis by GC or HPLC



App ID 20759



### Salts and Sorbents used in roQ Kits

#### Extraction:

- Magnesium Sulfate ( $MgSO_4$ )
- Sodium Acetate ( $NaOAc$ )
- Sodium Chloride ( $NaCl$ )
- Sodium Citrate Tribasic Dihydrate (SCTD)
- Sodium Citrate Dibasic Sesquihydrate (SCDS)

#### Clean Up/dSPE:

- Magnesium Sulfate ( $MgSO_4$ )
- Primary/Secondary Amine (PSA)
- Endcapped C18 Sorbent (C18E)
- Graphitized Carbon Black (GCB)

# Choose Your Kit



## STEP 1

### Extraction\*

#### AOAC

**AOAC 2007.01 Method**  
6.0 g MgSO<sub>4</sub>, 1.5 g NaOAc  
**KSO-8911**

#### ORIGINAL






**Non-Buffered Method**  
4.0 g MgSO<sub>4</sub>, 1.0 g NaCl  
**KSO-8910**  
6.0 g MgSO<sub>4</sub>, 1.5 g NaCl  
**KSO-8912**

#### EN

**EN 15662 Method**  
4.0 g MgSO<sub>4</sub>, 1.0 g NaCl,  
1.0 g SCTD, 0.5 g SCDS  
**KSO-8909**

## STEP 2

### Clean Up/dSPE\*\*

	AOAC 2007.01		EN 15662	
	1 mL	8 mL	1 mL	6 mL
<b>General</b> 	150 mg MgSO <sub>4</sub> 50 mg PSA <b>KSO-8920</b>	1200 mg MgSO <sub>4</sub> 400 mg PSA <b>KSO-8928</b>	150 mg MgSO <sub>4</sub> 25 mg PSA <b>KSO-8916</b>	900 mg MgSO <sub>4</sub> 150 mg PSA <b>KSO-8924</b>
<b>Fats and Waxes</b> 	150 mg MgSO <sub>4</sub> 50 mg PSA 50 mg C18E <b>KSO-8918</b>	1200 mg MgSO <sub>4</sub> 400 mg PSA 400 mg C18E <b>KSO-8926</b>	150 mg MgSO <sub>4</sub> 25 mg PSA 25 mg C18E <b>KSO-8913</b>	900 mg MgSO <sub>4</sub> 150 mg PSA 150 mg C18E <b>KSO-8921</b>
<b>Pigmented</b> 	150 mg MgSO <sub>4</sub> 50 mg PSA 50 mg GCB <b>KSO-8919</b>	1200 mg MgSO <sub>4</sub> 400 mg PSA 400 mg GCB <b>KSO-8927</b>	150 mg MgSO <sub>4</sub> 25 mg PSA 2.5 mg GCB <b>KSO-8914</b>	900 mg MgSO <sub>4</sub> 150 mg PSA 15 mg GCB <b>KSO-8922</b>
<b>Highly Pigmented</b> 	—	—	150 mg MgSO <sub>4</sub> 25 mg PSA 7.5 mg GCB <b>KSO-8915</b>	900 mg MgSO <sub>4</sub> 150 mg PSA 45 mg GCB <b>KSO-8923</b>
<b>Pigments and Fats</b> 	150 mg MgSO <sub>4</sub> 50 mg PSA 50 mg GCB 50 mg C18E <b>KSO-8917</b>	1200 mg MgSO <sub>4</sub> 400 mg PSA 400 mg GCB 400 mg C18E <b>KSO-8925</b>	—	—

#### GC



#### LC



\*All roQ Extraction kits contain fifty easy-pour salt packets and fifty 50 mL stand-alone centrifuge tubes.  
\*\*All roQ dSPE kits contain pre-weighed sorbents/salts inside 2 mL or 15 mL centrifuge tubes.

# Food Applications

## Multi-Residue Pesticides Screening: Fruits and Vegetables

Easily Prepare Samples with roQ QuEChERS Kits

STEP 1

### Extraction

EN 15662 Method

4.0 g MgSO<sub>4</sub>, 1.0 g NaCl,  
1.0 g SCTD, 0.5 g SCDS

**KSO-8909**

STEP 2

### Clean up/dSPE

EN 15662 Method

15 mL dSPE Kits  
900 mg MgSO<sub>4</sub>, 150 mg PSA

**KSO-8924**

**Column:** Synergi 2.5 µm Fusion-RP 100 Å

**Dimensions:** 50 x 2.0mm

**Part No.:** 00B-4423-B0

**SecurityGuard™:** AJ0-4286

**Mobile Phase:** A: Water/Methanol (90:10) +  
5mm Ammonium formate  
B: Methanol/Water (90:10) +  
5mm Ammonium formate

