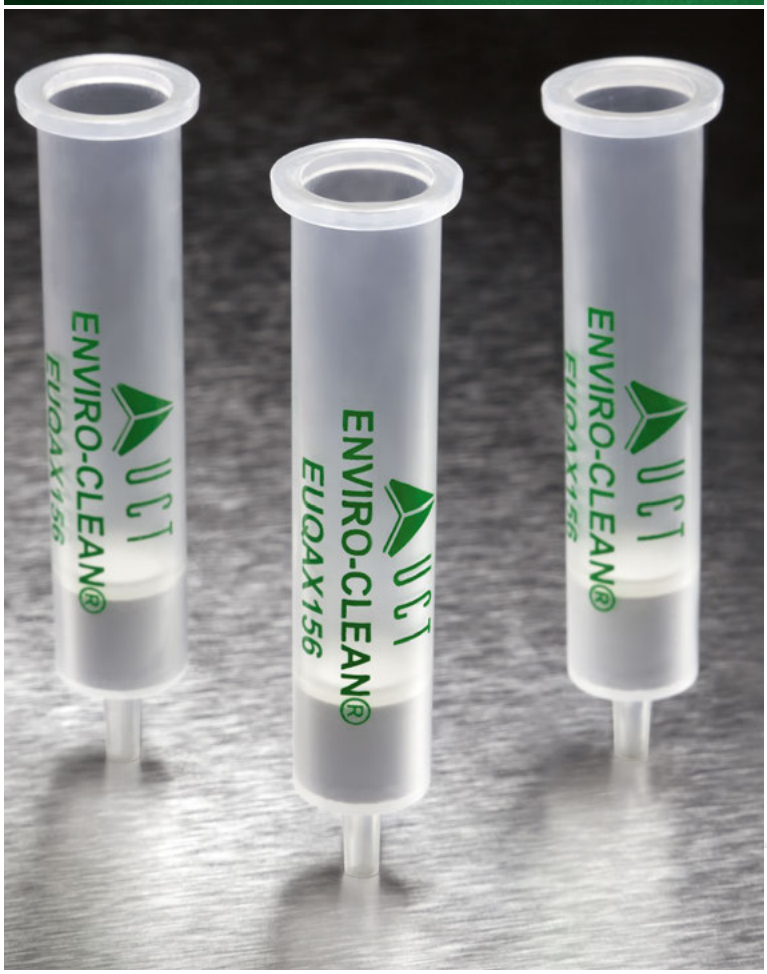
UCT

FOOD SAFETY & ENVIRONMENTAL PRODUCT CATALOG

ENVIRO FOOD INDUSTRIAL



BGB GC LC MS CE

ENVIRO

FOOD

INDUSTRIAL

UCT

Founded in 1986, UCT has grown to be a respected leader in the drug testing, pharmaceutical, clinical, environmental and agricultural industries. Our wide range of highly reproducible solid-phase extraction columns allow the chromatographer a consistent extraction technique, and our expertise in silane manufacturing allows greater control of the chemical processes involved in producing our high quality bonded phases. We manufacture our complete product line of bonded silica sorbents, packaged in a variety of formats, including SPE columns, 96 & 48 well plates, Universal cartridges and micro-centrifuge tubes. We also offer a variety of SPE accessories including derivatizing reagents, GC liners, and manifolds. Recently we launched several new product lines: Selectra® HPLC columns, Ultra Flash® Purification, and SpinFiltr™. Our commitment to ensuring the satisfaction of our customers is accomplished by delivering on our promises: top-quality, dependable solid-phase extraction and chromatography products, and unmatched technical support.

A GREENER EARTH

Here at UCT, Inc. we are making an effort to keep the planet cleaner and greener for everyone. It is our belief that we must act now to preserve our environment for future generations to come.

Organizations we support:

Arbor Day Foundation

Audubon Society

Sierra Club

P. 800.385.3153 | 215.781.9255 | **F.** 215.785.1226

TABLE OF CONTENTS

QuEChERS

QuEChERS Methods Schematic Flow Chart

Step 1 – Extraction Processes

Original QuEChERS
Anastassiades and Lehotay 2003

Unbuffered

Add 10 mL of ACN to 10 g homogenized/hydrated sample in a 50 mL centrifuge tube
Add ISTD
Shake

↓

Add 4 g $MgSO_4$ & 1 g NaCl
Shake vigorously for 1 minute
Centrifuge at >3000 rcf for 1 minute

(ECMSSC50CT-MP)

AOAC QuEChERS
AOAC 2007.01

Acetate Buffered

Add 15 mL of 1% HOAc in ACN to 15 ml homogenized/hydrated sample in a 50 mL centrifuge tube
Add ISTD
Shake

↓

Add 6 g $MgSO_4$ & 1.5 g NaOAc
Shake vigorously for 1 minute
Centrifuge at >3000 rcf for 1 minute

(ECMSSA50CT-MP)

CEN QuEChERS
EN 15662

Citrate Buffered

Add 10 mL of ACN to 10 g homogenized/hydrated sample in a 50 mL centrifuge tube
Add ISTD
Shake

↓

Add 4 g $MgSO_4$, 1 g NaCl, 1 g $Na_3Citrate{\cdot}2H_2O$, 0.5 g $Na2HCitr{\cdot}1.5H_2O$
Shake vigorously for 1 minute
Centrifuge at >3000 rcf for 1 minute

(ECQUEU750CT-MP)

Step 2 – Dispersive SPE Clean-Up Processes

↓

Transfer 1 mL aliquot of supernatant to a dSPE clean-up tube containing 150 mg $MgSO_4$ and 50 mg PSA.

Shake for 30 seconds

Centrifuge at >1500 rcf for 1 minute

(CUMPS2CT)

↓

Transfer 0.5 mL to vial for GC or LC analysis

↓

Transfer 1 mL aliquot of supernatant to a dSPE clean-up tube containing $MgSO_4$, PSA (C18, GCB or ChloroFiltr can be added for additional clean-up)

Shake for 30 seconds

Centrifuge at >1500 rcf for 1 minute

(CUMPS2CT)
OR
(CUMPS2C1875CB2CT)

↓

Preserve with toluene for GC/MS or

add 6.7mM formic acid for LC/MS/MS

Add TPP surrogate

↓

Transfer 1 mL aliquot of supernatant to a dSPE clean-up tube containing 25 mg of PSA and 150 mg $MgSO_4$, (plus 2.5 or 7.5 mg of GCB to remove pigments)

Shake for 30 seconds

Centrifuge at >1500 rcf for 1 minute

(ECQUEU32CT)
OR
(ECQUEU42CT)

↓

Preserve with 5% formic acid in ACN.

Analyze by GC/MS or LC/MS/MS

$MgSO_4$-magnesium sulfate
ACN-acetonitrile
HoAC-acetic acid
NaCl-sodium chloride
Na_3Citr.-sodium citrate tribasic dihydrate
Na_2HCitr.-sodium citrate dibasic sesquihydrate
PSA-primary secondary amine
TPP-triphenyl phosphate (surrogate)
GCB-graphitized carbon black

Extraction Components and Their Functions

$MgSO_4$ - Facilitates solvent partitioning
ACN - Provides the extraction of broadest range of pesticides with least amount of undesired matrix
HoAC - Adjusts pH
Buffer Salts - Prevent degredation of pH sensitive analytes
PSA - Removes sugars, acids, and some pigments
GCB - Strong sorbent for pigment removal
C18 - Removes long-chain fatty compounds and other non-polar interferencecs

Multi-Packs - Mylar Pouches + Centrifuge Tubes

QuEChERS extraction salts for all of the popular QuEChERS methods are available in individual mylar pouches for your convenience. Each pack of 50 pouches comes with a rack of 50 empty centrifuge tubes.

Part Number	Description	Quantity	Contents
ECMSSC50CT-MP	Non-Buffered Extraction	50/Pack	4000 mg $MgSO_4$ 1000 mg NaCl
ECQUUS250CT-MP	Non-Buffered Extraction	50/Pack	4000 mg $MgSO_4$ 2000 mg NaCl
ECMSSC50CTFS-MP	Non-Buffered Extraction	50/Pack	6000 mg $MgSO_4$ 1500 mg NaCl
EC4MSSA50CT-MP	AOAC 2007.01 Method	50/Pack	4000 mg $MgSO_4$ 1000 mg NaOAc
ECMSSA50CT-MP	AOAC 2007.01 Method	50/Pack	6000 mg $MgSO_4$ 1500 mg NaOAc
ECQUEU750CT-MP	EN 15662 Method	50/Pack	4000 mg $MgSO_4$ 1000 mg NaCl 500 mg $Na_2HCitr.1.5H_2O$ 1000 mg $Na_3Citr.2H_2O$
ECMIV50CT-MP	EN 15662 Method	50/Pack	6000 mg $MgSO_4$ 1500 mg NaCl 750 mg $Na_2HCitr.1.5H_2O$ 1500 mg $Na_3Citr.2H_2O$
ECQUUS950CT-MP	THC Potency & Pesticides	50/Pack	Proprietary Salt Blend for THC Potency & Pesticide Testing

Mylar Pouch Format

Part Number	Description	Quantity	Contents
ECMSSC-MP	Non-Buffered Extraction	50/Pack	4000 mg $MgSO_4$ 1000 mg NaCl
ECQUUS2-MP	Non-Buffered Extraction	50/Pack	4000 mg $MgSO_4$ 2000 mg NaCl
ECMSSCFS-MP	Non-Buffered Extraction	50/Pack	6000 mg $MgSO_4$ 1500 mg NaCl
ECQUVIN-MP	Non-Buffered Extraction	50/Pack	8000 mg $MgSO_4$ 2000 mg NaCl
EC4MSSA-MP	AOAC 2007.01 Method	50/Pack	4000 mg $MgSO_4$ 1000 mg NaOAc
ECMSSA-MP	AOAC 2007.01 Method	50/Pack	6000 mg $MgSO_4$ 1500 mg NaOAc
ECGMSSA-MP	AOAC 2007.01 Method	50/Pack	6000 mg $MgSO_4$ (granular) 1500 mg NaOAc
ECQUEU7-MP	EN 15662 Method	50/Pack	4000 mg $MgSO_4$ 1000 mg NaCl 500 mg $Na_2HCitr.1.5H_2O$ 1000 mg $Na_3Citr.2H_2O$
ECGQUEU7-MP	EN 15662 Method	50/Pack	4000 mg $MgSO_4$ (granular) 1000 mg NaCl 500 mg $Na_2HCitr.1.5H_2O$ 1000 mg $Na_3Citr.2H_2O$
ECMIV-MP	EN 15662 Method	50/Pack	6000 mg $MgSO_4$ 1500 mg NaCl 750 mg $Na_2HCitr.1.5H_2O$ 1500 mg $Na_3Citr.2H_2O$

QuEChERS Extraction Salts

Centrifuge Tube Format

UCT offers an extensive selection of QuEChERS extraction salts pre-packed in either 15 or 50 ml polypropylene centrifuge tubes.

Part Number	Description	Volume	Quantity	Contents
ECMS4MSC550CT	Non-Buffered Extraction	50 mL	50/Pack	4000 mg $MgSO_4$ 500 mg NaCl
ECMSSC50CT	Non-Buffered Extraction	50 mL	50/Pack	4000 mg $MgSO_4$ 1000 mg NaCl
ECMSSC50CTFS	Non-Buffered Extraction	50 mL	50/Pack	6000 mg $MgSO_4$ 1500 mg NaCl
ECQUVIN50CT	Non-Buffered Extraction	50 mL	50/Pack	8000 mg $MgSO_4$ 2000 mg NaCl
ECMS4MSA1M50CT	AOAC 2007.01 Method	50 mL	50/Pack	4000 mg $MgSO_4$ 1000 mg NaOAc
ECMSSA50CT	AOAC 2007.01 Method	50 mL	50/Pack	6000 mg $MgSO_4$ 1500 mg NaOAc
ECQUEU750CT	EN 15662 Method	50 mL	50/Pack	4000 mg $MgSO_4$ 1000 mg NaCl 500 mg $Na_2HCitr.1.5H_2O$ 1000 mg $Na_3Citr.2H_2O$
EUMIV50CT	EN 15662 Method	50 mL	50/Pack	6000 mg $MgSO_4$ 1500 mg NaCl 750 mg $Na_2HCitr.1.5H_2O$ 1500 mg $Na_3Citr.2H_2O$
ECQUUS1015CT	Non-Buffered Extraction	15 mL	50/Pack	400 mg $MgSO_4$ 100 mg NaCl
ECQUUS1115CT	Non-Buffered Extraction	15 mL	50/Pack	800 mg $MgSO_4$ 200 mg NaCl
ECQUUS15CT	AOAC 2007.01 Method	15 mL	50/Pack	400 mg $MgSO_4$ 100 mg NaOAc
ECQUEU415CT	EN 15662 Method	15 mL	50/Pack	4000 mg $MgSO_4$ 1000 mg NaCl 500 mg $Na_2HCitr.1.5H_2O$ 1000 mg $Na_3Citr.2H_2O$

dSPE Clean-Up

UCT offers the most extensive line of dSPE products, conveniently packaged in centrifuge tube format. Each corresponding part number contains pre-weighed sorbents for use with Original, Association of Analytical Communities (AOAC) and European Committee for Standardization (CEN) QuEChERS methods. UCT dSPE kits make sample prep quick and easy for multi-residue analysis in a wide variety of matrices.

Part Number	Volume	Quantity	Contents
ECQUME12CT	2 mL	100/Pack	200 mg PSA
ECQUEU12CT	2 mL	100/Pack	150 mg $MgSO_4$ + 25 mg PSA
CUMPS2CT	2 mL	100/Pack	150 mg $MgSO_4$ + 50 mg PSA
ECQUEU52CT	2 mL	100/Pack	300 mg $MgSO_4$ + 50 mg PSA
CUMC182CT	2 mL	100/Pack	150 mg $MgSO_4$ + 50 mg C18
ECQUEU252CT	2 mL	100/Pack	150 mg $MgSO_4$ + 7.5 mg GCB
ECQUEU22CT	2 mL	100/Pack	150 mg $MgSO_4$ + 25 mg PSA + 25 mg C18
CUMPSC18CT	2 mL	100/Pack	150 mg $MgSO_4$ + 50 mg PSA + 50 mg C18
CUMPS15C18CT	2 mL	100/Pack	150 mg $MgSO_4$ + 150 mg PSA + 50 mg C18
ECQUEU32CT	2 mL	100/Pack	150 mg $MgSO_4$ + 25 mg PSA + 2.5 mg GCB
ECQUEU42CT	2 mL	100/Pack	150 mg $MgSO_4$ + 25 mg PSA + 7.5 mg GCB
CUMPSCB2CT	2 mL	100/Pack	150 mg $MgSO_4$ + 50 mg PSA + 50 mg GCB
CUMSC1875CB2CT	2 mL	100/Pack	150 mg $MgSO_4$ + 50 mg C18 + 7.5 mg GCB
ECQUAU12CT	2 mL	100/Pack	150 mg $MgSO_4$ + 25 mg Aminopropyl + 7.5 mg GCB
ECQUUS72CT	2 mL	100/Pack	50 mg PSA + 50 mg C18 + 25 mg GCB
CUMPSC1875CB2CT	2 mL	100/Pack	150 mg $MgSO_4$ + 50 mg PSA + 50 mg C18 + 7.5 mg GCB
ECQUEU122CT	2 mL	100/Pack	150 mg $MgSO_4$ + 50 mg PSA + 50 mg C18 + 50 mg GCB
ECQUUS142CT	2 mL	100/Pack	Proprietary Sorbent Blend for Pesticide Testing in Cannabis

*** All C18 sorbent utilized in dSPE clean-up configurations above is endcapped.**

Dispersive-SPE (dSPE) Sorbents

15/50 mL Format

Part Number	Volume	Quantity	Contents
EEC18515CT	15 mL	50/Pack	500 mg C18
ECQUAS815CT	15 mL	50/Pack	300 mg DVB
ECQUEU2515CT	15 mL	50/Pack	450 mg $MgSO_4$ + 450 mg C18
ECQUAS315CT	15 mL	50/Pack	750 mg $MgSO_4$ + 250 mg C18
ECQUUS515CT	15 mL	50/Pack	900 mg $MgSO_4$ + 150 mg C18
ECMPS15CT	15 mL	50/Pack	900 mg $MgSO_4$ + 250 mg PSA
ECQUAS415CT	15 mL	50/Pack	900 mg $MgSO_4$ + 300 mg PSA
ECMPSA15CT	15 mL	50/Pack	1200 mg $MgSO_4$ + 200 mg PSA
ECMS12CPSA415CT	15 mL	50/Pack	1200 mg $MgSO_4$ + 400 mg PSA
EUMPSMG15CT	15 mL	50/Pack	1500 mg $MgSO_4$ + 250 mg PSA
ECMPSA615CT	15 mL	50/Pack	1800 mg $MgSO_4$ + 600 mg PSA
ECMMCCNAX215CT	15 mL	50/Pack	1200 mg $MgSO_4$ + 200 mg Aminopropyl
ECQUEU2115CT	15 mL	50/Pack	450 mg $MgSO_4$ + 450 mg PSA + 150 mg C18
ECQUEU2415CT	15 mL	50/Pack	750 mg $MgSO_4$ + 750 mg PSA + 250 mg C18
ECQUEU315CT	15 mL	50/Pack	900 mg $MgSO_4$ + 150 mg PSA + 150 mg C18
ECMPSC1815CT	15 mL	50/Pack	900 mg $MgSO_4$ + 300 mg PSA + 150 mg C18
ECQUAS515CT	15 mL	50/Pack	900 mg $MgSO_4$ + 300 mg PSA + 300 mg C18
CUMPSC1815CT2	15 mL	50/Pack	1200 mg $MgSO_4$ + 400 mg PSA + 400 mg C18
ECQUEU515CTB	15 mL	50/Pack	885 mg $MgSO_4$ + 150 mg PSA + 15 mg GCB
ECQUEU515CT	15 mL	50/Pack	900 mg $MgSO_4$ + 150 mg PSA + 15 mg GCB
ECQUEU615CT	15 mL	50/Pack	900 mg $MgSO_4$ + 150 mg PSA + 45 mg GCB
ECMPSCB15CT	15 mL	50/Pack	900 mg $MgSO_4$ + 300 mg PSA + 150 mg GCB
ECQUEU1115CT	15 mL	50/Pack	1200 mg $MgSO_4$ + 400 mg PSA + 400 mg GCB
ECQUHK315CT	15 mL	50/Pack	700 mg $MgSO_4$ + 200 mg PSA + 200 mg C18 + 35 mg GCB
ECQUAS615CT	15 mL	50/Pack	900 mg $MgSO_4$ + 450 mg PSA + 300 mg C18 + 50 mg GCB
ECQUUS215CT	15 mL	50/Pack	1200 mg $MgSO_4$ + 400 mg PSA + 400 mg C18 + 400 mg GCB
ECC1850CT	50 mL	50/Pack	500 mg C18
ECMSC1850CT	50 mL	50/Pack	1500 mg $MgSO_4$ + 500 mg C18
ECQUUS350CT	50 mL	50/Pack	1500 mg $MgSO_4$ + 500 mg PSA + 500 mg C18

dSPE Multi-Packs - Mylar Pouches + 15 mL Centrifuge Tubes

UCT also offers it's diverse dSPE product line in Mylar pouch format.

