

Supelco Solid Phase Extraction Products:

The quality you require...
and the performance you demand...



**FEATURED
PRODUCTS:**

Discovery
SPE Products

Supelclean ENVI
SPE Products

Visiprep & PlatePrep
Vacuum Manifolds

**Achieving your
Sample Prep
Objectives with
Supelco**

sigma-aldrich.com/supelco

SUPELCO

Table of Contents

Supelco Solid Phase Extraction Products

Discovery Solid Phase Extraction Products	4	Custom Products	16
Discovery SPE Tubes		Hardware Configuration	
Discovery DSC-18 SPE Products	5	Polypropylene SPE Tubes	16
Discovery DSC-18Lt SPE Products	5	Glass Tubes	16
Discovery DSC-8 SPE Products	6	Teflon and Stainless Steel Frits	16
Discovery DSC-Ph SPE Products	6	Discovery SPE 96-Well Plates	16
Discovery DSC-CN SPE Products	7	Büchner Funnels	16
Discovery DPA-6S SPE Products	7	Rezorian Cartridges	16
Discovery DSC-Si SPE Products	8	Polypropylene SPE Tube Components, Tube Adapters	
Discovery DSC-Diol SPE Products	8	Polypropylene SPE Tube Components	17
Discovery DSC-NH ₂ SPE Products	9	Tube Adapters	17
Discovery DSC-SAX SPE Products	9	Empty Reversible SPE Tubes	17
Discovery DSC-WCX SPE Products	10	SPE Vacuum Manifolds	
Discovery DSC-SCX SPE Products	10	12-Port Visiprep DL (Disposable Liner)	
Supelclean ENVI SPE Tubes and Disks		Vacuum Manifold	18
Supelclean ENVI-18 SPE Products	11	24-Port Visiprep DL (Disposable Liner)	
Supelclean ENVI-8 SPE Products	11	Vacuum Manifold	18
Supelclean ENVI-18 & ENVI-8 DSK SPE Discs	11	12-Port Visiprep Vacuum Manifold	18
Supelclean ENVI-Carb SPE Products	12	24-Port Visiprep Vacuum Manifold	18
Supelclean ENVI-Chrom P SPE Products	12	Long Stem Flow Control Valves	18
Supelclean ENVI-Florisil SPE Products	12	PlatePrep Vacuum Manifold	19
Supelclean SPE Tubes		Supelco Preppy Vacuum Manifold	19
Reversed-Phase Supelclean SPE Tubes	13	Single SPE Tube Processor	19
Normal Phase Supelclean SPE Tubes	13	Vacuum Manifold Accessories	
Adsorption Supelclean SPE Tubes	13	For 12-Port and/or 24-Port Manifolds	20
Ion Exchange Supelclean SPE Tubes	13	Visidry Drying Attachment	21
Method Development Kits	14	Long Stem Flow Control Knobs	21
Discovery 96-Well Plates	14	Visiprep Large Volume Samplers for Direct	
Solid Phase Combinatorial Chemistry		Sample Extraction	22
Discovery DSC-Si SPE Products	15	Trap Kit for SPE Vacuum Manifolds	22
Empty Glass Reaction Tubes	15	Vacuum Gauge / Bleed Valve Assembly	22
Combigel XE-305 Support	15	SPE Elution Rack	22
		ENVI-Disk Accessories	
		ENVI-Disk Holder	23
		ENVI-Disk Holder Manifold	23
		ENVI-Disk Clamp	23

Solid Phase Extraction Applications

Drugs

Antidepressants (Tricyclic) From Serum Using Zymark RapidTrace SPE Workstation (SPE/GC) 24

Barbiturates From Serum Using Zymark RapidTrace SPE Workstation (SPE/HPLC) 24

Bronchodilator: Theophylline and Other Caffeine Metabolites from Serum (SPE/HPLC) 25

Competitor Comparison of 3-methylpyrazole and 4-methylpyrazole From Urine Using Discovery DSC-SCX (SPE/HPLC) 25