Gradient:	Time (min)	% B
	0	0
	1	0
	15	100
	18	100
	18.05	0
	20	0

**Flow Rate:** 400 µL/min

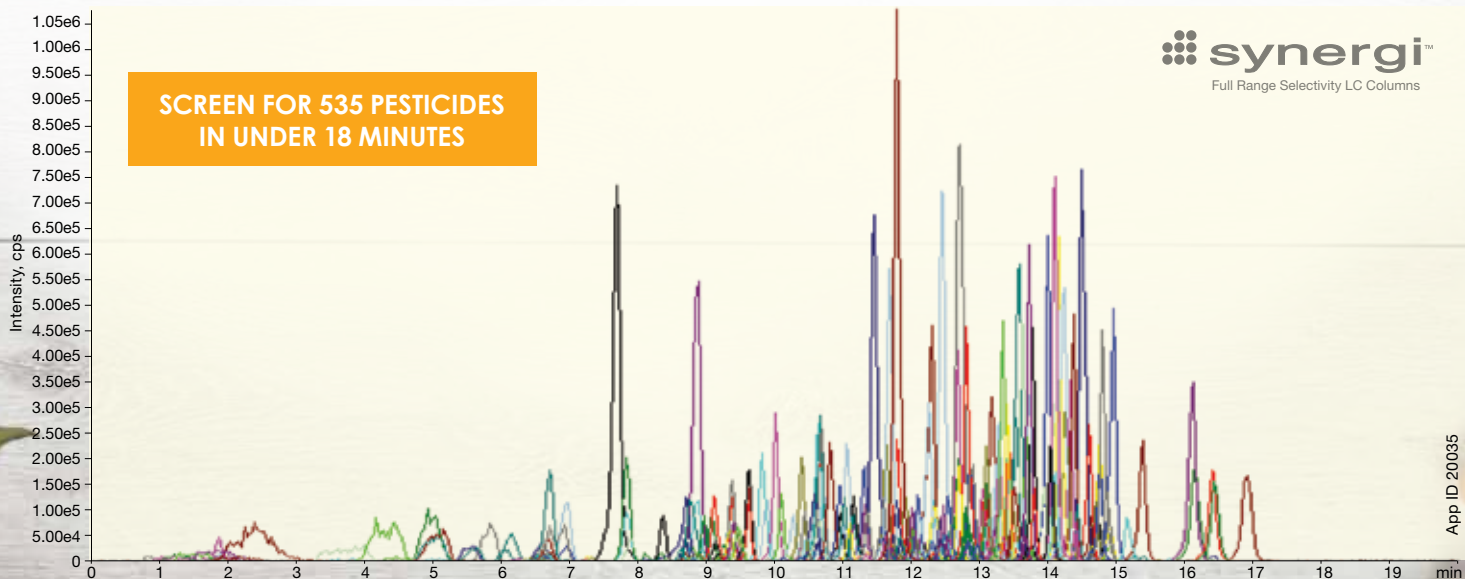
**Temperature:** 40 °C

**Detection:** Tandem Mass Spectrometer  
(MS/MS) (400 °C)

**Detector:** SCIEX API 3200™ System

**Sample:** Pesticide mix

### Fully Porous LC/MS/MS Option



# Food Applications

## STEP 1

### Extraction

#### EN 15662 Method

4.0 g MgSO<sub>4</sub>, 1.0 g NaCl,  
1.0 g SCTD, 0.5 g SCDS

**KSO-8909**

## STEP 2

### Clean up/dSPE

#### EN 15662 Method

15 mL dSPE Kits  
900 mg MgSO<sub>4</sub>, 150 mg PSA

**KSO-8924**

**Column:** Kinetex 5 µm Biphenyl 100 Å

**Dimensions:** 100 x 2.1 mm

**Part No.:** 00D-4627-AN

**Mobile Phase:** A: 5 mM Ammonium formate in Water

B: 5 mM Ammonium formate in Methanol

Gradient:	Time (min)	% B
	0.01	10
	1.00	10
	10.00	90
	15.00	90
	15.10	10
	20.00	10