Part Number	Volume	Quantity	Contents
ECMPS15CT-MP	15 mL	50/Pack	900 mg $MgSO_4$ 150 mg PSA
ECMS12CPSA415CT-MP	15 mL	50/Pack	1200 mg $MgSO_4$ 400 mg PSA
ECMPSCB15CT-MP	15 mL	50/Pack	900 mg $MgSO_4$ 300 mg PSA 150 mg GCB

Dispersive-SPE (dSPE) Sorbents

dSPE Mylar Pouches

Part Number	Quantity	Contents
ECMPS-MP	50/Pack	900 mg $MgSO_4$ + 150 mg PSA
ECMS12CPSA4-MP	50/Pack	1200 mg $MgSO_4$ + 400 mg PSA
ECMSC18-MP	50/Pack	1500 mg $MgSO_4$ + 500 mg C18
ECQUEU315-MP	50/Pack	900 mg $MgSO_4$ + 150 mg PSA + 150 mg C18
CUMPSC182-MP	50/Pack	1200 mg $MgSO_4$ + 400 mg PSA + 400 mg C18
ECQU001-MP	50/Pack	750 mg $MgSO_4$ + 125 mg PSA + 12.5 mg GCB
ECQU002-MP	50/Pack	750 mg $MgSO_4$ + 125 mg PSA + 37.5 mg GCB
ECQUEU5-MP	50/Pack	900 mg $MgSO_4$ + 150 mg PSA + 15 mg GCB
ECMPSCB-MP	50/Pack	900 mg $MgSO_4$ + 300 mg PSA + 150 mg GCB
ECQUEU12-MP	50/Pack	150 mg $MgSO_4$ + 50 mg PSA + 50 mg C18 + 50 mg GCB

ChloroFiltr®

Traditional QuEChERS methods use graphitized carbon black (GCB) to remove chlorophyll from sample extracts. Although GCB is very effective in removing chlorophyll, it can also remove planar pesticides. UCT has developed a unique sorbent that removes chlorophyll without the loss of planar pesticides. ChloroFiltr® is used as an alternative to GCB during dSPE clean-up with no method modifications needed.

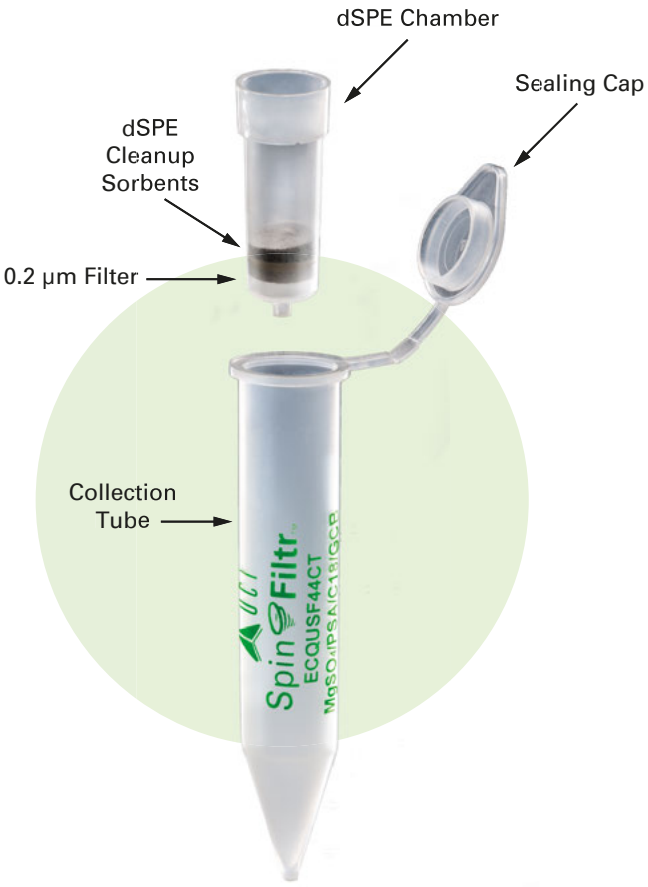
Part Number	Volume	Quantity	Contents
CUMPSGG2CT	2 mL	100/Pack	150 mg $MgSO_4$ + 50 mg PSA + 50 mg Chlorofiltr®
ECQUCHL12CT	2 mL	100/Pack	150 mg $MgSO_4$ + 50 mg C18 + 50 mg Chlorofiltr®
CUMPSGGC182CT	2 mL	100/Pack	150 mg $MgSO_4$ + 50 mg PSA + 50 mg C18 + 50 mg Chlorofiltr®
ECMSGG15CT	15 mL	50/Pack	900 mg $MgSO_4$ + 150 mg Chlorofiltr®
ECMPSGG15CT	15 mL	50/Pack	900 mg $MgSO_4$ + 300 mg PSA + 150 mg Chlorofiltr®
ECQUCHL115CT	15 mL	50/Pack	900 mg $MgSO_4$ + 300 mg PSA + 300 mg Chlorofiltr®
ECQUCHL215CT	15 mL	50/Pack	900 mg $MgSO_4$ + 300 mg C18 + 300 mg Chlorofiltr®
ECQUCHL315CT	15 mL	50/Pack	900 mg $MgSO_4$ + 300 mg PSA + 300 mg C18 + 300 mg Chlorofiltr®
ECMPSGG50CT	50 mL	50/Pack	1800 mg $MgSO_4$ + 600 mg PSA + 300 mg Chlorofiltr®
ECQUCHL150CT	50 mL	50/Pack	1800 mg $MgSO_4$ + 600 mg PSA + 600 mg Chlorofiltr®
ECQUCHL250CT	50 mL	50/Pack	1800 mg $MgSO_4$ + 600 mg C18 + 600 mg Chlorofiltr®
ECQUCHL350CT	50 mL	50/Pack	1800 mg $MgSO_4$ + 600 mg PSA + 600 mg C18 + 600 mg Chlorofiltr®
WSHECQUUS14-LD	96 Well Plate Format	1	Proprietary sorbent blend for pesticide testing in cannabis

SpinFiltr®

UCT's new SpinFiltr® is taking the hassle out of dSPE

- dSPE + Ultrafiltration in a single step.
- Obtain enhanced extract purification with the built-in 0.2 µm PTFE filter.
- Recover additional sample volume without worrying about the disruption of centrifugation layers.
- Simply discard dSPE chamber containing unwanted matrix and sorbet following centrifugation.

Part Number	Volume	Quantity	Contents
ECQUSF14CT	4 mL	50/Pack	150 mg $MgSO_4$ 50 mg PSA
ECQUSF24CT	4 mL	50/Pack	150 mg $MgSO_4$ 50 mg PSA 50 mg C18
ECQUSF34CT	4 mL	50/Pack	150 mg $MgSO_4$ 25 mg PSA 2.5 mg GCB
ECQUSF44CT	4 mL	50/Pack	150 mg $MgSO_4$ 50 mg PSA 50 mg C18 7.5 mg GCB
ECQUSF54CT	4 mL	50/Pack	150 mg $MgSO_4$ 50 mg PSA 50 mg C18 50 mg Chlorofiltr®
ECQUSF64CT	4 mL	50/Pack	150 mg $MgSO_4$ 50 mg C18 50 mg Chlorofiltr®



Discover a whole new approach to dSPE!

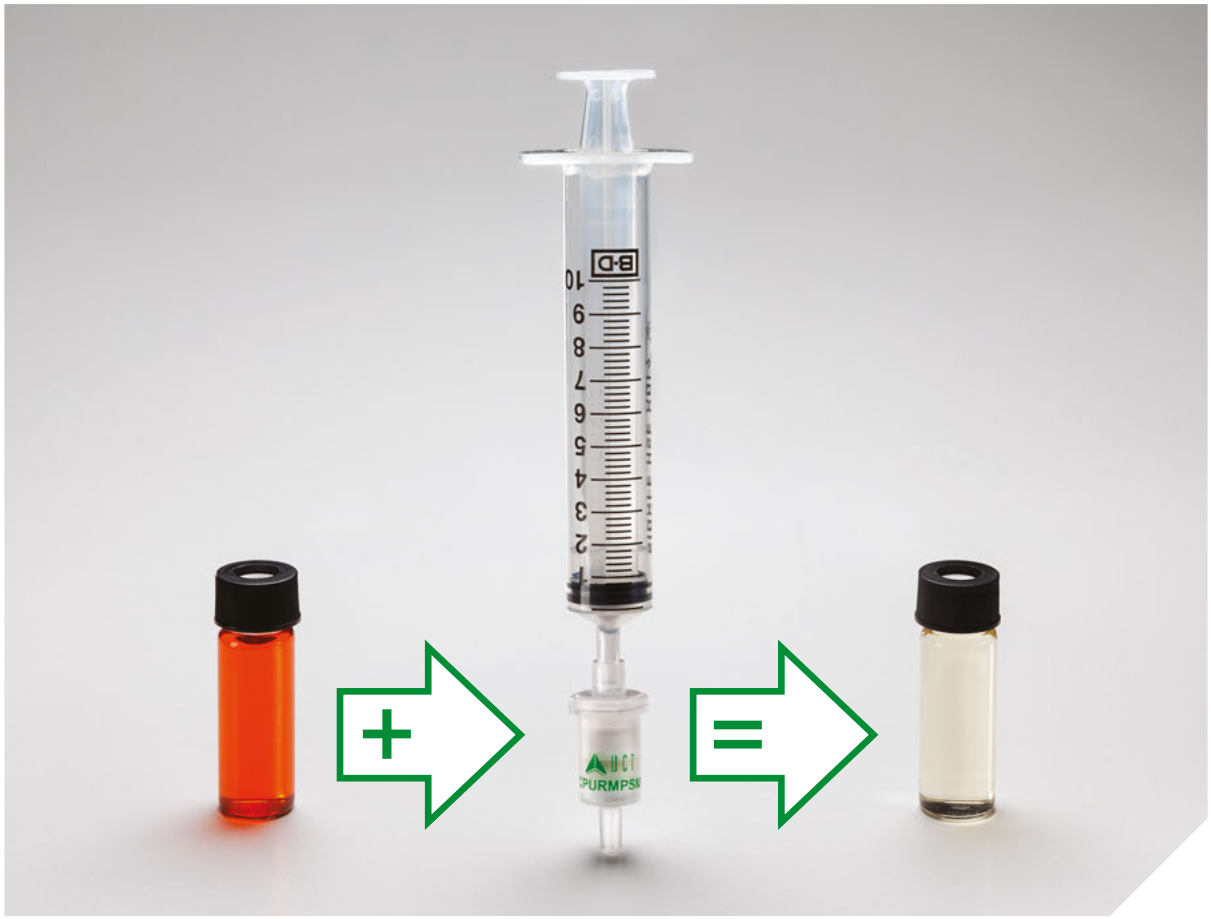
QuICK QuEChERS

Simple, Fast, Efficient
Cartridges for Clean-Up of QuEChERS Extracts

UCT's QuICK QuEChERS push-thru cartridge eliminates the need for shaking and centrifugation of extracts during clean-up, significantly reducing sample processing time. In addition, any residual sorbent is filtered via the frit providing a clean, final extract for analysis.*

After QuEChERS sample extraction:

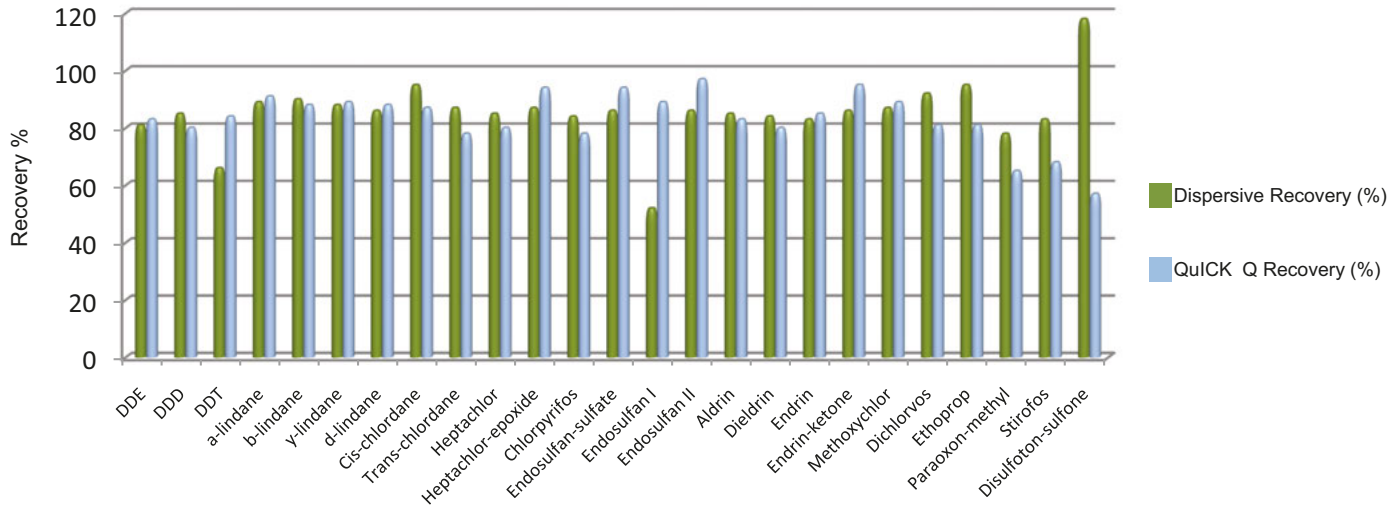
1. Draw the extract into a disposable syringe
2. Push the extract through the cartridge into a sample vial
3. Sample is ready for analysis by LC or GC



* Product developed by Steven C. Moser - OK Department of Agriculture, Food and Forestry

The UCT QuICK QuEChERS cartridge provides results comparable to traditional dSPE but without the need for centrifugation.

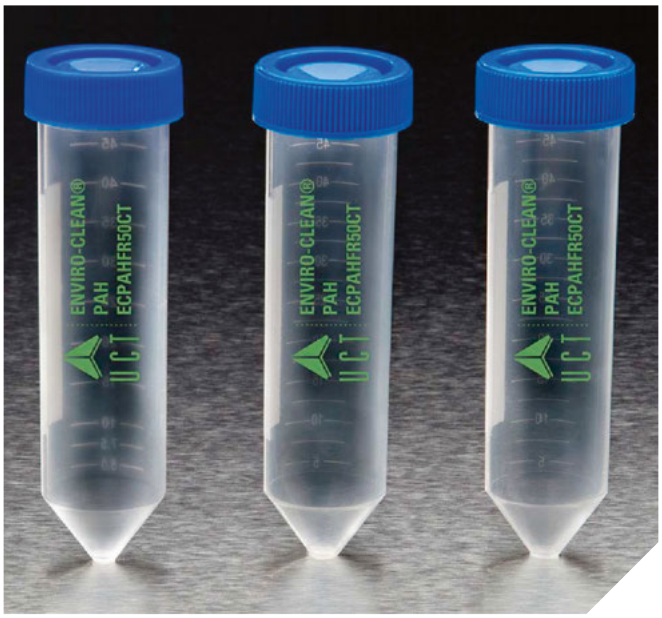
dSPE Recovery Data vs. QuICK QuEChERS



Part Number	Cartridge Size	Contents
ECPURMPSMC	Medium	110 mg $MgSO_4$ (top layer); PTFE Frit; 180 mg PSA (bottom layer)
ECPURMPSLC	Large	110 mg $MgSO_4$ (top layer); PTFE Frit; 600 mg PSA (bottom layer)

Enviro-Clean® PAH Tubes

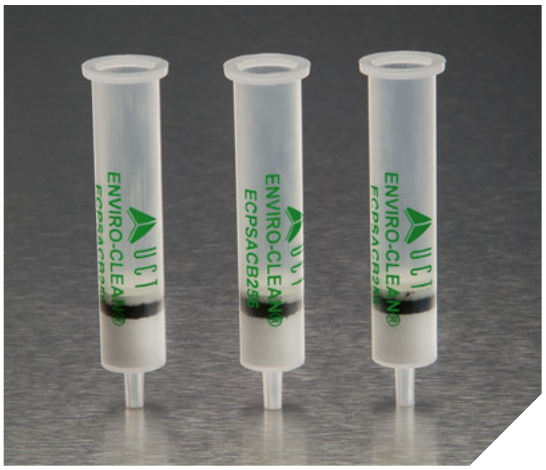
UCT's ENVIRO-CLEAN® PAH certified centrifuge tubes are specially designed for performing PAH analysis utilizing the QuEChERS technique or any other methods that require the use of 50 mL centrifuge tubes. UCT's special polypropylene tubes with plug-seal caps are ideal for performing low level PAH extractions.