Mycotoxins

Aflatoxins (SPE/HPLC) 26

Herbicides

Paraquat and Diquat (SPE/HPLC) 26

Acidic Herbicides in Water (SPE/HPLC) 27

Triazine Herbicides from Grass (SPE/HPLC) 27

PCBs

PCB (SPE/GC) 28

Pesticides

Pesticides in Fruits and Vegetables (SPE/GC) 28

Nonvolatile Pesticides (SPE/HPLC) 29

Chlorinated Pesticides (SPE/GC) 29

Chlorinated Pesticides in Hazardous Waste (SPE/GC) 30

Phenols

Phenols (SPE/GC) 30

Polynuclear Aromatic Hydrocarbons

PAHs in Water (SPE/GC) 31

Semivolatiles

Semivolatiles (SPE/GC) 31

Volatiles

Volatile Compounds by US EPA Method 502.2 (PT/GC) 32

Volatile Compounds by US EPA Method 524.2 (PT/GC) 33

Volatile Compounds by US EPA Method 624 (PT/GC) 33

Volatile Compounds by US EPA Method 624 (PT/GC) 34

Volatile Compounds by US EPA Method 624 (PT/GC) 34

Services and Support 35

Trademarks

Discovery, ENVI, ENVI-Disk, Preppy, Rezorian, Supelclean, Visi-1, Visidry, Visiprep, — Sigma-Aldrich Co.
Amberlite — Rohm and Haas Co.
Beckman, Biomek — Beckman Coulter, Inc.
Florisil — U.S. Silica Co.
Gilson, SPE 215 — Gilson, Inc.
Luer-Lock — Becton-Dickinson & Co.
Packard, Multi-Probe — Packard BioScience Company
RapidTrace, Zymark — Zymark Corp.
Teflon — E.I. du Pont de Nemours & Co., Inc.
Tomtec, Quadra — Tomtec

Solid Phase Extraction (SPE)

Discovery Products

Solid Phase Extraction Products

Designed to meet the exacting requirements of pharmaceutical and clinical analysis, Discovery SPE products are ideal for all application areas including: Food & Beverage, Environmental, Petrochemical, Agriculture, Consumer Products and more...

The multitude of phase chemistries and hardware configurations available within the Discovery SPE line offer the comprehensive level of selection and flexibility required to handle today's increasingly complex and diverse sample prep challenges.

Each Discovery SPE product includes an extensive Certificate of Analysis ensuring optimal performance and reproducible properties for each Discovery product shipped from Supelco.

Discovery SPE allows you to:

- Achieve greater and more reproducible recoveries for diverse compounds from difficult sample matrices
- Removes endogenous sample interference for improved accuracy and sensitivity
- Concentrate target analytes for increased sensitivity
- Protects analytical instrument from unwanted sample matrix components

Discovery SPE offers the quality and performance you need to bridge the sample prep gap between sample collection and analysis.

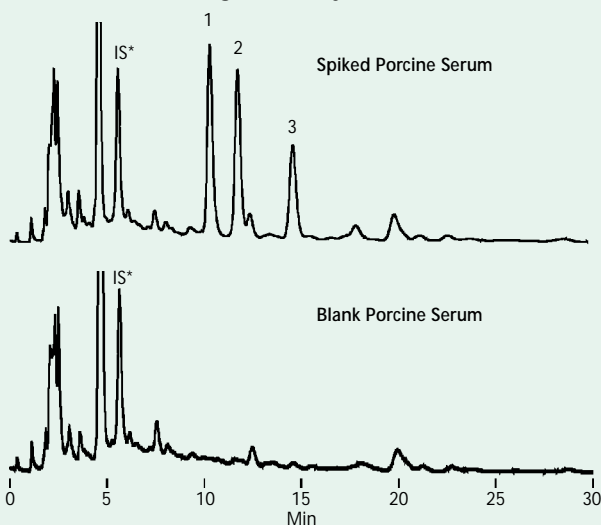
Discovery SPE Products:

- Developed, tested and quality controlled for pharmaceutical and clinical applications
- Twelve different phase chemistries ranging from polymerically bonded C18 to polyamide adsorbents
- Available in 96-well plate configurations for high throughput parallel processing
- Available in Büchner Funnel configurations for easier scalability (combinatorial chemistry clean-up)
- Ultra clean phases for highly sensitive analyses
- Narrower pore size distribution for improved extraction selectivity
- Acid washed to reduce metal chelating activity
- Consistent particle size and specific surface area coverage to ensure reproducible recoveries
- Low fines (<12µm) content to minimize injection port fouling

PROPERTIES

Base Silica: Irregular shape, acid washed
 Mean Particle Size: 50µm
 Mean Pore Diameter: 70Å
 Total Pore Volume: 0.9cm³/g
 Specific Surface Area: 480m²/g
 Endcapped: Yes