**Flow Rate:** 0.5 mL/min

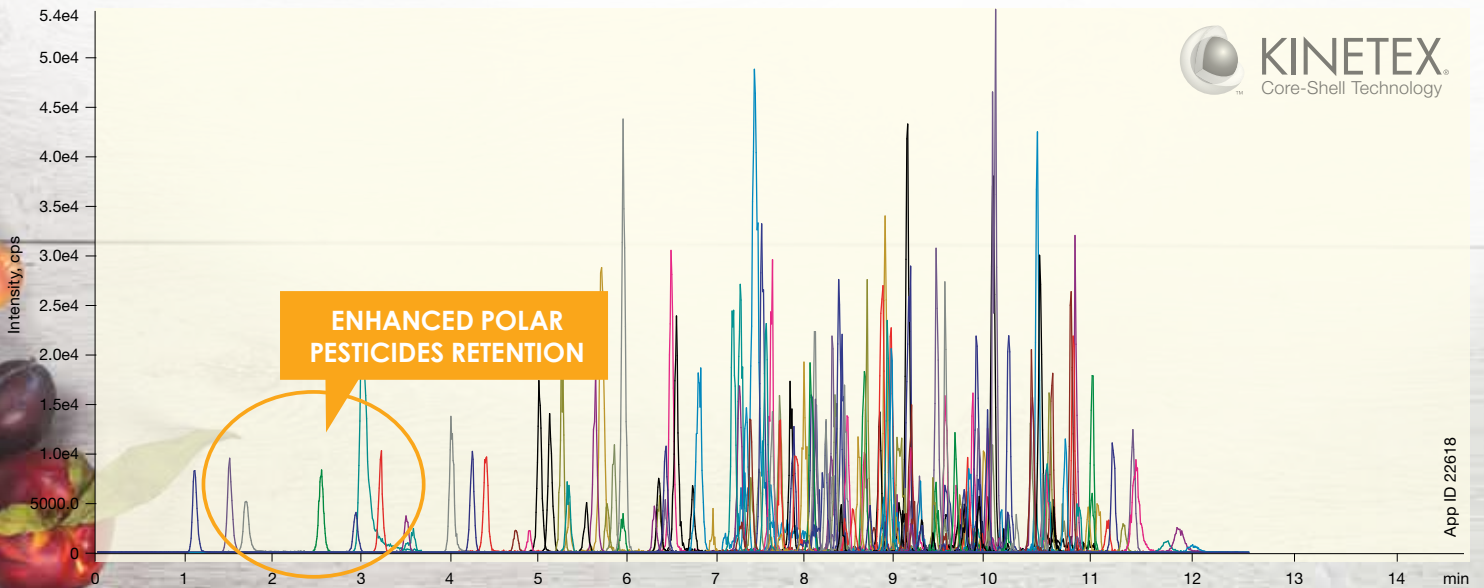
**Temperature:** 35 °C

**Detection:** Tandem Mass Spectrometer (MS/MS) (0 °C)

**Detector:** SCIEX 4500 QTRAP®

**Sample:** 175+ Pesticide mix

## Core-Shell LC/MS/MS Option



# Food Applications

## Mycotoxins Screening: Grains

Easily Prepare Samples with roQ QuEChERS Kits

STEP 1

### Extraction

#### EN 15662 Method

4.0 g MgSO<sub>4</sub>, 1.0 g NaCl,  
1.0 g SCTD, 0.5 g SCDS

**KSO-8909**

STEP 2

### Clean up/dSPE

#### EN 15662 Method

15 mL dSPE Kits  
900 mg MgSO<sub>4</sub>, 150 mg PSA

**KSO-8924**

**Column:** Kinetex 2.6 µm Biphenyl  
**Dimensions:** 50 x 2.1 mm  
**Part No.:** 00B-4622-AN  
**Mobile Phase:** A: 5 mM Ammonium acetate with 0.1% Acetic acid  
B: Methanol with 5 mM Ammonium acetate with 0.1% Acetic acid

Gradient:	Time (min)	% B
	0	2
	2	2
	5	80
	5.2	98
	8	98
	8.01	2
	11	2

**Flow Rate:** 0.45 mL/min

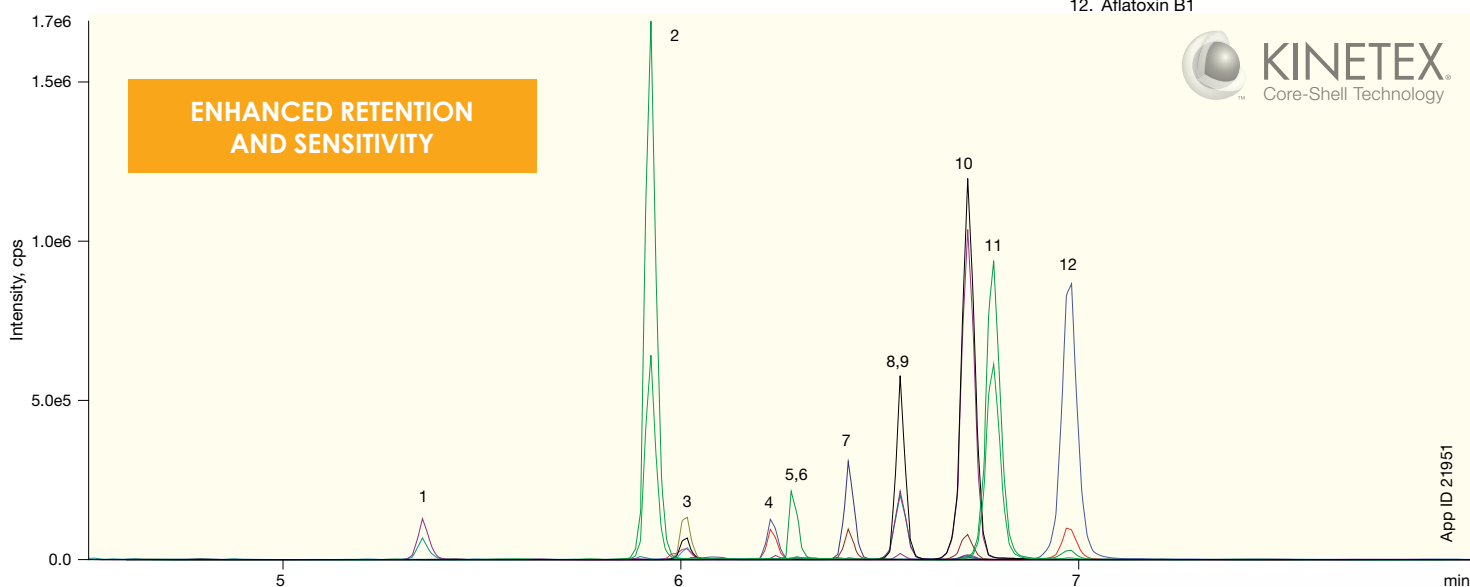
**Temperature:** Ambient

**Detection:** MS/MS (SCIEX API 4000™)

**Sample:**

1. 15-Acetyldeoxynivalenol
2. DAS
3. FB1
4. HT2 Toxin
5. FB2
6. T2 Toxin
7. Aflatoxin M1
8. Aflatoxin G2
9. Ochratoxin A
10. Aflatoxin G1
11. Aflatoxin B2
12. Aflatoxin B1