ECPAHFR50CT 50/pk

Compound	Specification Values	Analysis
Acenaphthene	0.5 ppb	ND
Acenaphthylene	1 ppb	< 0.5 ppb
Anthracene	0.5 ppb	ND
Benz(a)anthracene	0.5 ppb	ND
Benzo(a)pyrene	0.5 ppb	ND
Benzo(b) fluoranthene	0.5 ppb	ND
Benzo(g,h,i) perylene	0.5 ppb	ND
Benzo(k) fluoranthene	0.5 ppb	ND
Chrysene	0.5 ppb	ND
Dibenzo(a,h) anthracene	0.5 ppb	ND
Fluoranthene	0.5 ppb	ND
Fluorene	0.5 ppb	ND
Indeno(1,2,3-cd) pyrene	0.5 ppb	ND
Naphthalene	1 ppb	< 0.3 ppb
Phenanthrene	0.5 ppb	ND
Pyrene	0.5 ppb	ND
*Note : Values based on 10g sample size		

SPE Dual Phase Cartridge Clean-up



SPE dual phase cartridges provide an alternative clean-up option for complicated matrices and/or when dSPE does not provide adequate cleanliness of sample extracts. Examples of matrices that are suitable for SPE include tea, herbs, spices and high lipid content samples.

Part Number	Volume	Quantity	Frit Type	Contents
ECPSACB6	6 mL	30/Pack	PTFE	200 mg GCB 400 mg PSA
ECPSACB256	6 mL	30/Pack	PTFE	250 mg GCB 500 mg PSA
ECPSACB256-PE	6 mL	30/Pack	PE	250 mg GCB 500 mg PSA
ECPSACB21M6	6 mL	30/Pack	PTFE	250 mg GCB 1000 mg PSA
ECPSACB506	6 mL	30/Pack	PTFE	500 mg GCB 500 mg PSA
ECPSACB506P	6 mL	30/Pack	PE	500 mg GCB 500 mg PSA
ECNAXCB506	6 mL	30/Pack	PTFE	500 mg GCB 500 mg CUNAX
EUMSPSA6	6 mL	30/Pack	PTFE	500 mg PSA 750 mg $MgSO_4$
ECPSAC1856	6 mL	30/Pack	PTFE	500 mg PSA 500 mg C18
ECMSPSACB6	6 mL	30/Pack	PTFE	250 mg GCB 500 mg PSA 750 mg $MgSO_4$
EUSILMSSM26	6 mL	30/Pack	PTFE	1000 mg silica 200 mg muffled anhydrous sodium sulfate
EUCARBC18515	15 mL	20/Pack	PTFE	500 mg GCB 500 mg C18
EEMSC1811M15	15 mL	20/Pack	PTFE	1000 mg C18 1000 mg $MgSO_4$
EEMS2C181M15	15 mL	20/Pack	PFTE	1000 mg C18 2000 mg $MgSO_4$
EUPSAC181M15	15 mL	20/Pack	PTFE	1000 mg PSA 1000 mg C18

Enviro-Clean® Universal & Specialty Cartridges

UNIVERSAL
OIL & GREASE

UNIVERSAL
525

UNIVERSAL
PAH / DRO

UNIVERSAL
C18

UNIVERSAL
549

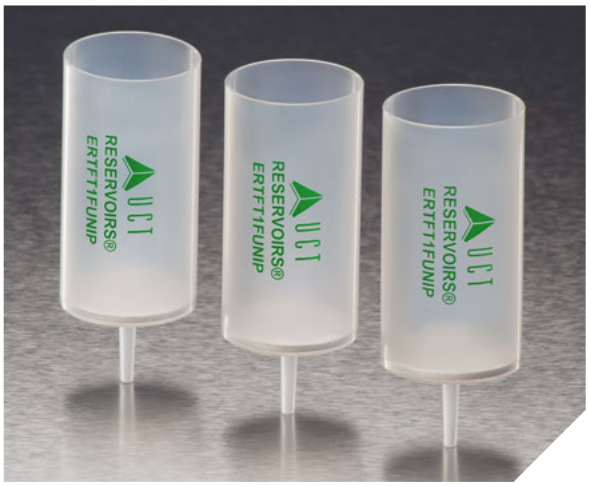
UNIVERSAL
Zero-Blank Filter™

Part Number	Product Name	Description	Quantity	Amount/Tube Vol.
ECUNIOGXF	UNIVERSAL OIL & GREASE	For EPA Method 1664/ Sorbent C18	15/Pack	2000 mg / 83 mL
ECUNI525	UNIVERSAL 525	For EPA Method 525.2 & 525.3 / Sorbent C18	8/Pack	1500 mg / 83 mL
ECUNIPAH	UNIVERSAL PAH / DRO	For PAH and Diesel Range Organics extractions/ Sorbent C18	8/Pack	2000 mg / 83 mL
ECUNIC18	UNIVERSAL C18	For extraction of pesticides, herbicides and PCBs, etc./ Sorbent C18	8/Pack	1100 mg / 83 mL
ECUNI549	UNIVERSAL 549	For EPA Method 549/ Sorbent C8	8/Pack	500 mg / 83 mL
ECUNIDVB500	UNIVERSAL DVB	For extraction of a wide range of analytes/ Sorbent PS-DVB	8/Pack	500 mg / 83 mL
ECBLANK	UNIVERSAL Zero-Blank Filter™	Proprietary adsorbent for filtration of lab air for use during sorbent drying	6/Pack	200 mg / 83 ml

ENVIRO-CLEAN®

UNIVERSAL CARTRIDGE RESERVOIRS

Part Number	Description	Quantity
ERFT1FUNIP	1 10µm PTFE frit	10/Pack
ERFT2FUNIP	2 10µm PTFE frits	10/Pack
ERTFT1FUNIP	1 50µm PTFE frit	10/Pack
ERFV00UNIP	Empty Reservoir	10/Pack



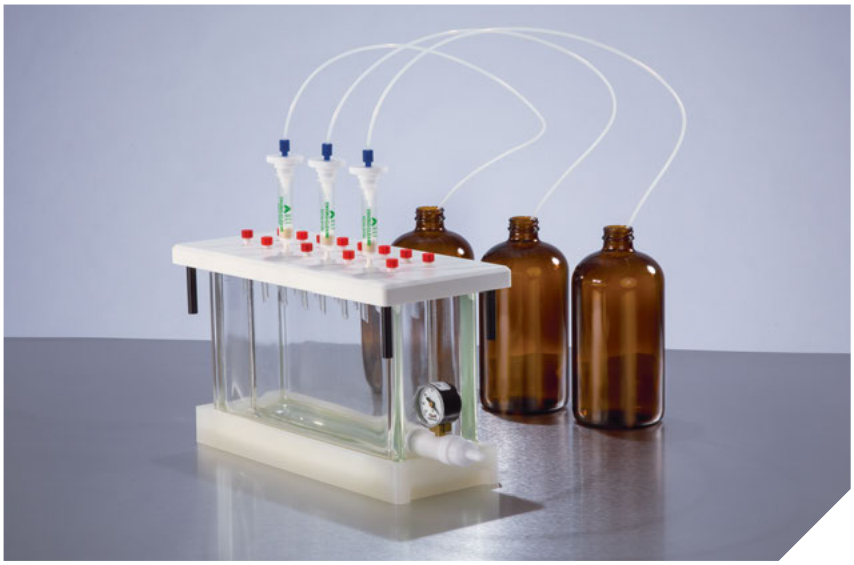
FITS THE HORIZON SPE-DEX® 4790 AUTOMATED EXTRACTION SYSTEM

For Environmental & EPA Extractions

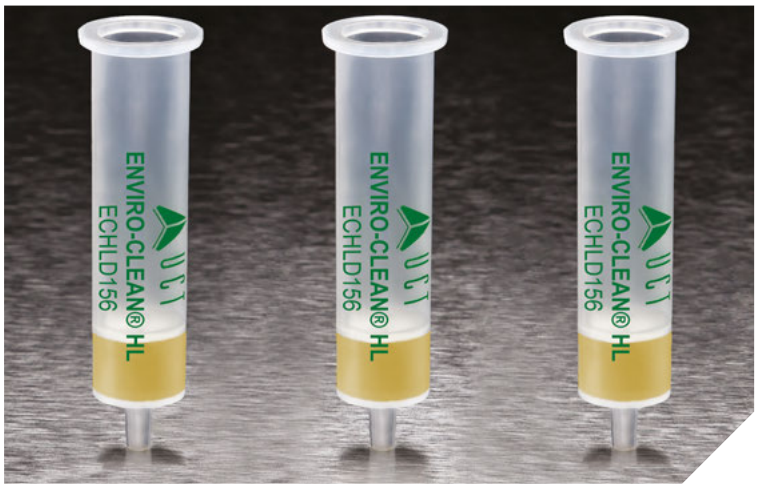
Product Name	Description	Part Number	Amount/Tube Vol.	Units/Pack
Clean-Elute™	Diatomaceous Earth for EPA Method 509	CLEAN-ELUTE	25,000 mg / 200mL	108
Enviro-Clean® HL DVB	For use in EPA Methods 526, 528, 529, 530, 544, 553, 1694, 8321B, 8141B, 8330	ECHLD156-P	500 mg / 6mL	30
Enviro-Clean® 521 & 522	Activated Carbon for EPA Methods 521 & 522	EU52112M6	2000 mg / 6mL	30
Enviro-Clean® 523	Graphitized Carbon for EPA Method 523	EC5232506	250 mg / 6mL	30
Enviro-Clean® 525	Novel C18 blend for use in EPA Method 525.2	EC525006	1500 mg / 6mL	30
Enviro-Clean® 535 (90 m^2/g SA)	For EPA Method 535 or in applications requiring Graphitized Carbon Black with lower surface area	EC535156	500 mg / 6mL	30
Enviro-Clean® 537	For EPA Method 537 Perfluorinated Alkyl Acids	ECHLD156-P	500 mg / 6mL	30
Enviro-Clean® 541	For EPA Method 541 Polar Organic Compounds in Drinking Water	EU541163	600 mg / 3mL	50
Enviro-Clean® 548	For EPA Method 548.1 Endothall Extraction	EC548006	548 Slurry / 6mL	30
Enviro-Clean® C8	For EPA Method 549 Diquat & Paraquat	EEC08156	500 mg / 6mL	50
Enviro-Clean® EPH Fractionation	Developed for fractionation of MA EPH (gravity flow)	XRSIHT13M15 XRSIHT15M25 CUSILHT15M25	3000 mg / 15mL 5000 mg / 25mL 5000 mg / 25mL	24 20 20
Enviro-Clean® Silica Gel	For silica gel clean-up applications	EUSILMSSM26	1000 mg silica: 200 mg muffled anhydrous sodium sulfate / 6mL	30
Enviro-Clean® Anhydrous Sodium Sulfate Drying Cartridge	Used for the removal of water from extracts prior to concentration and analysis	ECSS15M6	5000 mg / 6mL	30
Enviro-Clean® Anhydrous Sodium Sulfate Muffled – Glass Reservoir	Used for the removal of water from extracts prior to concentration and analysis	CUSS25M6G	2500 mg / 6mL	30
Enviro-Clean® Alumina & Silica Dual-Phase Cartridge	For environmental clean-up	ECALNSIL25M25	2500 mg alumina neutral: 5000 mg silica / 25mL	20
Enviro-Clean® Sodium Sulfate & Florisil Dual-Phase Cartridge	For environmental clean-up	EUSSFL2M6	2000 mg sodium sulfate: 2000 mg florisil / 6mL	30

ENVIRO-CLEAN® HL DVB

ENVIRO-CLEAN® HL DVB extraction columns are manufactured from an extremely clean, highly cross-linked divinylbenzene based sorbent. The material was developed with the environmental market in mind. It has been successfully used to extract a wide range of analytes from water samples. By varying the sample pH, wash and elution solvents ENVIRO-CLEAN® HL DVB can be used to analyze acidic, basic, and neutral (both polar & non-polar) compounds.



Part Number	Description	Quantity
ECHLD(150)6-P	150 mg / 6mL Cartridge	30/Pack
ECHLD126-P	200 mg / 15mL Cartridge	30/Pack
ECHLD156-P	500 mg / 15mL Cartridge	30/Pack



EPA METHOD 8270 - Extraction of Acids, Bases, and Neutrals in Water using Solid Phase Extraction

UCT offers a 2 cartridge system and extraction procedure for EPA Method 8270. A wide range of 137 target analytes and 6 surrogates can be successfully analyzed using this method. The procedure is reliable, efficient, and cost-effective. The tandem cartridge system uses UCT's proprietary 8270 cartridge in-line with our activated carbon cartridge. High throughout can be achieved by extracting multiple samples simultaneously using a multi-port SPE manifold combined with a 12 position collection rack, which allows for the simultaneous extraction of up to 12 samples at once. A set of 24 samples can be extracted in 5 to 6 hours.

Product Benefits

- Cost-effective
- Reduced usage of organic solvents
- Only one sample pass is needed
  - 5-6 hrs for a batch of 24 samples.
- No emulsion or white precipitate generated
- Shorter solvent evaporation time
- Shorter sample turnaround time
- High sample throughput
- Excellent recovery
- Cleaner extracts and chromatograms
- Cartridge body manufactured from special, proprietary polypropylene – minimizing potential source of interferences
- Packaged in Mylar to maintain cleanliness

8270 Cartridge Kits

1 Liter Sample Size		
Part Number	**Description**	**Quantity**
EC8270-KIT1L	ENVIRO-CLEAN® 8270 STARTER KIT	Kit
Contents	30 x 8270 Extraction Cartridges (p/n EC82702M15), 30 x Carbon Extraction Cartridges (p/n EU52113M6), 30 x Cartridge Adapters (p/n AD0000AS), 12 x Large Volume Transfer Tubes (p/n VMFSTFR12)	
EC8270-1000REFL	ENVIRO-CLEAN® 8270 REFILL KIT	Kit
Contents	30 x 8270 Extraction Cartridges (p/n EC82702M15), 30 x Carbon Extraction Cartridges (p/n EU52113M6)	
500 mL Sample Size		
Part Number	**Description**	**Quantity**
EC8270-KIT	ENVIRO-CLEAN® 8270 STARTER KIT	Kit
Contents	30 x 8270 Extraction Cartridges (p/n EC82701M15), 30 x Carbon Extraction Cartridges (p/n EU52112M6), 30 x Cartridge Adapters (p/n AD0000AS), 12 x Large Volume Transfer Tubes (p/n VMFSTFR12)	
EC8270-500REFL	ENVIRO-CLEAN® 8270 REFILL KIT	Kit
Contents	30 x 8270 Extraction Cartridges (p/n EC82701M15), 30 x Carbon Extraction Cartridges (p/n EU52112M6)	
≤100 mL Sample Size		
Part Number	**Description**	**Quantity**
EC8270-KIT100ML	ENVIRO-CLEAN® 8270 STARTER KIT	Kit
Contents	30 x 8270 Extraction Cartridges (p/n EC8270506), 30 x Carbon Extraction Cartridges (p/n EU5211M6), 30 x Cartridge Adapters (p/n AD0000AS), 12 x Large Volume Transfer Tubes (p/n VMFSTFR12)	
EC8270-100REFL	ENVIRO-CLEAN® 8270 REFILL KIT	Kit
Contents	30 x 8270 Extraction Cartridges (p/n EC8270506) 30 x Carbon Extraction Cartridges (p/n EU5211M6)	

8270 Cartridge Refills		
Part Number	**Description**	**Quantity**
EC8270506	500 mg in a 6mL Cartridge	30/Pack
EC82701M15	1000 mg in a 15mL Cartridge	30/Pack
EC82702M15	2000 mg in a 15mL Cartridge	30/Pack

Carbon Cartridge Refills		
Part Number	**Description**	**Quantity**
EU5211M6	1000 mg in a 6mL Cartridge	30/Pack
EU52112M6	2000 mg in a 6mL Cartridge	30/Pack
EU52113M6	3000 mg in a 6mL Cartridge	30/Pack

Extraction Manifold

Part Number	Description	Quantity
VMF016GL	16 Position Complete Vacuum Manifold System	Complete Unit
Contents	1 x Glass Block 1 x 16 Position Corian Lid 1 x Cover Gasket 1 x Vacuum Gauge 1 x 16 Position Adjustable Collection Rack 1 x Glass Block Safety Tray 16 x PTFE Tips 16 x Bulkhead Luer Fittings 16 x Plugs	

ENVIRO-CLEAN® Push-Thru Purification Cartridges

UCT's wide sorbent range is also offered in a convenient push-thru format, providing simple, fast, and efficient sample clean-up. The analyst can choose from a wide range of sorbent types tailored to the specific requirements of each analysis. The small, medium, and large push-thru cartridges allow for the filtration and removal of unwanted matrix that can otherwise lead to significant ion suppression during sample analysis.