Extraction of Anti-Ulcer Compounds from Porcine Serum using Discovery DSC-18 SPE

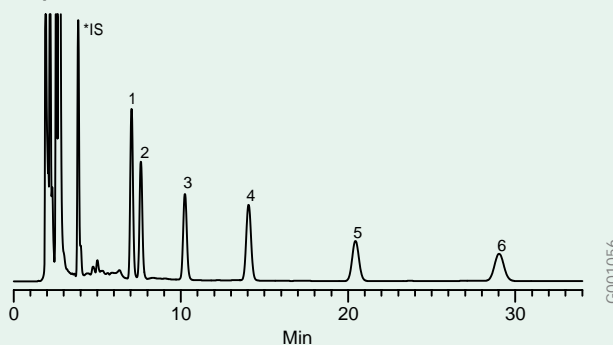


Compound	Concentration (µg/mL)	%Recovery ± RSD (n = 6)
1. Ranitidine	0.25	92.5 ± 5.4
	0.50	95.5 ± 5.1
2. Cimetidine	0.25	94.5 ± 5.2
	0.50	98.2 ± 3.2
3. Nizatidine	0.25	97.0 ± 7.0
	0.50	94.8 ± 3.4

Analyzed with a Discovery C18 HPLC Column, 15cm x 4.6mm ID, 5µm particles

* IS = Famotidine (internal standard).

Barbiturates from Serum, using 500mg/3mL Discovery DSC-18Lt SPE Tubes and Zymark RapidTrace SPE Workstation.



Analyzed with a Discovery C18 HPLC column, 15cm x 4.6mm ID, 5µm particles.

Efficiency of Recovery

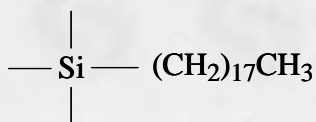
Compound	Concentration (µg/mL)	%Recovery	%RSD (n=6)
1. Phenobarbital	0.5	96.2	±1.6
	1.0	94.9	±1.7
2. Aprobartibital	0.5	98.5	±2.1
	1.0	100.8	±0.8
3. Butabartibital	0.5	97.2	±1.9
	1.0	98.7	±1.8
4. Mephobarbital	0.5	99.7	±2.4
	1.0	101.0	±2.0
5. Pentobarbital	0.5	96.4	±1.7
	1.0	96.4	±1.9
6. Secobarbital	0.5	98.2	±1.7
	1.0	97.7	±1.8

* IS = Barbitol (internal standard).

G001056

Solid Phase Extraction (SPE) Discovery SPE Tubes

Discovery DSC-18 SPE Products



G001625

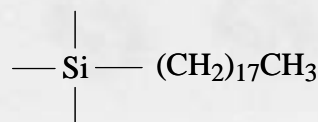
Retention Mechanism: Reversed-phase

Sample Matrix Compatibility: Aqueous solutions (biological fluids, water)

- *Polymerically bonded, octadecyl (18%C), endcapped*
- *Higher 18%C loading for increased binding capacities and higher recoveries*
- *The least selective phase: retains most organic analytes from aqueous matrices*
- *Can also be used for desalting aqueous matrices*
- *Beneficial for extracting structurally diverse analytes from the same sample*

DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
50mg/1mL	108	52601-U
100mg/1mL	108	52602-U
500mg/3mL	54	52603-U
500mg/6mL	30	52604-U
1g/6mL	30	52606-U
2g/12mL	20	52607-U
5g/20mL	20	52608-U
10g/60mL	16	52609-U
SPE 96-WELL PLATES		
100mg/well	1	575603-U
50mg/well	1	575602-U
25mg/well	1	575601-U
BULK PACKING		
Bulk packing	100g	52600-U

Discovery DSC-18Lt SPE Products



G001625

Retention Mechanism: Reversed-phase

Sample Matrix Compatibility: Aqueous solutions (biological fluids, water)

- *Monomerically bonded, octadecyl (11%C), endcapped*
- *Increased retention for moderately polar hydrophobic molecules*
- *Used to elute very large hydrophobic molecules that are too strongly retained on DSC-18.*
- *Offers opportunity to differentiate between drug metabolites in bioanalysis applications*
- *Use this less retentive phase for the rapid release of hydrophobic compounds using weaker organic solvents at lower volumes*