### Analytical Column: Kinetex Core-Shell 2.6 µm Biphenyl



**KINETEX**  
Core-Shell Technology





## Antibiotics Analysis: Meat and Animal Tissues

Easily Prepare Samples with roQ QuEChERS Kits

STEP 1

### Extraction

AOAC 2007.01 Method

6.0 g  $MgSO_4$ , 1.5 g NaOAc  
**KSO-8911**

STEP 2

### Clean up/dSPE

15 mL dSPE Kits

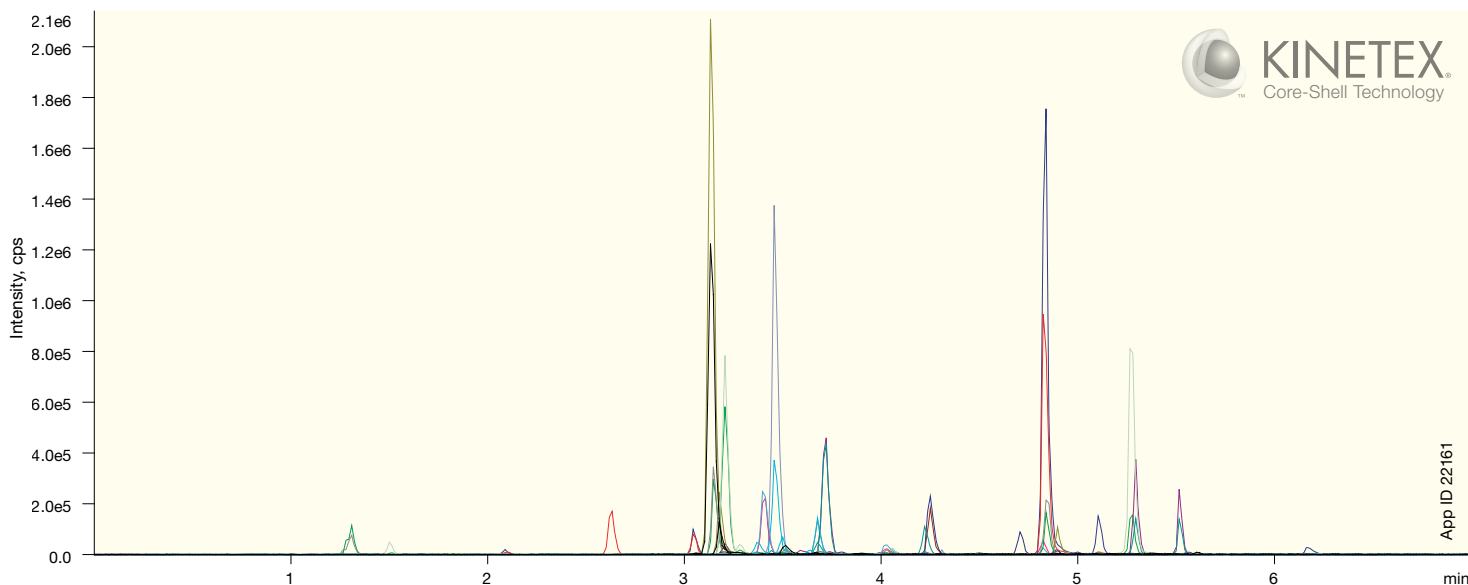
900 mg  $MgSO_4$ , 150 mg PSA,  
150 mg C18E  
**KSO-8921**

**Column:** Kinetex 2.6  $\mu m$  Biphenyl 100Å  
**Dimensions:** 50 x 2.1 mm  
**Part No.:** 00B-4622-AN  
**Mobile Phase:** A: Water with 0.1 % Formic Acid  
B: Methanol with 0.1 % Formic Acid  
**Gradient:**

Time (min)	% B
0	0
5	100
7	100

**Flow Rate:** 0.5 mL/min  
**Temperature:** Ambient  
**Detection:** Tandem Mass Spectrometer (MS/MS) (22 °C)  
**Detector:** SCIEX 4500 QTRAP®  
**Sample:** 41 Antibiotics