SMALL

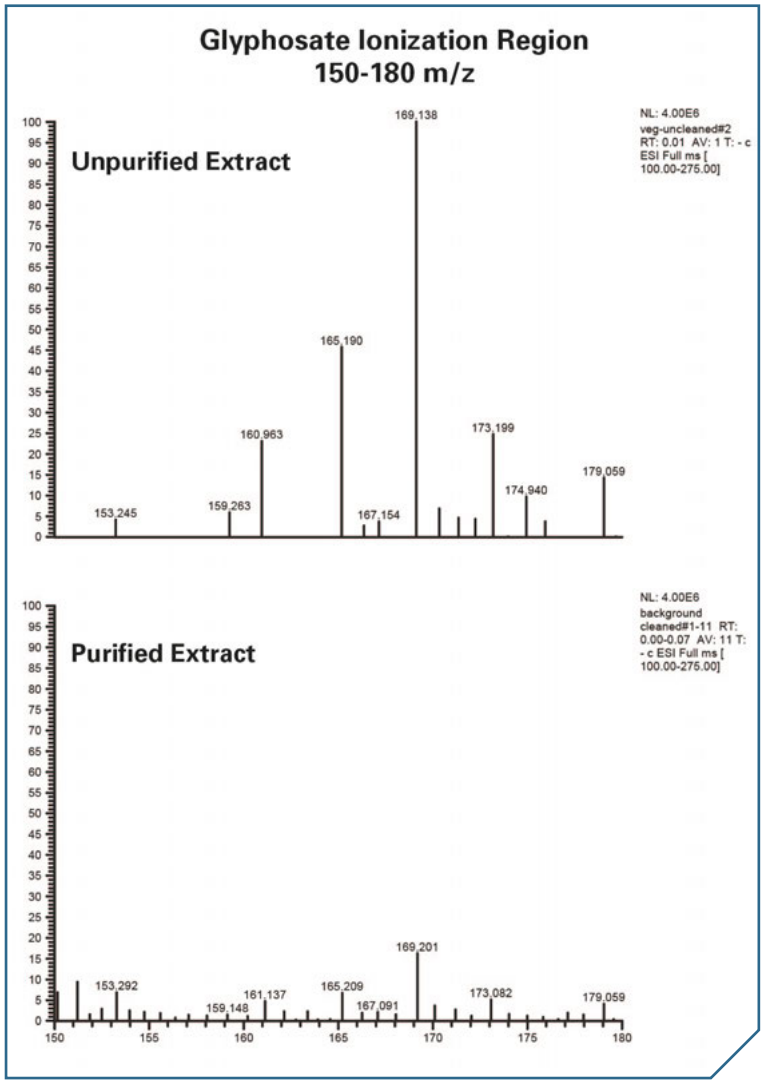
MEDIUM

LARGE

Part Number	Cartridge Size	Quantity	Frit Type	Contents
EEC1815MC	Medium	50/Pack	PTFE	Enviro-Clean® Encapped C18
EEC18MC-P	Medium	50/Pack	PE	Enviro-Clean® Encapped C18
EUCARBMC	Medium	30/Pack	PTFE	Enviro-Clean® Graphitized Carbon – 120/400 Mesh
EUFLSLC	Large	50/Pack	PTFE	Enviro-Clean® Florisil® PR
EUALNLC-P	Large	50/Pack	PE	Enviro-Clean® Alumina Neutral
EUQAXLC	Large	50/Pack	PTFE	Enviro-Clean® Quaternary Amine
EUPSAMC	Medium	50/Pack	PTFE	Enviro-Clean® Primary/ Secondary Amine
EUPSALC	Large	50/Pack	PTFE	Enviro-Clean® Primary/ Secondary Amine

ENVIRO-CLEAN® Push-Thru Glyphosate Purification Cartridges

Remove unwanted matrix interferences that can lead to significant suppression and loss of ionization for glyphosate and glufosinate. Water and vegetation/fruits/swabs and other non-soil samples extracted with water are simply pushed through the Glyphosate cartridge to purify final extracts.



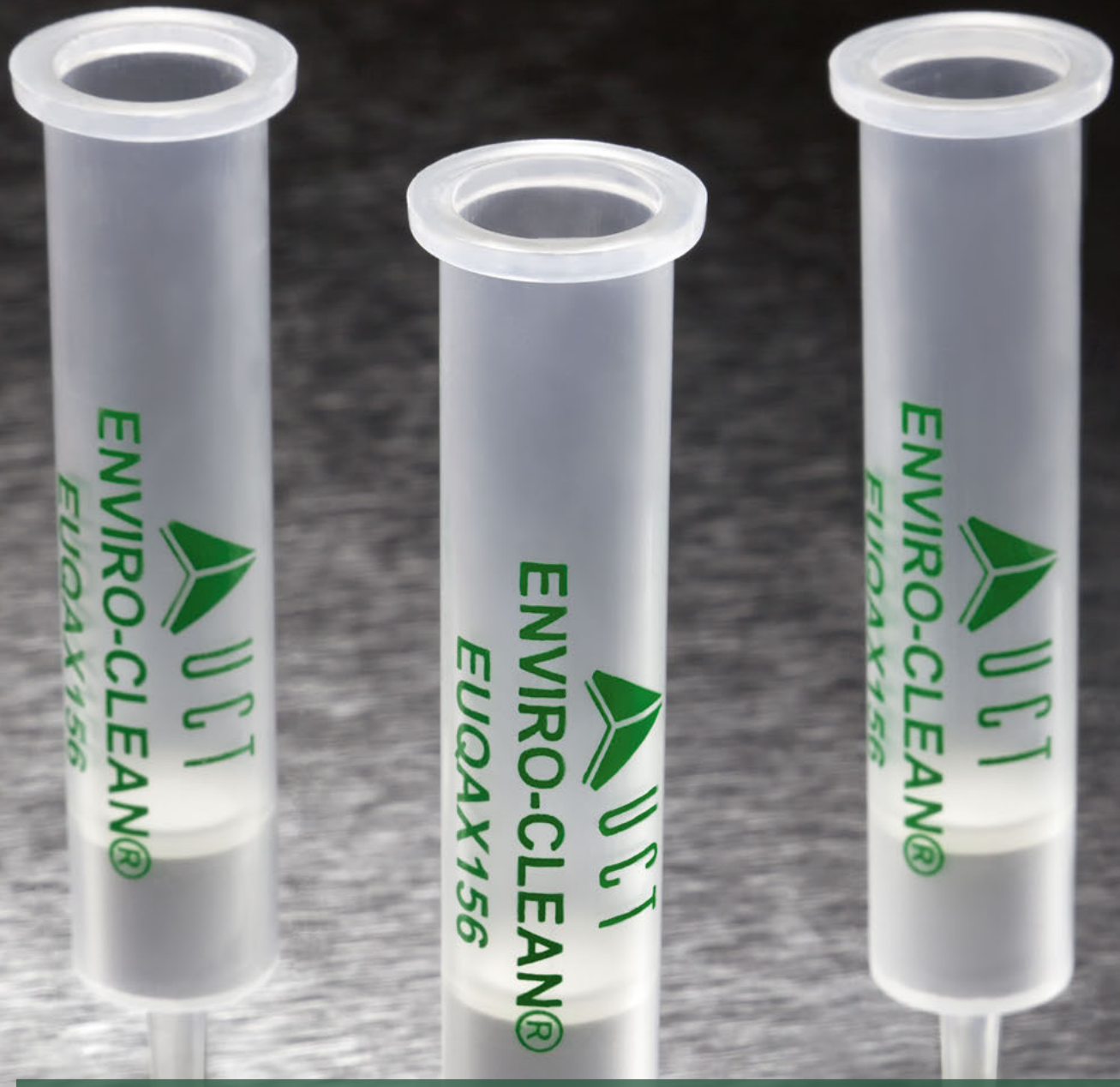
Part Number	Size	Contents
ECGLYSC	Small Cartridge	180 mg*
ECGLYLC	Large Cartridge	560 mg*

*** Proprietary polymeric sorbent blend**

* Source: Steven C. Moser OK Department of Agriculture, Food & Forestry
**Glyphosate is found at 168 m/z in ESI⁻ mode.

Infused samples were injected onto LC/MS Ion Trap in full scan mode for an average of a 30 second infusion pre and post clean-up using UCT's Glyphosate Purification Cartridges. Background matrix peaks that can lead to significant suppression and compete with glyphosate and glufosinate during ionization were significantly reduced following clean-up.

ENVIRO-CLEAN®
SOLID-PHASE EXTRACTION CARTRIDGES



HYDROPHOBIC / HYDROPHILIC / ION EXCHANGE / COPOLYMERIC / POLYMERIC

ENVIRO-CLEAN® SORBENTS

ENVIRO-CLEAN® solid-phase extraction (SPE) cartridges are designed specifically for the isolation and purification of environmental analytes such as pesticides, herbicides, polyaromatic hydrocarbons, polychlorinated biphenyls and other environmentally related compounds. By utilizing ultra-clean extraction sorbents along with chemically resistant PTFE frits, an end-user not only has the ability to purify complex matrices, but also reduce ion suppression or enhancement, and most importantly enrich compunds present at trace concentration levels.

To successfully conduct SPE, a mechanistic understanding of the interaction between sorbent and analyte of interest is vital for producing optimal results. The most common retention mechanisms include non-polar interactions (van der Waals forces), polar interactions (hydrogen bonding, dipole-dipole forces), and ionic interactions (cation-anion exchange).

Non-polar phases are universal but often are considered to exhibit the least selective retention mechanisms when compared to normal phase or ion-exchange SPE. C18 is the most widely used of these phases. While this retention mechanism happens to lack specificity, it is very useful for extracting analytes that are very diverse in structure within the same sample. Several EPA approved methods for analyzing organics in water mandate the use of a C18 phase.

Retention of an analyte under normal phase conditions is primarily due to interactions between polar functional groups of the analyte and polar groups on the sorbent surface. This could include hydrogen bonding, pi-pi, and dipole-dipole interactions. This mode is classically used to separate neutral organic compounds whose chemical nature ranges from hydrophobic to moderately polar.

Ion-exchange phases are often applied when analytes of interest carry a charge while in solution. The primary retention mechanism of the compound is based mainly on the electrostatic attraction of the charged functional group on the compound to the charged group that is bonded to the sorbent surface. ENVIRO-CLEAN® sorbents are available in either cation or anion exchangers and exhibit both weak and strong characteristics.

Lastly, copolymeric phases offer a dual retention mechanism providing superior cleanliness. Hydrophobic interactions in addition to ion exchange contribute to a higher degree of analyte selectivity than what was previously possible. Compounds of interest can be retained by multiple mechanisms, resulting in greater removal of matrix-related contamination.

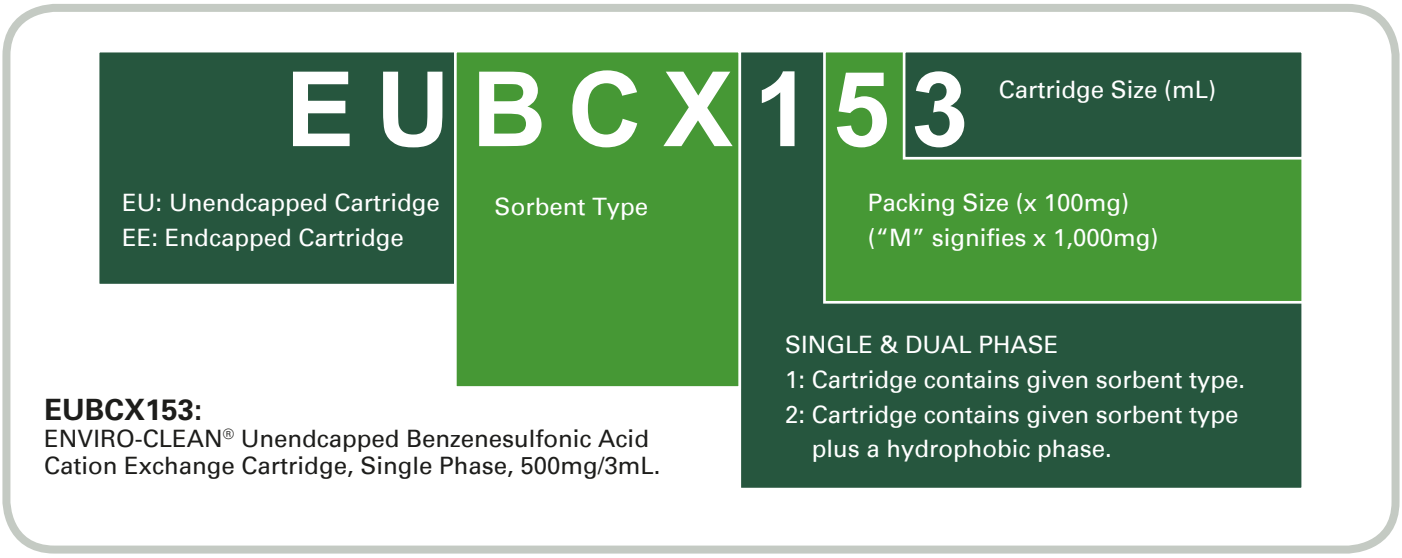
SPE TERMINOLOGY

- Sorbent –The solid-phase material to which analytes attach during the extraction process
- Bed Volume – The quantity of solvent needed to cover the sorbent
- Capacity – The amount of analyte that a sorbent can retain
- Activation – a process of rinsing the sorbent with a solvent to clean the bed and extend the bonded groups (i.e. C18) to maximize its effectiveness
- Wash Solvent – Solvent used to wash interferences off of the sorbent prior to elution
- Retention – The attraction a solid-phase has for the analyte that causes the analyte to “adsorb” to the sorbent
- Elution – The process of removing an analyte from the sorbent for analysis

ENVIRO-CLEAN® SOLID PHASE EXTRACTION CARTRIDGES

HOW TO READ ENVIRO-CLEAN® PART NUMBERS:

ENVIRO-CLEAN® CODE



EUBCX153:
ENVIRO-CLEAN® Unendcapped Benzenesulfonic Acid Cation Exchange Cartridge, Single Phase, 500mg/3mL.

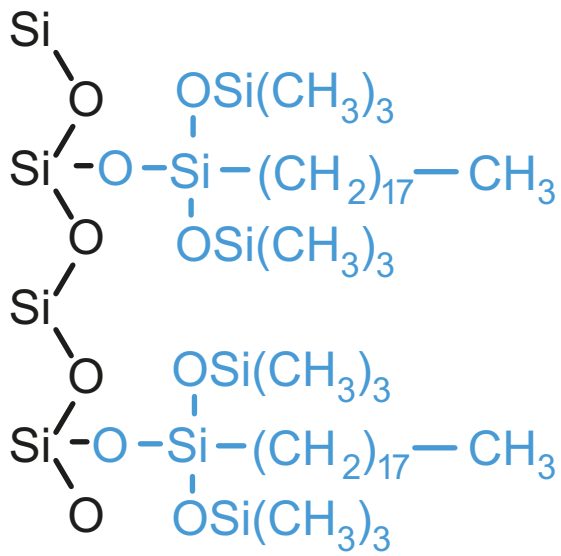
Sorbent Type

CODE	DESCRIPTION
C08, C18, C30	Carbon Chains
SIL	Unbonded Silica
PSA	n-2 Aminoethyl
BCX	Benzenesulfonic Acid Cation Exchanger
PCX	Propylsulfonic Acid Cation Exchanger
CCX	Carboxylic Acid Cation Exchanger
QAX	Quaternary Amine Anion Exchanger
NAX	Aminopropyl Anion Exchanger
FLS	Florisil® PR
ALA	Alumina - Acid
ALB	Alumina - Base
ALN	Alumina - Neutral
CNP	Cyanopropyl
CYH	Cyclohexyl
DOL	Diol
PHY	Phenyl

HYDROPHOBIC EXTRACTION SORBENTS

UCT's ENVIRO-CLEAN® hydrophobic sorbents feature silanol groups at the surface of the raw silica packing that have been chemically modified with hydrophobic alkyl or aryl functional groups. These phases are commonly utilized to extract compounds that exhibit medium non-polar characteristics from a variety of complex matrices. The C18 phase is the most widely used phase for non-polar interactions because of its non-selective nature; C18 will extract a large number of compounds with differing chemical properties. To enhance selectivity, UCT offers a variety of hydrophobic sorbents ranging from C2 all the way to C30, as well as endcapped and unendcapped versions.

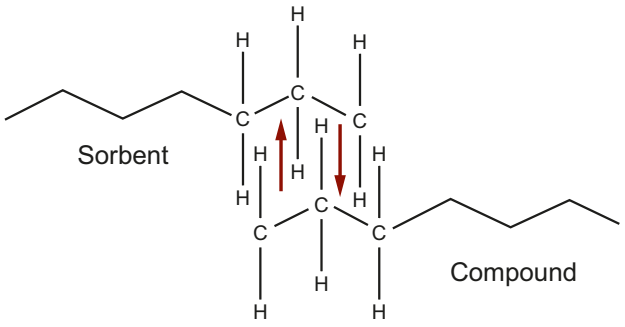
Example of a Hydrophobic Phase



MECHANISM OF HYDROPHOBIC BONDING

Retention of organic analytes from polar solutions (e.g. water) onto these SPE materials is due primarily to the attractive forces between the carbon-hydrogen bonds in the analyte and the functional groups. These nonpolar-nonpolar attractive forces are commonly called van der Waals forces, or dispersion forces. To elute an adsorbed compound from a reversed phase sorbent, use a nonpolar solvent to disrupt the forces that bind the compound to the packing. Some polar solvents, such as methanol and acetonitrile have enough non-polar characteristics to disrupt nonpolar binding triggering compound elution. Methanol can be used as well, although it should be noted that it will remove both polar and non-polar analytes of interest as well as interferences.

Example of a Hydrophobic Bonding

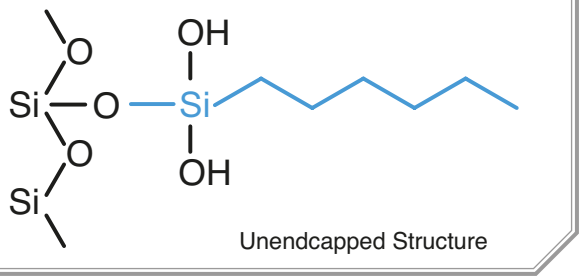


Hydrophobic Sorbents & Structures

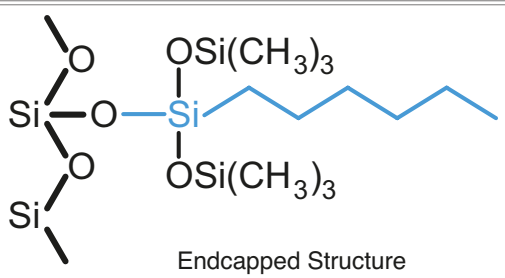
Sorbent	Structure
C2 Ethyl	$-SiCH_2CH_3$
C4 n-Butyl	$-Si(CH_2)_3CH_3$
C8 Octyl	$-Si(CH_2)_7CH_3$
C18 Octadecyl	$-Si(CH_2)_{17}CH_3$
C30 Tricontyl	$-Si(CH_2)_{29}CH_3$
Cyclohexyl	-Si 
Phenyl	-Si 

ENDCAPPED VS. UNENDCAPPED

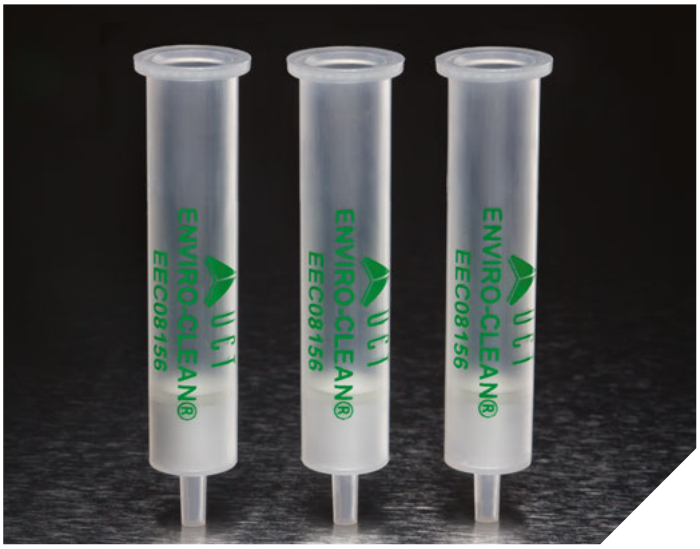
Bonded phases are manufactured by the reaction of organosilanes with activated silica. During the polymerization reaction of carbon chains to the silica backbone, a very stable silyl ether linkage forms. Our unendcapped columns allow hydroxyl sites to remain, thus making these columns slightly hydrophilic. In order to minimize this slight polarity, the hydroxyl sites are deactivated. Proprietary bonding techniques ensure that these sites are 100% reacted, leading to complete endcapping. Because there are no hydroxyl sites left, our endcapped columns render the silica non-acidic and non-polar.