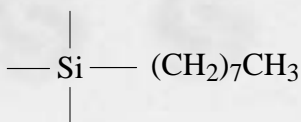
DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
50mg/1mL	108	52610-U
100mg/1mL	108	52611-U
500mg/3mL	54	52613-U
500mg/6mL	30	52615-U
1g/6mL	30	52616-U
2g/12mL	20	52618-U
5g/20mL	20	52621-U
10g/60mL	16	52622-U
SPE 96-WELL PLATES		
100mg/well	1	575606-U
50mg/well	1	575605-U
25mg/well	1	575604-U
BULK PACKING		
Bulk packing	100g	52623-U

Note: Unless stated otherwise, tubes are polypropylene. Frits are polyethylene with 20µm pores.

Solid Phase Extraction (SPE)

Discovery SPE Tubes

Discovery DSC-8 SPE Products



G001624

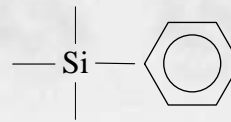
Retention Mechanism: Reversed-phase

Sample Matrix Compatibility: Aqueous solutions (biological fluids, water)

- Monomerically bonded, octyl (9%C), endcapped; lower carbon content than DSC-18Lt
- Used to elute very large hydrophobic molecules too strongly retained on DSC-18 or DSC-18Lt
- Use this less retentive phase for the rapid release of hydrophobic molecules using weaker organic solvents at lower volumes
- Inorganic buffers of sufficient ionic strength may be used for elution

DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
50mg/1mL	108	52703-U
100mg/1mL	108	52707-U
500mg/3mL	54	52713-U
500mg/6mL	30	52714-U
1g/6mL	30	52716-U
2g/12mL	20	52717-U
5g/20mL	20	52718-U
10g/60mL	16	52722-U
SPE 96-WELL PLATES		
100mg/well	1	575627-U
50mg/well	1	575628-U
25mg/well	1	575629-U
BULK PACKING		
Bulk packing	100g	57223-U

Discovery DSC-Ph SPE Products



G001628

Retention Mechanism: Reversed-phase

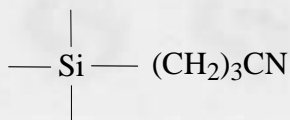
Sample Matrix Compatibility: Aqueous solutions (biological fluids, water)

- Monomerically bonded, phenyl (7%C), endcapped
- Similar in polarity to DSC-8; however, electron dense aromatic ring offers unique selectivity and retention
- Offers improved retention of conjugated ring structures over aliphatic functional groups.

DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
50mg/1mL	108	52723-U
100mg/1mL	108	52725-U
500mg/3mL	54	52727-U
500mg/6mL	30	52728-U
1g/6mL	30	52731-U
SPE 96-WELL PLATES		
100mg/well	1	575630-U
50mg/well	1	575631-U
25mg/well	1	575632-U
BULK PACKING		
Bulk packing	100g	57227-U

Solid Phase Extraction (SPE) Discovery SPE Tubes

Discovery DSC-CN SPE Products



G001626

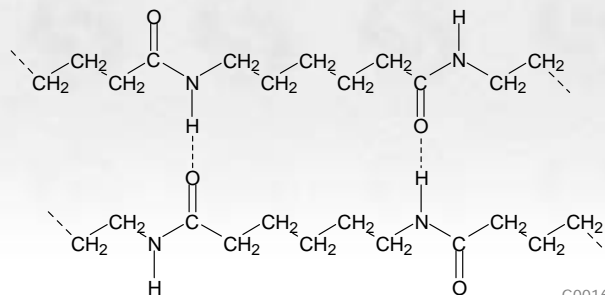
Retention Mechanism: Reversed-phase or normal phase

Sample Matrix Compatibility: Aqueous solutions (biological fluids, water) when used in reversed-phase; or organic solvents, oils, and lipids when used in normal phase

- Monomerically bonded, cyanopropyl (7%C), endcapped
- Can be used in either reversed-phase or normal phase
- Ideal for very hydrophobic analytes that may be irreversibly retained on more hydrophobic sorbents such as DSC-18
- Less retentive than DSC-Si or DSC-Diol when used in normal phase (organic matrices such as hexane or oils)
- Allows for the rapid release of very polar molecules irreversibly retained on very polar sorbents

DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
50mg/1mL	108	52693-U
100mg/1mL	108	52694-U
500mg/3mL	54	52695-U
500mg/6mL	30	52696-U
1g/6mL	30	52697-U
2g/12mL	20	52698-U
5g/20mL	20	52699-U
10g/60mL	16	52700-U
SPE 96-WELL PLATES		
100mg/well	1	575624-U
50mg/well	1	575625-U
25mg/well	1	575626-U
BULK PACKING		
Bulk packing	100g	57222-U

Discovery DPA-6S SPE Products



G001625

Retention Mechanism: Reversed-phase

Sample Matrix Compatibility: Aqueous or methanolic solutions

- Polyamide Resin: Particle Size: 50-160 μ m, Surf pH: 4.5-7.5, Density: 0.2-0.3cm³/g, Water Content: < 5%
- Used to adsorb polar compounds (-OH groups, esp. phenolic compounds) from aqueous or methanolic solutions under the reversed-phase mechanism through strong hydrogen bonding between compound hydroxyl groups and amide groups of the resin
- Useful for extracting tannins, chlorophyll, humic acid, pharmacologically active terpenoids, flavanoids, gallic acid, catechol A, protocatechuic acid, and phloroglucinol
- Also useful for extracting aromatic carboxylic acids and nitroaromatic compounds
- Irreversibly retains quinones

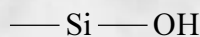
DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
50mg/1mL	108	52624-U
250mg/3mL	54	52625-U
250mg/6mL	30	52626-U
500mg/6mL	30	52627-U
1g/12mL	20	52629-U
2g/20mL	20	52631-U
5g/60mL	16	52632-U
BULK PACKING		
Bulk packing	50g	52633-U
BÜCHNER FUNNELS		
110mm ID x 66mm H, 50g/800mL	1	52634-U

Note: Unless stated otherwise, tubes are polypropylene. Frits are polyethylene with 20 μ m pores.

Solid Phase Extraction (SPE)

Discovery SPE Tubes

Discovery DSC-Si SPE Products



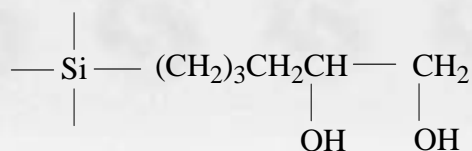
Retention Mechanism: Normal phase

Sample Matrix Compatibility: Organic solvents, oils, and lipids

- Unbonded acid washed silica sorbent ideal for normal phase SPE and other modified flash techniques
- Often used to separate or remove structurally similar molecules through successive elutions with increasingly polar solutions
- The most polar normal phase sorbent available
- Excellent capacity for purifying solution phase combinatorial chemistry reactions when removing target molecules from reaction by-products and excess reagents
- Available in Büchner Funnel configurations for easy scalability

DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
50mg/1mL	108	52652-U
100mg/1mL	108	52653-U
500mg/3mL	54	52654-U
500mg/6mL	30	52655-U
1g/6mL	30	52656-U
2g/12mL	20	52657-U
5g/20mL	20	52658-U
10g/60mL	16	52659-U
SPE 96-WELL PLATES		
100mg/well	1	575609-U
50mg/well	1	575608-U
25mg/well	1	575607-U
BULK PACKING		
Bulk Packing	100g	52651-U
BÜCHNER FUNNELS		
50mmID x 30mmH, 12.5g	6	52591-U
70mmID x 40mmH, 25g	6	52592-U
90mmH x 48mmH, 50g	6	52593-U
110mmID x 66mmH, 100g	6	52594-U

Discovery DSC-Diol SPE Products



G001627

Retention Mechanism: Normal phase

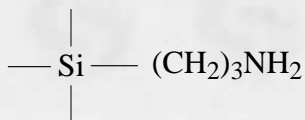
Sample Matrix Compatibility: Organic solvents, oils, and lipids

- Polymerically bonded, 2,3-Dihydroxypropoxypropyl (7% C)
- Polar sorbent most commonly used for normal phase applications (polar extractions from non-polar matrices)
- The sorbent's dihydroxy groups facilitates strong hydrogen bonding
- Excellent selectivity when extracting structurally similar molecules

DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
50mg/1mL	108	52747-U
100mg/1mL	108	52748-U
500mg/3mL	54	52751-U
500mg/6mL	30	52752-U
1g/6mL	30	52753-U
SPE 96-WELL PLATES		
100mg/well	1	575636-U
50mg/well	1	575637-U
25mg/well	1	575638-U
BULK PACKING		
Bulk packing	100g	57229-U