### Analytical Column: Kinetex Core-Shell 2.6 $\mu m$ Biphenyl



# Environmental Applications

## Hormones: Marine & Fresh Water Sediment

### Modified roQ QuEChERS Protocol

#### STEP 1

#### Extraction

1. Weigh 2 g of dry sediment into a 50 mL centrifuge
2. Spike sample with internal standards
3. Add 10 mL of reagent water and mix
4. Add 10 mL of acidified acetonitrile (0.1% acetic acid) and shake for 10 seconds
5. Add sodium acetate (1.5 g) and MgSO<sub>4</sub> (2.0 g), or weigh out 3.5 g of AOAC 2007.01 roQ extraction packet **AH0-9043**
6. Shake for 10 seconds and vortex for 1 minute
7. Centrifuge at 4000 rpm for 5 min
8. Cool sample at -20 °C for 1.5 hours or until frozen

#### STEP 2

#### Clean-up

1. Take 8-9 mL of the supernatant from the previous step and transfer to a 15 mL dSPE tube (**KSO-8926**)
2. Shake for 10 seconds and vortex for 1 minute
3. Centrifuge for 10 minutes at 3000 rpm
4. Aspirate 5 mL of supernatant and filter using a Phenex™ 0.2 µm PTFE filter (**AF0-2202-12**) into a test tube suitable for a dry-down station
5. Evaporate sample using a dry-down station at ≤35 °C to near dryness
6. Reconstitute by first adding 50 µL of acetone, vortexing, and then adding 950 µL of methanol/water (1:1)
7. Transfer the reconstituted sample to an autosampler vial for analysis

**Column:** Kinetex 2.6 µm XB-C18

**Dimensions:** 50 x 2.1 mm

**Part No.:** 00B-4622-AN

**Mobile Phase:** A: Water  
B: Acetonitrile

Gradient:	Time (min)	% B
	0	15
	1.0	20
	7.25	60
	8.00	80
	9.50	80
	9.55	15
	14	15

**Injection:** 12 µL

**Flow Rate:** 0.5 mL/min

**Temperature:** 30 °C

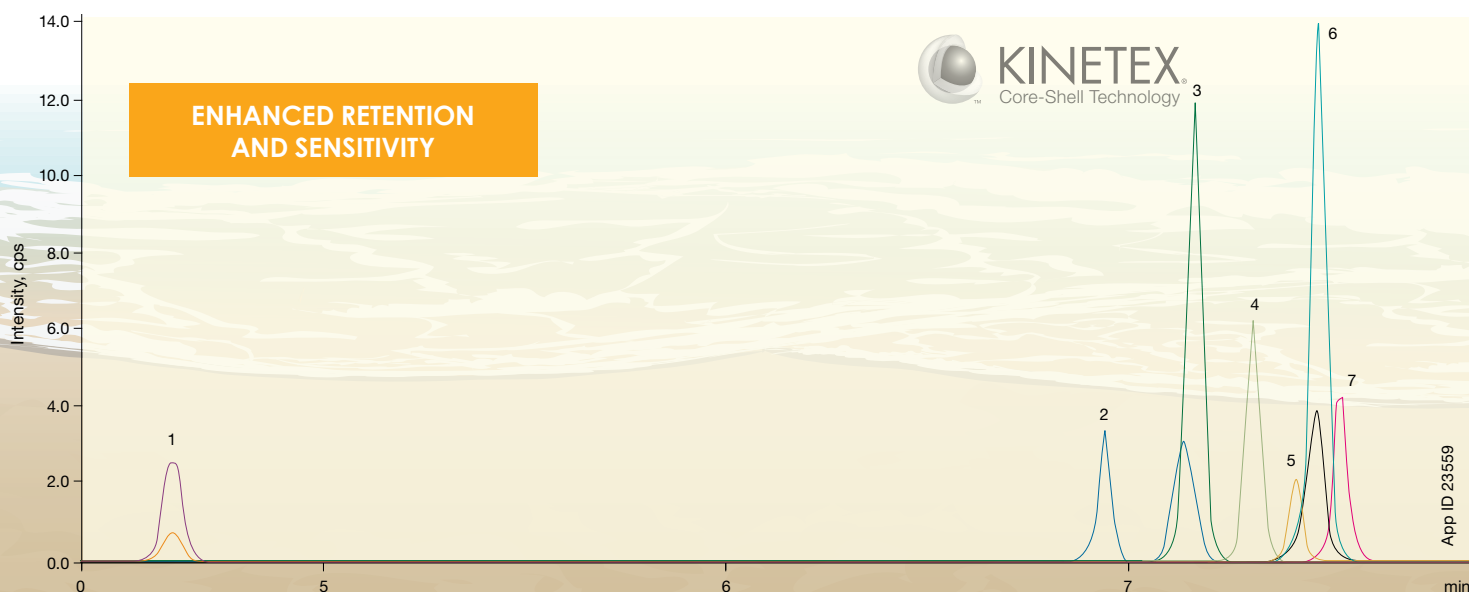
**Detector:** SCIEX 5500 QTRAP®

**Detection:** MS/MS (ESI + and ESI -)

- Sample:**
1. Estriol (E3)
  2. 17-β Estradiol (E2)
  3. Testosterone (TEST)
  4. Equilin (EQ)
  5. 17-α-Ethnylestradiol (EE2)
  6. Estrone (E1)
  7. Androstenedione (AND)