Unendcapped Structure



Endcapped Structure



C18, OCTADECYL

Organic Loading = 21.5%
Surface Area = 500 m^2/g

Average Pore Size = 60Å
Pore Volume = 0.77 cm^3/g

COLUMNS				
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Endcapped	Part Number
1	50	100	NO	**EUC181L1**
1	100	100	NO	**EUC18111**
1	100	100	YES	**EEC18111**
3	200	50	NO	**EUC18123**
3	200	50	YES	**EEC18123**
3	500	50	NO	**EUC18153**
3	500	50	YES	**EEC18153**
6	500	50	NO	**EUC18156**
6	500	50	YES	**EEC18156**
6	1000	30	NO	**EUC181M6**
6	1000	30	YES	**EEC181M6**
10	100	50	NO	**EUC1811Z**
10	100	50	YES	**EEC1811Z**
10	200	50	NO	**EUC1812Z**
10	200	50	YES	**EEC1812Z**
10	500	50	NO	**EUC1815Z**
10	500	50	YES	**EEC1815Z**
15	1000	20	YES	**EEC1811M15**
15	2000	20	NO	**EUC1812M15**
15	2000	20	YES	**EEC1812M15**
25	5000	20	NO	**EUC1815M25**
25	5000	20	YES	**EEC1815M25**
75	10000	10	NO	**EUC18110M75**
75	10000	10	YES	**EEC18110M75**

C8, OCTYL

Organic Loading = 11.1%
Surface Area = 500 m^2/g

Average Pore Size = 60Å
Pore Volume = 0.77 cm^3/g

COLUMNS				
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Endcapped	Part Number
1	50	100	NO	**EUC081L1**
1	100	100	NO	**EUC08111**
1	100	100	YES	**EEC08111**
3	200	50	NO	**EUC08123**
3	200	50	YES	**EEC08123**
3	500	50	NO	**EUC08153**
3	500	50	YES	**EEC08153**
6	500	50	NO	**EUC08156**
6	500	50	YES	**EEC08156**
6	1000	30	NO	**EUC081M6**
6	1000	30	YES	**EEC081M6**
10	100	50	NO	**EUC0811Z**
10	200	50	NO	**EUC0812Z**
10	200	50	YES	**EEC0812Z**
10	500	50	NO	**EUC0815Z**
10	500	50	YES	**EEC0815Z**
15	2000	20	NO	**EUC0812M15**
15	2000	20	YES	**EEC0812M15**
25	5000	20	NO	**EUC0815M25**
25	5000	20	YES	**EEC0815M25**
75	10000	10	NO	**EUC08110M75**
75	10000	10	YES	**EEC08110M75**

ENVIRO-CLEAN®
Hydrophobic Phase

C2, ETHYL

Organic Loading = 6.2%
Surface Area = 500 m^2/g
Average Pore Size = 60Å
Pore Volume = 0.77 cm^3/g

COLUMNS				
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Endcapped	Part Number
6	500	50	YES	**EEC02156**
10	500	50	YES	**EEC0215Z**

C30, TRICONTYL

Organic Loading = 20.0%
Surface Area = 500 m^2/g
Average Pore Size = 60Å
Pore Volume = 0.77 cm^3/g

COLUMNS				
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Endcapped	Part Number
3	200	50	NO	**EUC30123**
3	500	50	NO	**EUC30153**
6	1000	30	YES	**EEC301M6**
10	500	50	NO	**EUC3015Z**
10	500	50	YES	**EEC3015Z**

PHY, PHENYL

Organic Loading = 10.8%
Surface Area = 500 m^2/g
Average Pore Size = 60Å
Pore Volume = 0.77 cm^3/g

COLUMNS				
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Endcapped	Part Number
3	500	50	NO	**EUPHY153**
3	500	50	YES	**EEPHY153**
6	1000	30	NO	**EUPHY1M6**

CYH, CYCLOHEXYL

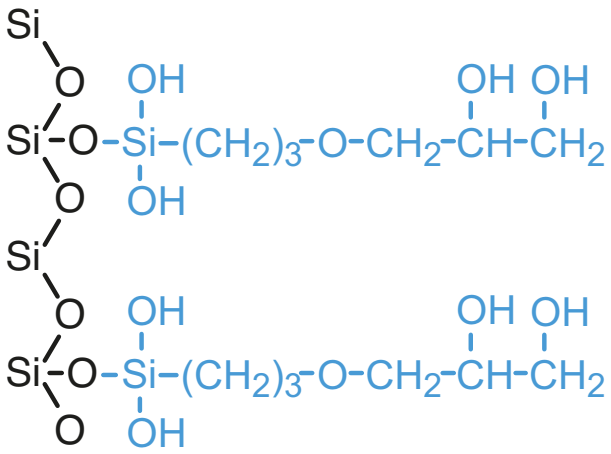
Organic Loading = 11.6%
Surface Area = 500 m^2/g
Average Pore Size = 60Å
Pore Volume = 0.77 cm^3/g

COLUMNS				
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Endcapped	Part Number
3	500	50	NO	**EUCYH153**
6	500	50	YES	**EECYH156**
6	1000	30	YES	**EECYH1M6**

ENVIRO-CLEAN® HYDROPHILIC NORMAL PHASE EXTRACTION SORBENTS

Hydrophilic sorbents are composed of a silica backbone bonded with carbon chains containing polar functional groups. Examples of phases that feature this functionality include bare silica, diol, and cyanopropyl phases.

Example of
Hydrophilic Phase



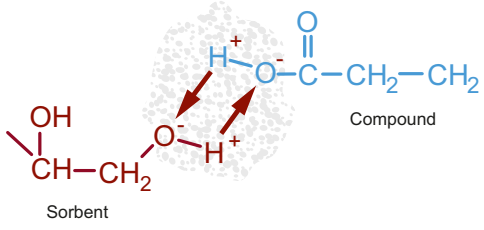
Mechanism of Hydrophilic Bonding

Compounds are retained on hydrophilic sorbents through polar interactions including hydrogen bonding, pi-pi or dipole-dipole interactions. These types of interactions occur when the distribution of electrons between individual atoms in functional groups is unequal, causing negative and positive polarity. Polar-functionalized bonded silicas and polar adsorption media are typically used under normal phase conditions.

Hydrophilic Sorbents & Structures

Sorbent	Structure
Silica	-SiOH
Diol	$-Si(CH_2)_3OCH_3OHCH_2OH$
Cyanopropyl	$-Si(CH_2)_3CN$

Example of Hydrophilic Bonding



ENVIRO-CLEAN®

Hydrophilic Phase

UNBONDED SILICA, ACID WASHED

Organic Loading = N/A
Surface Area = 500 m^2/g
Average Pore Size = 60Å
Pore Volume = 0.77 cm^3/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	100	100	EUSIL111
3	200	50	EUSIL123
3	500	50	EUSIL153
6	500	50	EUSIL156
6	1000	30	EUSIL1M6
15	2000	20	EUSIL12M15
25	5000	20	EUSIL15M25
75	10000	10	EUSIL110M75

PHARMA-SIL®

Organic Loading = N/A
Surface Area = 500 m^2/g
Average Pore Size = 60Å
Pore Volume = 0.82 cm^3/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	100	100	EPHSIL111
3	500	50	EPHSIL153
6	500	50	EPHSIL156
6	1000	30	EPHSIL1M6
10	200	50	EPHSIL12Z
15	2000	20	EPHSIL12M15
25	5000	20	EPHSIL15M25
75	10000	10	EPHSIL110M75

ALUMINA, ACIDIC

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	200	50	EUALA123
3	500	50	EUALA153
6	500	50	EUALA156
6	1000	30	EUALA1M6
6	2000	30	EUALA2M6
15	2000	20	EUALA12M15

ALUMINA, BASIC

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	50	100	EUALB1L1
3	500	50	EUALB153
6	500	50	EUALB156
6	1000	30	EUALB1M6
15	2000	20	EUALB12M15

ALUMINA, NEUTRAL

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	50	100	EUALN1L1
1	100	100	EUALN111
3	200	50	EUALN123
6	500	50	EUALN156
6	1000	30	EUALN1M6
15	2000	20	EUALN12M15
25	5000	20	EUALN15M25
75	10000	10	EUALN110M75

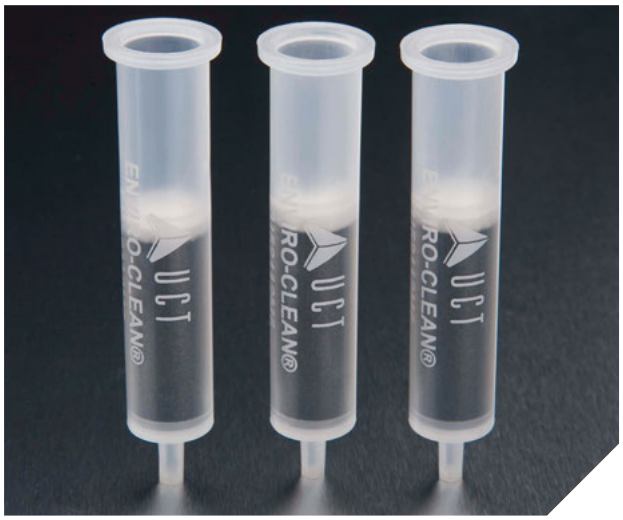
DIOL

Organic Loading = 8.0%
Surface Area = 500 m^2/g
Average Pore Size = 60 Å
Pore Volume = 0.77 cm^3/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	50	100	EUDOL1L1
1	100	100	EUDOL111
1	200	100	EUDOL121
3	200	50	EUDOL123
3	500	50	EUDOL153
6	500	50	EUDOL156
6	1000	30	EUDOL1M6
10	500	50	EUDOL15Z
15	2000	20	EUDOL12M15
25	5000	20	EUDOL15M25

CARBON, GRAPHITIZED NON-POROUS, 120/400 MESH

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	100	100	EUCARB111
3	200	50	EUCARB123
3	500	50	EUCARB153
6	200	50	EUCARB126
6	250	30	EUCARB2L6
6	500	50	EUCARB156
6	1000	30	EUCARB1M6
10	100	50	EUCARB11Z
10	200	50	EUCARB12Z
15	2000	20	EUCARB12M15



FLORISIL® PR

Florisil® is the trademark of U.S. Silica Co.

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	100	100	EUFLS111
3	200	50	EUFLS123
3	500	50	EUFLS153
6	500	50	EUFLS156
10	100	50	EUFLS11Z
10	500	50	EUFLS15Z
15	2000	20	EUFLS12M15
25	5000	20	EUFLS15M25
75	10000	10	EUFLS110M75

FLORISIL® A (100 / 120 Mesh)

Florisil® is the trademark of U.S. Silica Co.

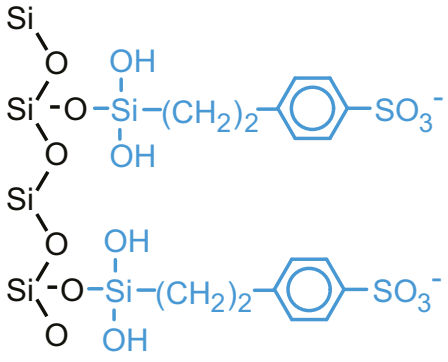
COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	500	50	EUFLSA153
15	2000	20	EUFLSA12M15

MECHANISM OF ION EXCHANGE BONDING

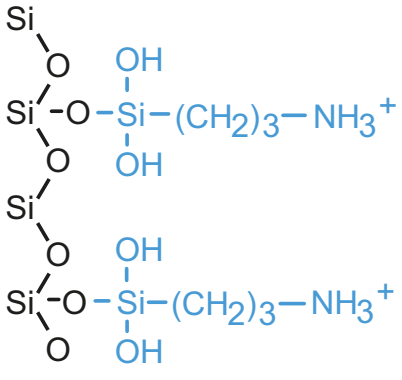
The retention mechanism in ion exchange bonding is the electrostatic attraction of the charged functional group on the compound to the charged functional group on the SPE sorbent. In order for an optimal interaction, both the compound of interest and the functional group on the bonded silica must be fully charged. To ensure 99% or more ionization, the pH should be at least two pH units below the pKa of the cation and two pH units above the pKa of the anion. Elution occurs by using a solution/buffer to raise the pH above the pKa of the cationic group or to lower the pH below the pKa of the anion to disrupt retention. At this point, the sorbent or compound is neutralized. Ion exchange resins come in two varying forms: strong and weak. The number of charges on a strong ion exchanger remains constant regardless of the buffer pH. Weak ion exchangers display pH-dependent functionality and therefore deliver optimal performance over only a small pH range.

Percent of Compound in Ionic State						
Functionality	**Ionization**	pH units away from pKa				
		2 < pKa	1 < pKa	At pKa	1 > pKa	2 > pKa
ACID	Anionic (-)	1	9	50	91	99
BASE	Cationic (+)	99	91	50	9	1

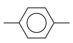
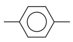
Example of a Cation Exchange Phase



Example of a Anion Exchange Phase



ION EXCHANGE SORBENTS & STRUCTURES

Sorbent	Structure	pKa
Anion Exchangers		
Aminopropyl (1° amine)	$-Si-(CH_2)_3NH_2$	9.8
N-2 Aminoethyl (1° & 2° amine)	$-Si-(CH_2)_3NH(CH_2)_2NH_2$	10.1, 10.9
Diethylamino (3° amine)	$-Si-(CH_2)_3N(CH_2CH_3)_2$	10.6
Quaternary Amine Chloride	$-Si-(CH_2)_3N^+(CH_3)_3$ Cl^-	Always charged
Quaternary Amine Hydroxide	$-Si-(CH_2)3N^+(CH_3)_3$ OH^-	Always charged
Quaternary Amine Acetate	$-Si-(CH_2)_3N^+(CH_3)_3$ CH_3COO^-	Always charged
Quaternary Amine Formate	$-Si-(CH_2)_3N^+(CH_3)_3$ $HCOO^-$	Always charged
Polyimine	$-Si-(CH_2)_3-R\ [NHCH_3CH_3]_x$	
Cation Exchangers		
Carboxylic Acid	$-Si-CH_2COOH$	4.8
Propylsulfonic Acid	$-Si-(CH_2)_3SO_3H$	<1
Benzenesulfonic Acid	$-Si-(CH_2)_2$  SO_3^-	Always charged
Benzenesulfonic Acid High Load	$-Si-(CH_2)_2$  SO_3^-	Always charged
Triacetic Acid	$-Si-(CH_2)_3NH-(CH_2)_2N(CH_2COOH)_2$ (NH substituted with CH_2COOH)	

	Goal	Anion Exchange Sorbent	Cation Exchange Sorbent
		pH	pH
WASH	To promote bonding between sorbent and analyte	> Analyte pKa and / or < Sorbent pKa	< Analyte pKa and / or > Sorbent pKa
ELUTION	To disrupt bonding between sorbent and analyte	< Analyte pKa and / or > Sorbent pKa	> Analyte pKa and / or < Sorbent pKa

ENVIRO-CLEAN®

Anion Exchange Phase

AMINOPROPYL

Organic Loading = 6.65%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Anion Exchange = 0.28 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	200	50	EUNAX123
3	500	50	EUNAX153
6	500	50	EUNAX156
6	1000	30	EUNAX1M6
10	100	50	EUNAX11Z
15	2000	20	EUNAX12M15
75	10000	10	EUNAX110M75

QUATERNARY AMINE WITH CHLORIDE COUNTER ION

Organic Loading = 8.40%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Anion Exchange = 0.230 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	100	100	EUQAX111
3	200	50	EUQAX123
3	500	50	EUQAX153
6	500	50	EUQAX156
6	1000	30	EUQAX1M6
10	100	50	EUQAX11Z
10	200	50	EUQAX12Z
10	500	50	EUQAX15Z

QUATERNARY AMINE WITH ACETATE COUNTER ION

Organic Loading = 8.40%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Anion Exchange = 0.230 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	500	50	EAQAX153
6	1000	30	EAQAX1M6
10	100	50	EAQAX11Z
75	10000	10	EAQAX110M75

QUATERNARY AMINE WITH HYDROXIDE COUNTER ION

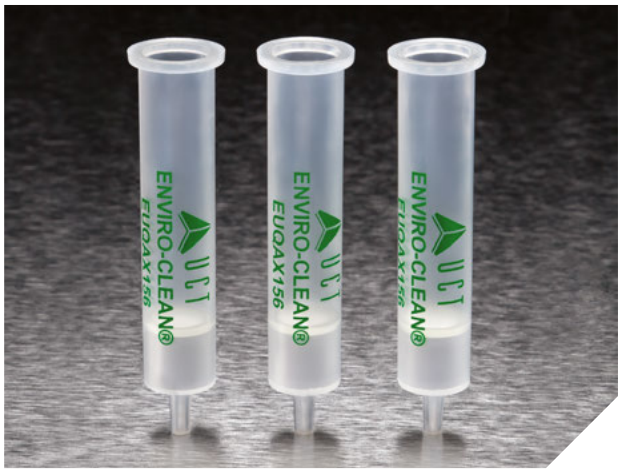
Organic Loading = 8.40%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Anion Exchange = 0.230 meq/g

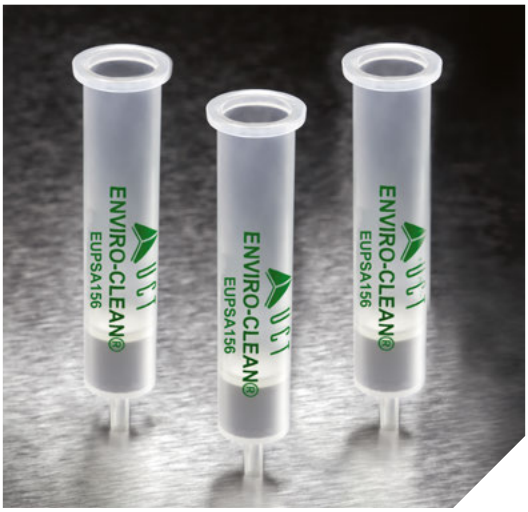
COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	500	50	EHQAX153
6	500	50	EHQAX156

QUATERNARY AMINE WITH FORMATE COUNTER ION

Organic Loading = 8.40%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Anion Exchange = 0.230 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	500	50	EFQAX153
6	1000	30	EFQAX1M6





POLYIMINE

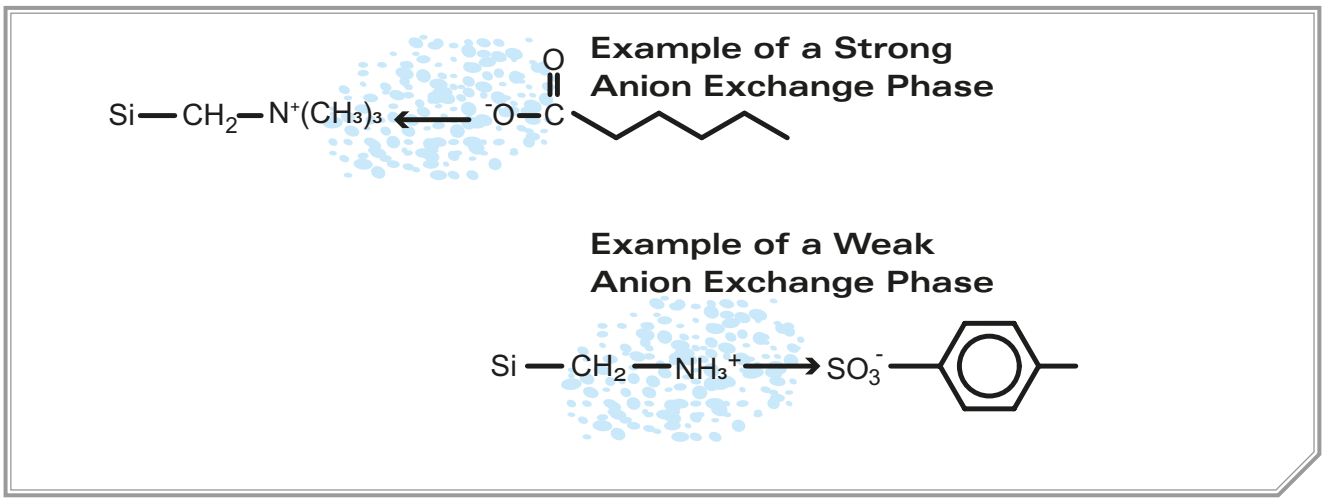
Organic Loading = 14.25%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Anion Exchange = 0.880 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	500	50	**EUPAX153**
3	1000	50	**EUPAX1M3**
6	500	50	**EUPAX156**
6	1000	30	**EUPAX1M6**

PRIMARY/SECONDARY AMINE

Organic Loading = 11.1%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Anion Exchange = 1.100 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	50	100	**EUPSA1L1**
1	100	100	**EUPSA111**
3	200	50	**EUPSA123**
3	500	50	**EUPSA153**
6	500	50	**EUPSA156**
6	1000	30	**EUPSA1M6**
75	10000	10	**EUPSA110M75**



ENVIRO-CLEAN®

Cation Exchange Phase

CARBOXYLIC ACID

Organic Loading = 8.75%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Cation Exchange = 0.043 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	100	100	EUCCX111
3	200	50	EUCCX123
3	500	50	EUCCX153
6	500	50	EUCCX156
6	1000	30	EUCCX1M6
10	200	50	EUCCX12Z

TRIACETIC ACID

Organic Loading = 7.50%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Cation Exchange = 0.10 meq/g
Anion Exchange = 0.15 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	100	100	EUTAX111
3	500	50	EUTAX153
6	500	50	EUTAX156
6	1000	30	EUTAX1M6
10	100	50	EUTAX11Z
75	10000	10	EUTAX110M75

BENZENESULFONIC ACID

Organic Loading = 10.69%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Cation Exchange = 0.320 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	100	50	EUBCX113
3	200	50	EUBCX123
3	500	50	EUBCX153
6	500	50	EUBCX156
6	1000	30	EUBCX1M6
10	100	50	EUBCX11Z
10	200	50	EUBCX12Z
10	500	50	EUBCX15Z
15	2000	20	EUBCX12M15
25	5000	20	EUBCX15M25

BENZENESULFONIC ACID HIGH LOAD

Organic Loading = 16.50%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Cation Exchange = 0.650 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	100	100	EUBCX1HL11
3	50	50	EUBCX1HLL3
3	100	50	EUBCX1HL13
6	500	50	EUBCX1HL56
6	1000	30	EUBCX1HLM6
10	200	50	EUBCX1HL2Z
10	500	50	EUBCX1HL5Z
75	10000	10	EUBCX1HL10M75

PROPYLSULFONIC ACID

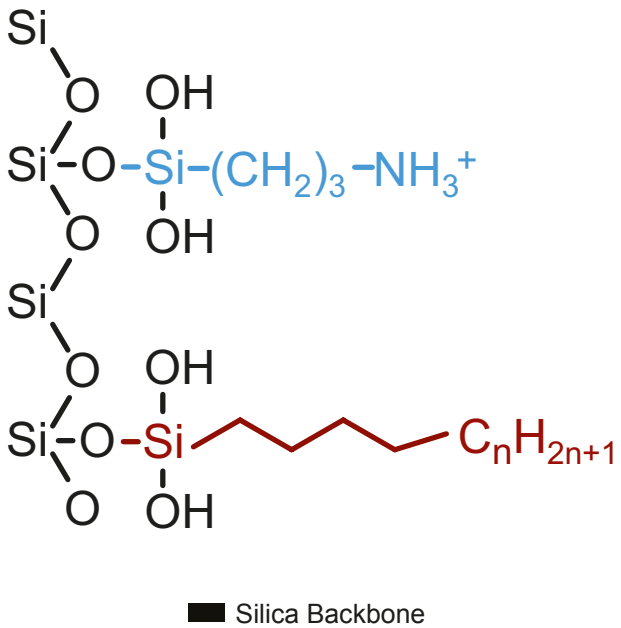
Organic Loading = 7.00%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Cation Exchange = 0.180 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	500	50	EUPCX153
10	500	50	EUPCX15Z
15	2000	20	EUPCX12M15

ENVIRO-CLEAN® COPOLYMERIC EXTRACTION SORBENTS

Copolymeric sorbents are composed of a silica backbone bonded with two types of functional chains. One is either an ion exchanger or polar chain, while the other is a hydrophobic carbon chain. The copolymeric phases manufactured by UCT are produced in a way as to allow for equal parts of each functional group to attach to the silica substrate yielding reproducible bonded phases and unique copolymeric chemistries. This type of mixed- mode seperation is beneficial when one is looking to extract both neutral and charged compounds and typically results in a cleaner, final extract.

Example of Copolymeric Bonding



ENVIRO-CLEAN®

Copolymeric Exchange Phase

Sorbent	Category	Structure	pKa
Benzenesulfonic Acid (BCX2)	Strong Cation	C8 + -Si-(CH2)2-Ph-SO3-	Always Charged
Benzenesulfonic Acid (BCX3)	Strong Cation	C18 + -Si-(CH2)2-Ph-SO3-	Always Charged
Propylsulfonic Acid (PCX2)	Strong Cation	C8 + -Si-(CH2)3SO3H	< 1
Carboxylic Acid (CCX2)	Weak Cation	C8 + -Si-(CH2)2COOH	4.8
Quaternary Amine (QAX2)	Strong Anion	C8 + -Si-(CH2)3N + (CH3)3	Always Charged
Quaternary Amine (QAX3)	Strong Anion	C18 + -Si-(CH2)3N + (CH3)3	Always Charged
Aminopropyl (NAX2)	Weak Anion	C8 + -Si-(CH2)3NH2	9.8
Cyanopropyl (CNP2)	Hydrophilic	C8 + -Si-(CH2)3CN	N/A
Cyclohexyl (CYH2)	Hydrophobic	C8 + -Si-(CH2)-C6H12	N/A

Analytes	Washes	Elutions
Cations/Anions Alkanes Alkenes Aromatics	1) Aqueous to remove polar matrix components. 2) Methanol to disrupt residual hydrophobic interferences and to remove any remaining residual matrix.	1) Organic to elute hydrophobically bound analytes. 2) Organic with a pH that would neutralize ionically bound analytes. 3) Aqueous buffer with high ionic strength. 4) Solvent possessing a counter ion that would bond to sorbent and displace analyte of interest.

EXTRACTION MECHANISMS OF COPOLYMERIC BONDED PHASES

A sample composed of a theoretical neutral parent drug and its charged (acidic) metabolite is applied at a pH of 6 (**Figure 1**). At this pH, most amine groups are positively charged. Since this sorbent is positively charged, compounds with positively charged cations are repelled. Depending on the pKa of the metabolite, the carboxylic acid groups may be negatively charged, allowing the metabolite to bond to the positively charged sorbent. The column also possesses a hydrophobic chain which allows the neutral parent drug to bond to the sorbent.

Water or a weak aqueous buffer (pH 6) washes away hydrophilically bound interferences (**Figure 2**). The column is then dried utilizing organic solvent to ensure it's free of any residual aqueous phase that would hinder effective elution.

After drying, analytes of interest can be eluted using a two-step process. During the first elution (**Figure 3**), the hydrophobically bound neutral parent drug is eluted with a solvent of minimal polarity, such as hexane/ethyl acetate (80:20). The second elution (**Figure 4**) employs an acid to neutralize the charge of acidic analytes. The ionic interaction is released, and analytes are eluted in an appropriate solvent mixture. If a tiered elution scheme is not desired, a universal solvent can be put to use that can effectively disrupt both bonding mechanisms at once to elute all analytes of interest within one single elution step.

Sample Application

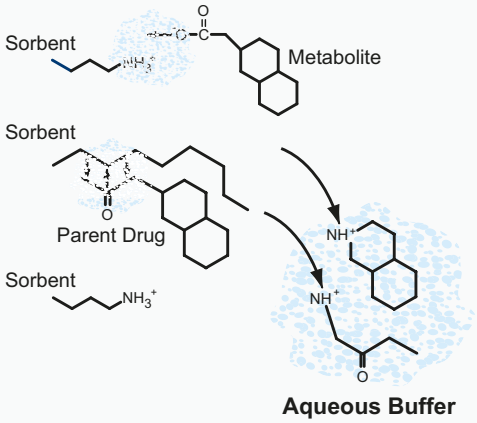


Figure 1

Column Wash

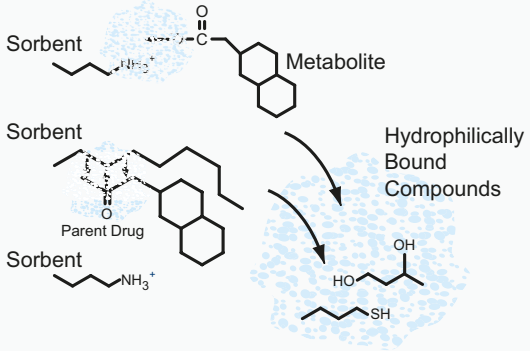


Figure 2

First Elution

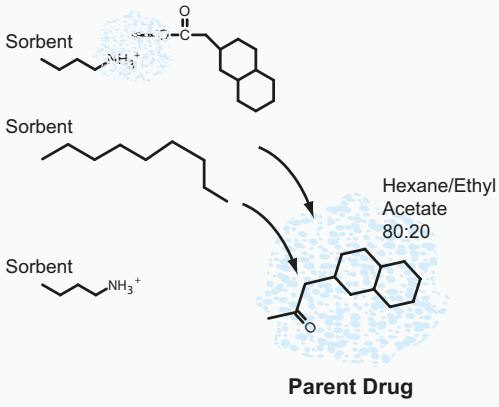


Figure 3

Second Elution

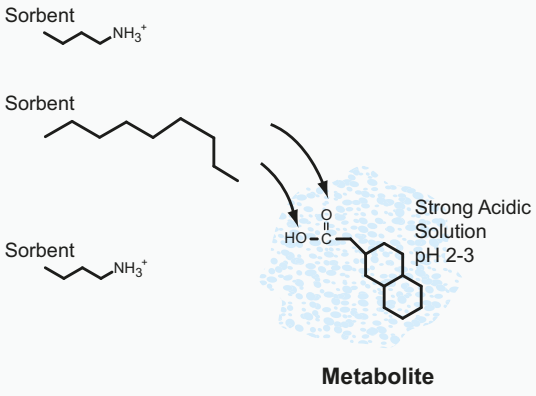


Figure 4

ENVIRO-CLEAN®

Copolymeric Exchange Phase

C8 PLUS CYCLOHEXYL

Organic Loading = 14.0%
Surface Area = 500 m^2/g
Average Pore Size = 60Å
Pore Volume = 0.77 cm^3/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	200	50	**EUCYH223**
6	500	50	**EUCYH256**

C8 PLUS CYANOPROPYL

Organic Loading = 14.0%
Surface Area = 500 m^2/g
Average Pore Size = 60Å
Pore Volume = 0.77 cm^3/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	200	50	**EUCNP223**

C8 PLUS PROPYLSULFONIC

Organic Loading = 14.62%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Exchange Capacity = 0.11 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	200	50	**EUPCX223**
6	500	50	**EUPCX256**

C8 PLUS CARBOXYLIC ACID

Organic Loading = 11.45%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Exchange Capacity = 0.110 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	200	50	**EUCCX223**
6	1000	30	**EUCCX2M6**
10	200	50	**EUCCX22Z**

C8 PLUS BENZENESULFONIC ACID

Organic Loading = 12.40%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Exchange Capacity = 0.077 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	200	50	**EUBCX223**
6	500	50	**EUBCX256**
6	1000	30	**EUBCX2M6**
10	200	50	**EUBCX22Z**
10	500	50	**EUBCX25Z**

C18 PLUS BENZENESULFONIC ACID

Organic Loading = 12.4%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Exchange Capacity = 0.077 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	50	50	**EUBCX3L3**
3	100	50	**EUBCX313**

C8 PLUS AMINOPROPYL

Organic Loading = 12.10%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Exchange Capacity = 0.144 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	200	50	**EUNAX223**
3	500	50	**EUNAX253**
6	1000	30	**EUNAX2M6**
10	100	50	**EUNAX21Z**
75	1000	10	**EUNAX10M75**

C8 PLUS QUATERNARY AMINE

Organic Loading = 13.00%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Exchange Capacity = 0.170 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
3	200	50	**EUQAX223**
3	500	50	**EUQAX253**
6	500	50	**EUQAX256**
6	1000	30	**EUQAX2M6**

ENVIRO-CLEAN® Polymeric DVB Extraction Sorbent

Enviro-Clean® polymeric extraction sorbents are formulated with an ultra-clean, highly cross-linked styrene and divinylbenzene polymer sorbent. The sorbent can be functionalized with many of the same phases as our silica based sorbents. Possibilities include standard ion exchange functionalities. Enviro-Clean® particles have an average particle size of 30 microns with enhanced loading capacity. This higher capacity translates into lower requirements for bed mass. The Enviro-Clean® sorbent also eliminates the need for the initial column conditioning step. All of these attributes ultimately result in improved cost to the end user.

Advantages of ENVIRO-CLEAN® DVB Sorbent:

- No conditioning steps
- High and reproducible recoveries
- Cross-linked sorbent minimized bead swelling
- Reduced sorbent mass
- Improved flow rates
- pH stable from 1-14
- High sorbent capacity

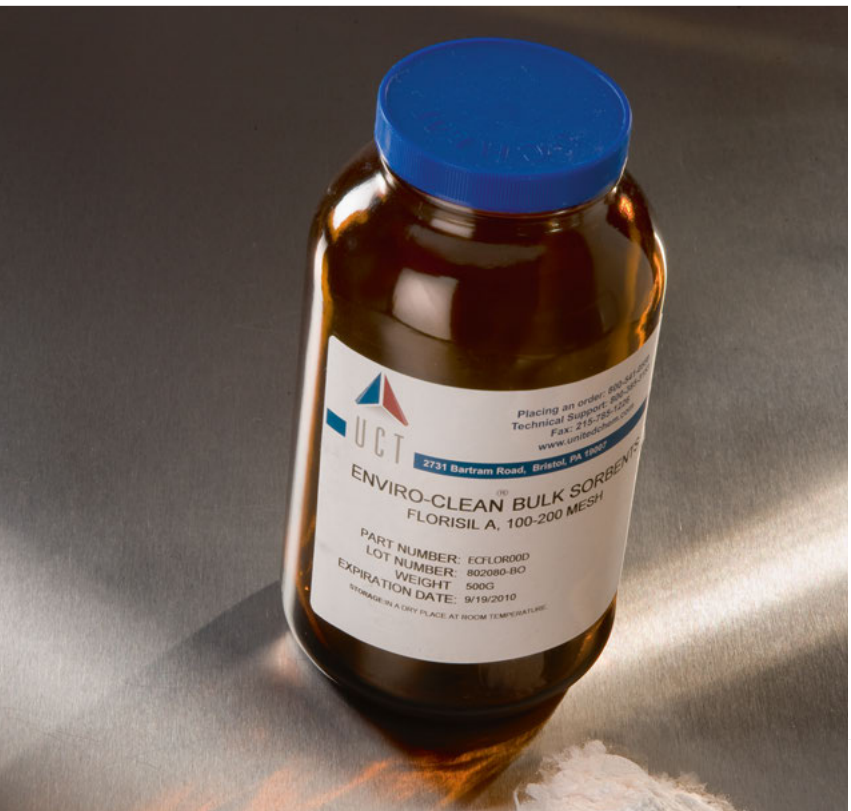
COLUMNS				
Tube Volume (mL)	Sorbent Amount (mg)	Frit Type	Units per Pack	Part Number
3	50	PTFE	50	**ECDVB1L3**
3	60	PE	100	**ECDVB063P**
3	100	PTFE	50	**ECDVB113**
3	100	PTFE	500	**ECDVB113-D**
6	200	PE	30	**ECDVB126P**
6	500	PTFE	30	**ECDVB156**
6	500	PE	30	**ECDVB156P**
15	1000	PTFE	20	**ECDVB1M15**

ENVIRO-CLEAN® Inert Glass Cartridge

For ultra-clean extractions, UCT offers inert, 6 mL glass cartridges in a variety of bonded phases packed between two PTFE frits.