Note: Post column infusion with 0.05 % NH<sub>4</sub>OH

### Analytical Column: Kinetex 2.6 µm XB-C18



## Pyrethroids: Marine & Fresh Water Sediment

### Modified roQ QuEChERS Protocol

#### STEP 1

#### Extraction

1. Weigh 2 g of dry sediment into a 50 mL centrifuge
2. Spike sample with internal standards
3. Add 10 mL of reagent water and mix
4. Add 10 mL of acidified acetonitrile (0.1% acetic acid) and shake for 10 seconds
5. Add sodium acetate (1.5 g) and MgSO<sub>4</sub> (2.0 g), or weigh out 3.5 g of AOAC 2007.01 roQ extraction packet **AH0-9043**
6. Shake for 10 seconds and vortex for 1 minute
7. Centrifuge at 4000 rpm for 5 min
8. Cool sample at -20 °C for 1.5 hours or until frozen

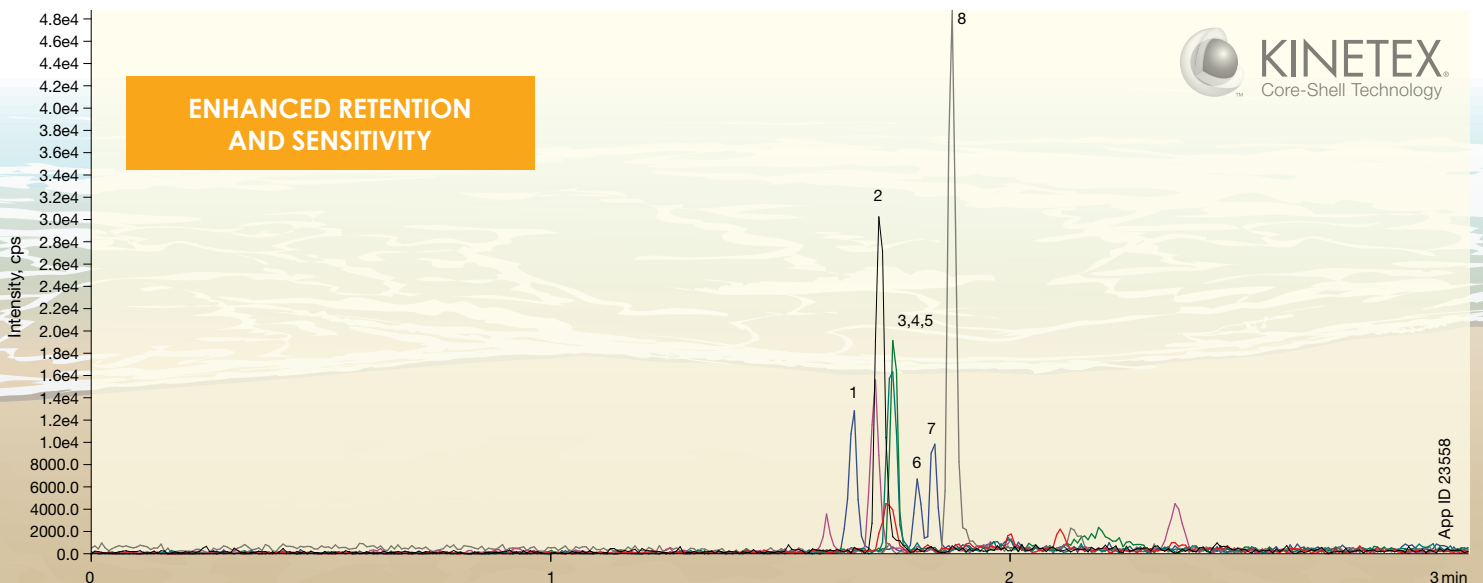
#### STEP 2

#### Clean-up

1. Take 8-9 mL of the supernatant from the previous step and transfer to a 15 mL dSPE tube (**KSO-8926**)
2. Shake for 10 seconds and vortex for 1 minute
3. Centrifuge for 10 minutes at 3000 rpm
4. Aspirate 5 mL of supernatant and filter using a Phenex™ 0.2 µm PTFE filter (**AF0-2202-12**) into a test tube suitable for a dry-down station
5. Evaporate sample using a dry-down station at ≤35 °C to near dryness
6. Reconstitute by first adding 50 µL of acetone, vortexing, and then adding 950 µL of methanol/water (1:1)
7. Transfer the reconstituted sample to an autosampler vial for analysis

<b>Column:</b>	Kinetex 2.6 µm EVO C18	
<b>Dimensions:</b>	50 x 2.1 mm	
<b>Part No.:</b>	00B-4725-AN	
<b>Mobile Phase:</b>	A: 5mM Ammonium acetate B: Methanol	
<b>Gradient:</b>	<b>Time (min)</b>	<b>% B</b>
	1	50
	2	95
	3	95
<b>Injection:</b>	5 µL/min	
<b>Flow Rate:</b>	0.7 mL/min	
<b>Temperature:</b>	22 °C	
<b>Detector:</b>	SCIEX Triple Quad™ 4500 System	
<b>Detection:</b>	MS/MS	
<b>Sample:</b>	1. Cyfluthrin 2. Cyhalothrin 3. Cypermethrin 4. Delamethrin 5. Esfenvalerate 6. cis-Permethrin 7. trans-Permethrin 8. Bifenthrin	

### Analytical Column: Kinetex 2.6 µm EVO C18



# Ordering Information

## roQ Extraction Kits

Extraction kits contain fifty easy-pour salt packets and fifty 50 mL stand-alone centrifuge tubes

Description	Unit	Part No.
<b>AOAC 2007.01 Method Extraction Kits</b>		
6.0 g MgSO <sub>4</sub> , 1.5 g NaOAc	50/pk	KSO-8911*
<b>EN 15662 Method Extraction Kits</b>		
4.0 g MgSO <sub>4</sub> , 1.0 g NaCl, 1.0 g SCTD, 0.5 g SCDS	50/pk	KSO-8909*
<b>Original Non-buffered Method Extraction Kits</b>		
4.0 g MgSO <sub>4</sub> , 1.0 g NaCl	50/pk	KSO-8910
6.0 g MgSO <sub>4</sub> , 1.5 g NaCl	50/pk	KSO-8912

\*AOAC and EN Extraction Kits also available in traditional non-collared 50 mL centrifuge tubes, Part No.: KSO-8911-NC and KSO-8909-NC

## roQ dSPE Kits

dSPE kits contain pre-weighed sorbents/salts inside 2 mL or 15 mL centrifuge tubes

Description	Unit	Part No.
<b>2 mL dSPE Kits</b>		
150 mg MgSO <sub>4</sub> , 25 mg PSA, 25 mg C18E	100/pk	KSO-8913
150 mg MgSO <sub>4</sub> , 25 mg PSA, 2.5 mg GCB	100/pk	KSO-8914
150 mg, MgSO <sub>4</sub> , 25 mg PSA, 7.5 mg GCB	100/pk	KSO-8915
150 mg MgSO <sub>4</sub> , 25 mg PSA	100/pk	KSO-8916
150 mg MgSO <sub>4</sub> , 50 mg PSA, 50 mg C18E, 50 mg GCB	100/pk	KSO-8917
150 mg MgSO <sub>4</sub> , 50 mg PSA, 50 mg C18E	100/pk	KSO-8918
150 mg MgSO <sub>4</sub> , 50 mg PSA, 50 mg GCB	100/pk	KSO-8919
150 mg MgSO <sub>4</sub> , 50 mg PSA	100/pk	KSO-8920
<b>15 mL dSPE Kits</b>		
900 mg MgSO <sub>4</sub> , 150 mg PSA, 150 mg C18E	50/pk	KSO-8921
900 mg MgSO <sub>4</sub> , 150 mg PSA, 15 mg GCB	50/pk	KSO-8922
900 mg MgSO <sub>4</sub> , 150 mg PSA, 45 mg GCB	50/pk	KSO-8923
900 mg MgSO <sub>4</sub> , 150 mg PSA	50/pk	KSO-8924
1200 mg MgSO <sub>4</sub> , 400 mg PSA, 400 mg C18E, 400 mg GCB	50/pk	KSO-8925
1200 mg MgSO <sub>4</sub> , 400 mg PSA, 400 mg C18E	50/pk	KSO-8926
1200 mg MgSO <sub>4</sub> , 400 mg PSA, 400 mg GCB	50/pk	KSO-8927
1200 mg MgSO <sub>4</sub> , 400 mg PSA	50/pk	KSO-8928

## Bulk roQ QuEChERS Sorbents

Phase	10 g	100 g
C18-E	—	04G-4348
GCB (Graphitized Carbon Black)	04D-4615	04G-4615
PSA	—	04G-4610

## roQ Extraction Salt Packets

Salt packets only. Centrifuge tubes not included.

Description	Unit	Part No.
<b>AOAC 2007.01 Method Extraction Packets</b>		
6.0 g MgSO <sub>4</sub> , 1.5 g NaOAc	50/pk	AHO-9043
<b>EN 15662 Method Extraction Packets</b>		
4.0 g MgSO <sub>4</sub> , 1.0 g NaCl, 1.0 g SCTD, 0.5 g SCDS	50/pk	AHO-9041
<b>Original Non-Buffered Method Extraction Packets</b>		
4.0 g MgSO <sub>4</sub> , 1.0 g NaCl	50/pk	AHO-9042
6.0 g MgSO <sub>4</sub> , 1.5 g NaCl	50/pk	AHO-9044

**roQ**  
QuEChERS Kits



If roQ QuEChERS Kits do not perform as well or better than your current QuEChERS product, return product with comparative data within 45 days for a FULL REFUND.



# LC Ordering Information

## Synergi™

Whether your pesticides are hydrophobic or polar, Synergi Fusion-RP columns provide you with a full range of selectivity ensuring separation of the most challenging and complex mixtures.