COLUMNS					
Tube Volume (mL)	Sorbent Amount (mg)	Bonded Phase	Endcapped	Units per Pack	Part Number
6	500	C2-ETHYL	YES	100	**EEC02156G**
6	500	C8-OCTYL	YES	50	**EEC08156G**
6	500	C18-OCTADECYL	NO	50	**EUC18156G**
6	500	C18-OCTADECYL	YES	50	**EEC18156G**
6	1000	C18-OCTADECYL	NO	30	**EUC181M6G**
6	1000	C18-OCTADECYL	YES	50	**EEC181M6G**
6	1000	CYCLOHEXL	YES	50	**EECYH1M6G**
6	1000	PHENYL	NO	50	**EUPHY1M6G**
6	1000	ALUMINA-NEUTRAL	N/A	30	**EUALN1M6G**
6	500	SILICA-ACID WASHED	N/A	10	**EUSIL156G**
6	1000	SILICA-ACID WASHED	N/A	10	**EUSIL1M6G**
6	500	PHARMA-SIL® SILICA	N/A	10	**EPHSIL156G**
6	200	POLYSTYRENE DVB	N/A	10	**ECDVB126G**
6	500	POLYSTYRENE DVB	N/A	10	**ECDVB156G**

ENVIRO-CLEAN® BULK SORBENT GUIDE



UCT sorbents are available in bulk quantities in a variety of sizes ranging from 10g to 50Kg. Common bulk sorbents used in environmental analysis are listed below, but all varities of bonded phases can be packaged in comparable quantities.

PRODUCT NAME	PART NUMBER	QUANTITY
Copper Granules 99.5% 30 Mesh	ECCU01K	1kg
	ECCU05K	5kg
	ECCU10K	10kg
Alumina Activity Super I, Neutral	ECALN00D	500g
	ECALN01K	1kg
	ECALN03K	3kg
Alumina Activity Super I, Basic	ECALB00D	500g
	ECALB01K	1kg
	ECALB03K	3kg
Alumina Activity Super I, Acid	ECALA00D	500g
	ECALA01K	1kg
Florisil® A 100-200 Mesh	ECFLOR00D	500g
	ECFLOR03K	3kg
Florisil® PR	ECFLS00X	10g
	ECFLS00D	500g
	ECFLS03K	3kg
Silica Gel 100-200 Mesh suitable for column chromatography	ECSIOH00D	500g
	ECSIOH03K	3kg
Sodium Chloride ACS Grade	ECNACL05K	5kg
	ECNACL10K	10kg
	ECNACL50K	50kg (Sent as 2 x 25kg)
Sodium Sulfate Anhydrous ACS Grade Granular 60 Mesh	ECSS01K	1kg
	ECSS05K	5kg
	ECSS10K	10kg
	ECSS25K	25kg
	ECSS50K	50kg (Sent as 2 x 25kg)
Magnesium Sulfate Anhydrous Organic Free Powder Reagent, 99.5% min.	ECMAG00C	100g (1 unit)
	ECMAG00D	500g (1 unit)
	ECMAG00DCS	1 case (4 units)
Celite 566 Hydromatrix Substitute	EC56601K	1kg
	EC56603K	3kg
	EC566030K	30kg
Ottawa Sand	ECOTT01K	1kg
	ECOTT05K	5kg
	ECOTT10K	10kg
	ECOTT25K	25kg
Graphitized Carbon 120/400 Mesh	EUCARB00C	100g
	EUCARB00K	1kg

MANIFOLDS


ENVIRO-CLEAN®
UNIVERSAL 525
ECUNI525
ENVIRO-CLEAN®
UNIVERSAL OIL & GREASE XF
ECUNIOGXF
ENVIRO-CLEAN®
UNIVERSAL C18
ECUNIC18
ENVIRO-CLEAN®
UNIVERSAL 525
ECUNI525
ENVIRO-CLEAN®
UNIVERSAL OIL & GREASE XF
ECUNIOGXF
ENVIRO-CLEAN®
UNIVERSAL 525
ECUNI525
UCT

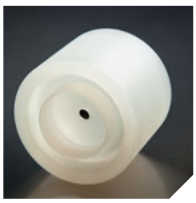
Disk Manifold and Accessories


6 Station Manifold


Glass Cartridge Adapter


Bottle Holder


Jar Holder


Universal Cartridge Adapter


47mm Aluminum Clamp


90mm Aluminum Clamp


47mm Support Base

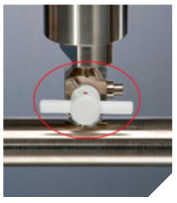

90mm Support Base


47mm 300ml Funnel


90mm 1000ml Funnel


47mm/90mm KEL-F Screen


Vacuum Pump


Teflon Stopcock and Body


Waste Trap

Description	Units	Part Number
Manifolds		
1 Station Manifold	1	ECUCTVAC1
3 Station Manifold	1	ECUCTVAC3
6 Station Manifold	1	ECUCTVAC6
NOTE: The above numbers indicate the stainless steel manifolds base only.		
UCT Universal Cartridge Accessories		
Glass cartridge adapter	1	ECUCTADP
Universal cartridge bottle holder adapter	1	ECUNIBHD
Universal cartridge jar bottle holder adapter	1	ECUNIJHD100
Universal cartridge adapter (Compatible with JT Baker Manifold*)	1	ECBMADP
SPE Disk Accessories		
47mm aluminum clamp	1	ECCG1420
90mm aluminum clamp	1	ECUC0502
47mm support base	1	ECQSB47
90mm support base	1	ECQSB90
47mm 300 mL funnel	1	ECQFN300
90mm 1000 mL funnel	1	ECQFN1000
47mm KEL-F screen	1	ECUCT47
90mm KEL-F screen	1	ECUCT90
Additional Accessories		
Vacuum pump - 110 volt	1	ECROCKER400
Vacuum pump - 220 volt	1	ECROCKER400-220
Teflon stopcock and body	1	ECUCTSC
Waste trap	1	ECUCTTRAP20

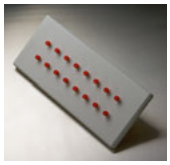
GLASS BLOCK MANIFOLD

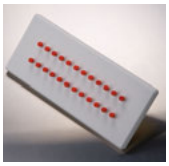
A complete Vacuum Manifold System consists of a glass block, Corian® manifold lid, a cover gasket, vacuum gauge and assembly, PTFE tips, an adjustable collection rack, bulkhead luer fittings, plugs and a glass block safety tray. The Vacuum Manifold System is available in either 16 or 24 positions. These manifold systems are durable and highly chemical resistant, designed to provide years of trouble-free extractions.

Description	Part Number
Complete 16 Position Vacuum Manifold System	VMF016GL
Complete 24 Position Vacuum Manifold System	VMF024GL

GLASS BLOCK MANIFOLD ACCESSORIES

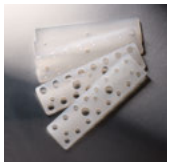

Glass Block


Manifold Lid (16 Position)


Manifold Lid (24 Position)


Manifold Lid Legs


Gasket


Collection Rack


Collection Rack (12 Position)


Collection Rack Posts


Collection Rack Retaining Clips


Vacuum Gauge and Bleed Valve


Bulkhead Luer Fittings


Luer Plugs


Flange Caps


Large Volume Transfer Tubes


Cartridge Adapters


20L Waste Trap

Description	Units	Part Number
Glass Block – The vacuum chamber is a clear glass block which is designed for clear visibility and easy cleaning.	1	VMF04123
Manifold Lid (16 position) – A rigid Corian® lid which resists warping with extended use. Lids come with caps, bulkhead fittings and gasket.	1	VMF06120
Manifold Lid (24 position) – A rigid Corian® lid which resists warping with extended use. Lids come with caps, bulkhead fittings and gasket.	1	VMF04120
Manifold Lid Legs – The lid legs can be used to set the manifold lid on a surface while loading columns, changing collection tubes or removing waste.	4	VMF02120-1
Gasket – A foam gasket that fits both the 16 and 24 position lids.	2	VMF04121
Collection Rack (16 position) – A polypropylene rack that is highly resistant to chemical degradation and abuse. This rack allows the use of 13 and 16 mm disposable test tubes.	1	VMF06125
Collection Rack (24 position) – A polypropylene rack that is highly resistant to chemical degradation and abuse. This rack allows the use of 13 and 16 mm disposable test tubes.	1	VMF04125
Collection Rack (12 position) – A polypropylene rack that is highly resistant to chemical degradation and abuse. This rack is designed for the use of 27 mm (VOA vials) and smaller disposable collection vials.	1	VMF02125
Collection Rack Posts – These posts can be ordered as replacements parts for the posts in all collection racks.	3	VMF02127
Collection Rack Retaining Clips – These clips are replacement parts for the clips included in all collection racks.	12	VMF02129
Vacuum Gauge and Bleed Valve – This system is used in monitoring and adjusting vacuum.	1	VMF02122
Bulkhead Luer Fittings – These fittings screw into the lid allowing the sample to transfer from the column into the PTFE Luer tip to the test tube.	12	VMF21BFN
Luer Plugs – These plugs fit into the bulkhead fittings in order to seal unused bulkhead fittings. These can also be used to break vacuum to the manifold.	12	VMF21PLN
Flange Caps – Used with the Luer Caps, Flange Caps plug the top of SPE cartridges.	1 mL 3 mL 6 & 10 mL 15 mL 25 mL	50 50 50 50 50	CR0001P CR0004P CR0008P CR0015P CR0025P
Large Volume Transfer Tubes – Used to transfer large volumes (100-1000mL) from a water collection bottle to an SPE cartridge.		6 12	VMFSTFR06 VMFSTFR12
Large Volume Transfer Tubes For Perfluorinated Compound Analysis – Used to transfer large volumes (100-1000mL) from a water collection bottle to an SPE cartridge.		6 12	VMFSTFR06 - PFC VMFSTFR12 - PFC
1, 3, 6, 10 mL Cartridge Adapters		15 100	AD0000AS AD00000C
20L Waste Trap		1	ECUCTTRAP20
20L Waste Trap Adapter – 3/8" x 1/4" PVDF ADPT for fitting to glass block manifold.		1	ECUCTTRAP20-ADPT

SELECTRA® U/HPLC COLUMNS

The SELECTRA® line of HPLC columns is created using an ultra-high purity, Type B, spherical silica. This support material minimizes surface activity and allows for high density functional group bonding.

Columns are available with either 1.8, 3, or 5 µm particle sizes.

Guard Column Holder	
Description	**Part Number**
HPLC Guard Cartridge Holder	**SLGRDHLDR**
UHPLC Guard Cartridge Holder	**SLGRDHLDR-HP**
Replacement Peek Tip for Holder	**SLGRDHLDR-TIP (2/pk)**

SELECTRA® DA

- Unique Biphenyl phase.
- Excellent selectivity for a wide range of compounds including therapeutic drugs, drugs of abuse, mycotoxins, veterinary drugs and pesticides.
- Ability to retain compounds that can be difficult to retain on a C18
- Can achieve significant selectivity changes with the choice of acetonitrile or methanol as the organic solvent.
- Carbon Load 13%.
- Conforms to USP L11.
- Fully endcapped.

SELECTRA® DA			
Column Length (mm)	**Column i.d. (mm)**	**Particle Size**	**Part Number**
50	2.1	1.8 µm	**SLDA50ID21-18UM**
100	2.1	1.8 µm	**SLDA100ID21-18UM**
50	4.6	1.8 µm	**SLDA50ID46-18UM**
100	4.6	1.8 µm	**SLDA100ID46-18UM**
50	2.1	3 µm	**SLDA50ID21-3UM**
100	2.1	3 µm	**SLDA100ID21-3UM**
50	4.6	3 µm	**SLDA50ID46-3UM**
100	4.6	3 µm	**SLDA100ID46-3UM**
150	4.6	3 µm	**SLDA150ID46-3UM**
50	2.1	5 µm	**SLDA50ID21-5UM**
100	2.1	5 µm	**SLDA100ID21-5UM**
50	4.6	5 µm	**SLDA50ID46-5UM**
100	4.6	5 µm	**SLDA100ID46-5UM**
150	4.6	5 µm	**SLDA150ID46-5UM**
250	4.6	5 µm	**SLDA250ID46-5UM**
Guard Cartridge Columns (2/pack)*			
10	2.0	1.8 µm	**SLDAGDC20-18UM**
10	2.0	3 µm	**SLDAGDC21-3UM**
10	2.0	5 µm	**SLDAGDC21-5UM**
10	4.6	1.8 µm	**SLDAGDC46-18UM**
10	4.6	3 µm	**SLDAGDC46-3UM**
10	4.6	5 µm	**SLDAGDC46-5UM**

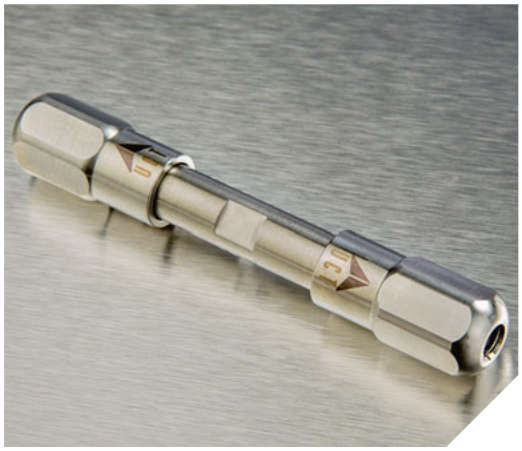
***Guard Cartridge columns must be used with a UCT guard cartridge holder.**

Storage of LC Columns:

Do not allow LC analytical columns to stand uncapped for any length of time. Store an LC column in methanol or an appropriate organic solvent, capped at both ends. A dry LC column is sometimes difficult to reactivate and may not recover to full performance status.

SELECTRA® C18

- Optimum retention for traditional reverse phase analysis.
- Highest hydrophobic interactions in the Selectra® column line.
- Carbon Load 20%.
- Conforms to USP L1.
- Fully endcapped.



SELECTRA® C18			
Column Length (mm)	Column i.d. (mm)	Particle Size	Part Number
50	2.1	1.8 µm	SLC-1850ID21-18UM
100	2.1	1.8 µm	SLC-18100ID21-18UM
50	4.6	1.8 µm	SLC-1850ID46-18UM
100	4.6	1.8 µm	SLC-18100ID46-18UM
50	2.1	3 µm	SLC-1850ID21-3UM
100	2.1	3 µm	SLC-18100ID21-3UM
50	4.6	3 µm	SLC-1850ID46-3UM
100	4.6	3 µm	SLC-18100ID46-3UM
150	4.6	3 µm	SLC-18150ID46-3UM
50	2.1	5 µm	SLC-1850ID21-5UM
100	2.1	5 µm	SLC-18100ID21-5UM
50	4.6	5 µm	SLC-1850ID46-5UM
100	4.6	5 µm	SLC-18100ID46-5UM
150	4.6	5 µm	SLC-18150ID46-5UM
250	4.6	5 µm	SLC-18250ID46-5UM
Guard Cartridge Columns (2/pack)*			
10	2.0	1.8 µm	SLC-18GDC20-18UM
10	2.0	3 µm	SLC-18GDC20-3UM
10	2.0	5 µm	SLC-18GDC20-5UM
10	4.6	1.8 µm	SLC-18GDC46-18UM
10	4.6	3 µm	SLC-18GDC46-3UM
10	4.6	5 µm	SLC-18GDC46-5UM

*Guard Cartridge columns must be used with a UCT guard cartridge holder.

SELECTRA® Aqueous C18

- Polar modified C18.
- Similar non-polar retention to traditional C18.
- Enhanced selectivity and retention for difficult to retain polar analytes.
- Suitable in up to 100% aqueous mobile phases.
- Carbon Load 10%.
- Conforms to USP L1.
- Fully endcapped.

SELECTRA® Aqueous C18			
Column Length (mm)	Column i.d. (mm)	Particle Size	Part Number
50	2.1	1.8 µm	SLAQ50ID21-18UM
100	2.1	1.8 µm	SLAQ100ID21-18UM
50	4.6	1.8 µm	SLAQ50ID46-18UM
100	4.6	1.8 µm	SLAQ100ID46-18UM
50	2.1	3 µm	SLAQ50ID21-3UM
100	2.1	3 µm	SLAQ100ID21-3UM
50	4.6	3 µm	SLAQ50ID46-3UM
100	4.6	3 µm	SLAQ100ID46-3UM
150	4.6	3 µm	SLAQ150ID46-3UM
50	2.1	5 µm	SLAQ50ID21-5UM
100	2.1	5 µm	SLAQ100ID21-5UM
50	4.6	5 µm	SLAQ50ID46-5UM
100	4.6	5 µm	SLAQ100ID46-5UM
150	4.6	5 µm	SLAQ150ID46-5UM
250	4.6	5 µm	SLAQ250ID46-5UM
Guard Cartridge Columns (2/pack)*			
10	2.0	1.8	SLAQGDC20-18UM
10	2.0	3	SLAQGDC20-3UM
10	2.0	5	SLAQGDC20-5UM
10	4.6	1.8	SLAQGDC46-18UM
10	4.6	3	SLAQGDC46-3UM
10	4.6	5	SLAQGDC46-5UM

*Guard Cartridge columns must be used with a UCT guard cartridge holder.

SELECTRA® PFPP			
Column Length (mm)	Column i.d. (mm)	Particle Size	Part Number
50	2.1	1.8 µm	SLPFPP50ID21-18UM
100	2.1	1.8 µm	SLPFPP100ID21-18UM
50	4.6	1.8 µm	SLPFPP50ID46-18UM
100	4.6	1.8 µm	SLPFPP100ID46-18UM
50	2.1	3 µm	SLPFPP50ID21-3UM
100	2.1	3 µm	SLPFPP100ID21-3UM
50	4.6	3 µm	SLPFPP50ID46-3UM
100	4.6	3 µm	SLPFPP100ID46-3UM
150	4.6	3 µm	SLPFPP150ID46-3UM
50	2.1	5 µm	SLPFPP50ID21-5UM
100	2.1	5 µm	SLPFPP100ID21-5UM
50	4.6	5 µm	SLPFPP50ID46-5UM
100	4.6	5 µm	SLPFPP100ID46-5UM
150	4.6	5 µm	SLPFPP150ID46-5UM
250	4.6	5 µm	SLPFPP250ID46-5UM
Guard Cartridge Columns (2/pack)*			
10	2.0	1.8 µm	SLPFPPGDC20-18UM
10	2.0	3 µm	SLPFPPGDC20-3UM
10	2.0	5 µm	SLPFPPGDC20-5UM
10	4.6	1.8 µm	SLPFPPGDC46-18UM
10	4.6	3 µm	SLPFPPGDC46-3UM
10	4.6	5 µm	SLPFPPGDC46-5UM

*Guard Cartridge columns must be used with a UCT guard cartridge holder.

SELECTRA® C8			
Column Length (mm)	Column i.d. (mm)	Particle Size	Part Number
50	2.1	1.8 µm	SLC-850ID21-18UM
100	2.1	1.8 µm	SLC-8100ID21-18UM
50	4.6	1.8 µm	SLC-850ID46-18UM
100	4.6	1.8 µm	SLC-8100ID46-18UM
50	2.1	3 µm	SLC-850ID21-3UM
100	2.1	3 µm	SLC-8100ID21-3UM
50	4.6	3 µm	SLC-850ID46-3UM
100	4.6	3 µm	SLC-8100ID46-3UM
150	4.6	3 µm	SLC-8150ID46-3UM
50	2.1	5 µm	SLC-850ID21-5UM
100	2.1	5 µm	SLC-8100ID46-5UM
50	4.6	5 µm	SLC-850ID46-5UM
100	4.6	5 µm	SLC-8100ID46-5UM
150	4.6	5 µm	SLC-8150ID46-5UM
250	4.6	5 µm	SLC-8250ID46-5UM
Guard Cartridge Columns (2/pack)*			
10	2.1	1.8 µm	SLC-8GDC21-18UM
10	2.1	3 µm	SLC-8GDC21-3UM
10	2.1	5 µm	SLC-8GDC21-5UM
10	4.6	1.8 µm	SLC-8GDC46-18UM
10	4.6	3 µm	SLC-8GDC46-3UM
10	4.6	5 µm	SLC-8GDC46-5UM

*Guard Cartridge columns must be used with a UCT guard cartridge holder.

SELECTRA® PFPP

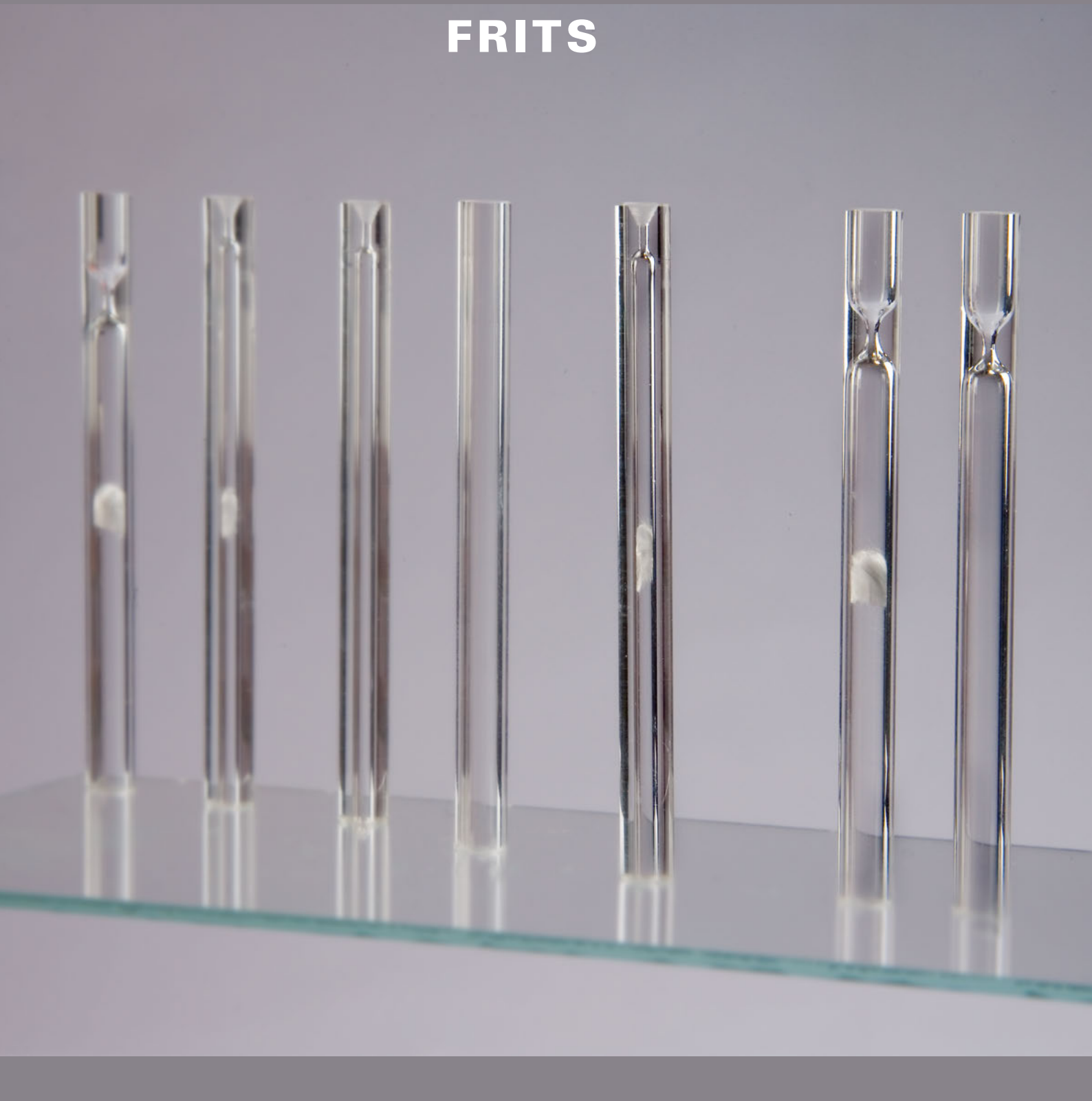
- Can be used for reverse phase, normal phase, or HILIC separations.
- Exhibits multiple selectivity mechanisms including hydrogen bonding, dipole dipole, pi-pi over lap, hydrophilic (HILIC), and hy drophobic interactions.
- Carbon Load 11%.
- Conforms to USP L43.
- Fully endcapped.

SELECTRA® C8

- Less retentive, less hydrophobic than standard C18 column.
- Selectivity similar to C18 for non-polar compounds.
- Carbon Load 12%.
- Conforms to USP L7.
- Fully endcapped.

ACCESSORIES

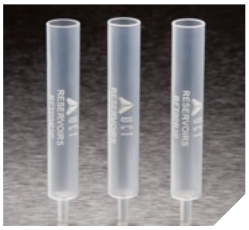
GC LINERS
RESERVOIRS
FRITS



Gas Chromatograph Glass Liners manufactured by UCT are deactivated using a proprietary silane. The silane is manufactured by UCT Specialties, LLC, a leader in high purity, specialty silanes for the chromatographic industry.

DESCRIPTION	INNER DIAMETER (mm)	OUTER DIAMETER (mm)	LENGTH (mm)	INSTRUMENT	UNITS	UCT Part Number
2 mm Straight Split/Splitless	2.0	6.5	78.5	Agilent	1 5 25	**GCL2MM** **GCL2MM-5** **GCL2MM-25**
2 mm Straight Split/Splitless with Deactivated Glass Wool	2.0	6.5	78.5	Agilent	1 5 25	**GCL2MMGW** **GCL2MMGW-5** **GCL2MMGW-25**
2 mm Gooseneck Split/Splitless	2.0	6.5	78.5	Agilent	1 5 25	**GCLGN2MM** **GCLGN2MM-5** **GCLGN2MM-25**
2 mm Gooseneck Split/Splitless with Deactivated Glass Wool	2.0	6.5	78.5	Agilent	1 5 25	**GCLGN2MMGW** **GCLGN2MMGW-5** **GCLGN2MMGW-25**
4 mm Straight Split/Splitless	4.0	6.5	78.5	Agilent	1 5 25	**GCL4MM** **GCL4MM-5** **GCL4MM-25**
4 mm Straight Split/Splitless with Deactivated Glass Wool	4.0	6.5	78.5	Agilent	1 5 25	**GCL4MMGW** **GCL4MMGW-5** **GCL4MMGW-25**
4 mm Recessed Gooseneck Split/Splitless	4.0	6.5	78.5	Agilent	1 5 25	**GCLRG4MM** **GCLRG4MM-5** **GCLRG4MM-25**
4 mm Recessed Gooseneck Split/Splitless with Deactivated Glass Wool	4.0	6.5	78.5	Agilent	1 5 25	**GCLRG4MMGW** **GCLRG4MMGW-5** **GCLRG4MMGW-25**
4 mm Gooseneck Split/Splitless	4.0	6.5	78.5	Agilent	1 5 25	**GCLGN4MM** **GCLGN4MM-5** **GCLGN4MM-25**
4 mm Gooseneck Split/Splitless with Deactivated Glass Wool	4.0	6.5	78.5	Agilent	1 5 25	**GCLGN4MMGW** **GCLGN4MMGW-5** **GCLGN4MMGW-25**
3.4 mm Straight Split 1078/1079 Inlet	3.4	5.0	54	Varian/ Bruker	1 5 25	**GCL3.4MM** **GCL3.4MM-5** **GCL3.4MM-25**
3.4 mm Straight Split with Frit Inserted 1078/1079 Inlet	3.4	5.0	54	Varian/ Bruker	1 5 25	**GCL3.4MMFR** **GCL3.4MMFR-5** **GCL3.4MMFR-25**

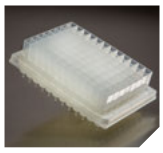
POLYPROPYLENE RESERVOIRS				
Volume Capacity	Units per Pack	No. of Frits	Porosity of Frits (µm)	Part Number
1 mL	50	0	N/A	**RFV0001P**
1 mL	50	1	10	**RFV01F1P**
1 mL	50	2	10	**RFV02F1P**
1 mL	50	1	20	**RFT01F1P**
1 mL	50	2	20	**RFT02F1P**
4 mL	50	0	N/A	**RFV0004P**
4 mL	50	1	10	**RFV01F4P**
4 mL	50	2	10	**RFV02F4P**
4 mL	50	1	20	**RFT01F4P**
4 mL	50	2	20	**RFT02F4P**
8 mL	50	0	N/A	**RFV0008P**
8 mL	50	1	10	**RFV01F8P**
8 mL	50	2	10	**RFV02F8P**
8 mL	50	1	20	**RFT01F8P**
8 mL	50	2	20	**RFT02F8P**
10 mL	50	0	N/A	**RFV0010P**
10 mL	50	1	10	**RFV1F10P**
10 mL	50	2	10	**RFV2F10P**
10 mL	50	1	20	**RFT1F10P**
10 mL	50	2	20	**RFT2F10P**
15 mL	50	0	N/A	**RFV0015P**
15 mL	50	1	10	**RFV1F15P**
15 mL	50	2	10	**RFV2F15P**
15 mL	50	1	20	**RFT1F15P**
15 mL	50	2	20	**RFT2F15P**
25 mL	50	0	N/A	**RFV0025P**
25 mL	50	1	10	**RFV1F25P**
25 mL	50	2	10	**RFV2F25P**
25 mL	50	1	20	**RFT1F25P**
25 mL	50	2	20	**RFT2F25P**
75 mL	50	0	N/A	**RFV0075P**
75 mL	50	1	10	**RFV1F75P**
75 mL	50	2	10	**RFV2F75P**
75 mL	50	1	20	**RFT1F75P**
75 mL	50	2	20	**RFT2F75P**
150 mL	10	0	N/A	**RFV00150P**
150 mL	10	1	20	**RFT1F150P**
150 mL	10	2	20	**RFT2F150P**

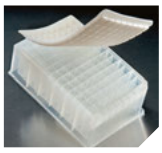


FLANGELESS POLYPROPYLENE RESERVOIRS				
Volume Capacity	Units per Pack	No. of Frits	Porosity of Frits (µm)	Part Number
4 mL	50	0	N/A	**RFT00R3P**
4 mL	50	1	20	**RFT1FR3P**
10 mL	50	1	20	**RFT1FR10P**

GLASS RESERVOIRS				
Volume Capacity	Units per Pack	No. of Frits	Porosity of Frits (µm)	Part Number
8 mL	30	0	N/A	**RFV0008G**
8 mL	30	1	10	**RFV01F8G**

48 DEEP WELL FILTER PLATES		
Description	Part Number	Units
Empty 48 deep well plate with one frit inserted	WIM481F	**1**
Loose 48 deep well plate square frits	FR10481P	**48**
48 deep well collection plate	WIM48CP	**1**

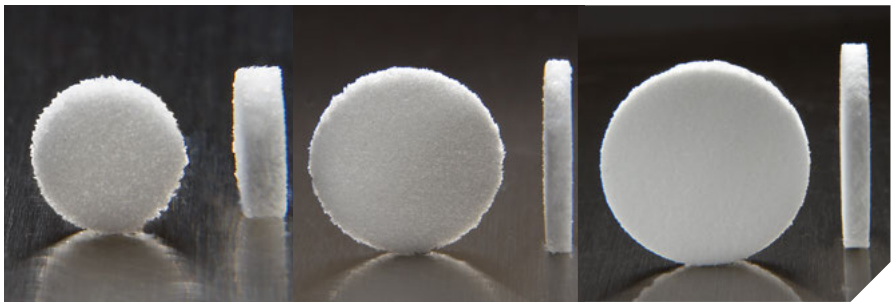




96 DEEP WELL FILTER PLATES		
Description	Part Number	Units
Empty 96 deep well plate with one frit inserted	WSH961FR	**1**
Loose 96 deep well plate square frits	FRSH2096P	**96**
96 well collection plate	WSH96CP	**1**
96 well plate sealable lid	WSH96PS	**1**

POLYPROPYLENE CARTRIDGES				
Volume Capacity	Units per Pack	No. of Frits	Porosity of Frits (µm)	Part Number
600 mg (Medium)	50	0	N/A	**RFV000MC**
600 mg (Medium)	50	2	20	**RFT02FMC**
900 mg (Large)	50	0	N/A	**RFV000LC**
900 mg (Large)	50	2	20	**RFT02FLC**

Frits



POLYETHYLENE FRITS					
Column Size	**Diameter**	**Porosity**	**Thickness**	**Units**	**Part Number**
1 mL	0.232″	10 µm	1/16″	100	**FR10011P**
1 mL	0.232″	20 µm	1/16″	100	**FR20011P**
1 mL	0.232″	20 µm	1/8″	100	**FT20011P**
4 mL	0.357″	7 µm	1/16″	100	**FR07041P**
4 mL	0.357″	10 µm	1/16″	100	**FR10041P**
4 mL	0.357″	20 µm	1/16″	100	**FR20041P**
4 mL	0.357″	20 µm	1/8″	100	**FT20041P**
4 mL	0.357″	100 µm	1/16″	100	**FR100041P**
8 mL	0.498″	10 µm	1/16″	100	**FR10081P**
8 mL	0.498″	20 µm	1/16″	100	**FR20081P**
8 mL	0.513″	20 µm	1/8″	100	**FT20081P**
10 mL	0.357″	10 µm	1/16″	100	**FR10101P**
10 mL	0.357″	20 µm	1/16″	100	**FR20101P**
10 mL	0.357″	20 µm	1/8″	100	**FT20101P**
15 mL	0.630″	10 µm	1/16″	100	**FR10151P**
15 mL	0.641″	20 µm	1/16″	100	**FR20151P**
15 mL	0.641″	20 µm	1/8″	100	**FT20151P**
25 mL	0.792″	10 µm	1/16″	100	**FR10251P**
25 mL	0.792″	20 µm	1/16″	100	**FR20251P**
25 mL	0.816″	20 µm	1/8″	100	**FT20251P**
75 mL	1.050″	10 µm	1/16″	100	**FR10751P**
75 mL	1.050″	20 µm	1/16″	100	**FR20751P**
75 mL	1.050″	20 µm	1/8″	100	**FT20751P**
150 mL	1.515″	20 µm	1/16″	20	**FR201501P**
150 mL	1.515″	20 µm	1/8″	20	**FT201501P**

PTFE FRITS					
Column Size	**Diameter**	**Porosity**	**Thickness**	**Units**	**Part Number**
4 mL	0.357″	10 µm	1.5 mm	60	**FR10041T**
8 mL	0.498″	10 µm	1.5 mm	60	**FR10081T**
8 mL	0.498″	50 µm	1.5 mm	60	**FR50081T**
15 mL	0.641″	10 µm	1.5 mm	60	**FR10151T**
15 mL	0.641″	50 µm	1.5 mm	100	**FR50151T**

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