### Synergi 2.5 µm High Speed Technology (HST) Columns (mm)

Phases	30 x 2.0	50 x 2.0	100 x 2.0	50 x 3.0	100 x 3.0	50 x 4.6
Fusion-RP	00A-4423-B0	00B-4423-B0	00D-4423-B0	00B-4423-Y0	00B-4423-Y0	00B-4423-E0

### Synergi 4 µm Microbore and Minibore Columns (mm)

Phases	50 x 1.0	150 x 1.0	30 x 2.0	50 x 2.0	75 x 2.0	150 x 2.0	250 x 2.0	SecurityGuard™ Cartridges (mm)
Fusion-RP	00B-4424-A0	00F-4424-A0	00A-4424-B0	00B-4424-B0	00C-4424-B0	00F-4424-B0	00G-4424-B0	AJO-7556
								10/pk for ID: 2.0-3.0 mm

### Synergi 4 µm MidBore™ Columns (mm)

Phases	50 x 3.0	150 x 3.0	250 x 3.0	SecurityGuard™ Cartridges (mm)
Fusion-RP	00B-4424-Y0	00F-4424-Y0	00G-4424-Y0	AJO-7557
				10/pk for ID: 2.0-3.0 mm

### Synergi 4 µm Analytical Columns (mm)

Phases	50 x 4.6	75 x 4.6	150 x 4.6	250 x 4.6	SecurityGuard™ Cartridges (mm)
Fusion-RP	00B-4424-E0	00C-4424-E0	00F-4424-E0	00G-4424-E0	AJO-7557
					10/pk for ID: 3.2-8.0 mm

\*SecurityGuard Analytical Cartridges require holder, Part No.: KJO-4282

Learn more about Synergi columns at

[www.phenomenex.com/synergi](http://www.phenomenex.com/synergi)



If Synergi analytical columns do not provide at least an equivalent separation as compared to a competing column of similar particle size, similar phase and dimensions, send in your comparative data within 45 days and for a FULL REFUND.

## Kinetex®

Get the most out of every HPLC/UHPLC analysis. Kinetex Core-Shell Technology produces increased efficiencies over traditional fully porous columns, yielding remarkable chromatographic resolution, higher peak capacities, and greater sensitivity.

Kinetex 5 µm Columns (mm)	SecurityGuard ULTRA Cartridges (mm)			SecurityGuard ULTRA Cartridges (mm)			SecurityGuard ULTRA Cartridges (mm)					
	50 x 2.1	3/pk		50 x 3.0	3/pk		50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	3/pk	
EVO C18	00B-4633-AN	AJO-9298		00B-4633-Y0	AJO-9297		00B-4633-E0	00D-4633-E0	00F-4633-E0	00G-4633-E0	AJO-9296	
Biphenyl	00B-4627-AN	AJO-9209		00B-4627-Y0	AJO-9208		00B-4627-E0	00D-4627-E0	00F-4627-E0	00G-4627-E0	AJO-9207	
XB-C18	00B-4605-AN	AJO-8782		00B-4605-Y0	AJO-8775		00B-4605-E0	00D-4605-E0	00F-4605-E0	00G-4605-E0	AJO-8768	
			for 2.1 mm ID							for 4.6 mm ID		

Kinetex 2.6 µm Columns (mm)	SecurityGuard ULTRA Cartridges (mm)			SecurityGuard ULTRA Cartridges (mm)			SecurityGuard ULTRA Cartridges (mm)					
	50 x 2.1	150 x 2.1	3/pk	50 x 3.0	3/pk		50 x 4.6	100 x 4.6	150 x 4.6	3/pk		
EVO C18	00B-4725-AN	00F-4725-AN	AJO-9298	00B-4725-Y0	AJO-9297		00B-4725-E0	00D-4725-E0	00F-4725-E0	AJO-9296		
Biphenyl	00B-4622-AN	00F-4622-AN	AJO-9209	00B-4622-Y0	AJO-9208		00B-4622-E0	00D-4622-E0	00F-4622-E0	AJO-9207		
XB-C18	00B-4496-AN	00F-4496-AN	AJO-8782	00B-4496-Y0	AJO-8775		00B-4496-E0	00D-4496-E0	00F-4496-E0	AJO-8768		
			for 2.1 mm ID							for 4.6 mm ID		

### Kinetex 1.7 µm Columns (mm)

Phases	50 x 2.1	100 x 2.1	150 x 2.1	SecurityGuard ULTRA Cartridges (mm)
	EVO C18	00B-4726-AN	00D-4726-AN	00F-4726-AN
Biphenyl	00B-4628-AN	00D-4628-AN	00F-4628-AN	AJO-9209
XB-C18	00B-4498-AN	00D-4498-AN	—	AJO-8782
				for 2.1 mm ID

\*SecurityGuard ULTRA cartridges require holder, Part No.: AJO-9000.

For additional Kinetex dimensions and phases, please visit

[www.phenomenex.com/kinetex](http://www.phenomenex.com/kinetex)



If you are not completely satisfied with Kinetex core-shell columns, return the column with comparative data within 45 days for a FULL REFUND.

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#### Disclaimer

Comparative separations may not be representative of all applications.

SecurityGuard is patented by Phenomenex. U.S. Patent No. 6,162,362

*CAUTION: this patent only applies to the analytical-sized guard cartridge holder, and does not apply to SemiPrep, PREP, or ULTRA holders, or to any cartridges.*

Kinetex EVO is patented by Phenomenex. U.S. Patent Nos. 7,563,367 and 8,658,038 and foreign counterparts.

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