Solid Phase Extraction (SPE) Discovery SPE Tubes

Discovery DSC-NH₂ SPE Products



G001631

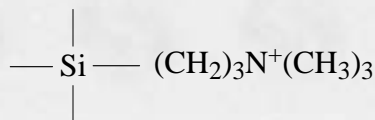
Retention Mechanism: Normal phase or anion-exchange

Sample Matrix Compatibility: Organic or aqueous solutions

- *Polymerically bonded, aminopropyl phase that is very polar in nature (hydrogen bonding) allowing for both normal phase and ion exchange applications*
- *A weak anion exchanger with a pKa of 9.8. At pH 7.8 or below, the functional groups are positively charged*
- *Ion exchange capacity is ~ 0.43 meq/g.*
- *Allows the rapid release of very strong anions such as sulfonic acids that may be retained irreversibly by strong anion exchangers*
- *Can be used in some reversed-phase applications (due to ethyl spacer); however, it is predominately used as an ion-exchanger or normal phase sorbent due to its polar nature*

DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
50mg/1mL	108	52635-U
100mg/1mL	108	52636-U
500mg/3mL	54	52637-U
500mg/6mL	30	52638-U
1g/6mL	30	52640-U
2g/12mL	20	52641-U
5g/20mL	20	52642-U
10g/60mL	16	52644-U
SPE 96-WELL PLATES		
100mg/well	1	575615-U
50mg/well	1	575616-U
25mg/well	1	575617-U
BULK PACKING		
Bulk packing	100g	57212-U

Discovery DSC-SAX SPE Products



G001629

Retention Mechanism: Anion-exchange

Sample Matrix Compatibility: Organic or aqueous solutions

- *A polymerically bonded quarternary amine that remains positively charged at all pH levels*
- *Counter ion is Cl⁻*
- *Ion exchange capacity is ~ 0.14 meq/g*
- *Commonly used when extracting weaker cations (e.g., carboxylic acids) that may not bind strongly enough to weaker anion-exchangers*
- *Selectivity can be modified by changing the counter ion with the appropriate buffer during conditioning*

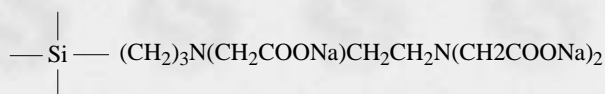
DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
50mg/1mL	108	52661-U
100mg/1mL	108	52662-U
500mg/3mL	54	52664-U
500mg/6mL	30	52665-U
1g/6mL	30	52666-U
2g/12mL	20	52667-U
5g/20mL	20	52668-U
10g/60mL	16	52669-U
SPE 96-WELL PLATES		
100mg/well	1	575618-U
50mg/well	1	575619-U
25mg/well	1	575620-U
BULK PACKING		
Bulk packing	100g	57214-U

Note: Unless stated otherwise, tubes are polypropylene. Frits are polyethylene with 20µm pores.

Solid Phase Extraction (SPE)

Discovery Products

Discovery DSC-WCX SPE Products



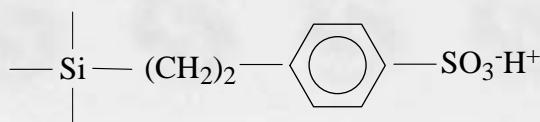
G001632

Retention Mechanism: Cation exchange

Sample Matrix Compatibility: Organic or aqueous solutions

- A polymerically bonded, carboxy propyl phase with a pKa of 4.8
- Counter ion is Na⁺
- Ion exchange capacity is ~ 0.15 meq/g
- Carries a negative charge at pH 6.8 or above
- A pH of 2.8 or below neutralizes this phase for easier elution of strong cationic analytes that are neutralized only at extreme basic conditions
- Typically used when dealing with very strong cationic (high pKa) compounds that may be irreversibly retained on strong cation exchangers

Discovery DSC-SCX SPE Products



G001630

Retention Mechanism: Cation exchange

Sample Matrix Compatibility: Organic or aqueous solutions

- A polymerically bonded, benzene sulfonic acid functional group, pKa (<1.0)
- Counter ion is H⁺
- Silica support allows for use with very organic solvents (no shrinking/swelling)
- Excellent capacity (0.8meq/g) for cleaning up solution phase combinatorial chemistry reactions (removing target molecules from reaction by-products and excess reagents)
- The presence of the benzene ring offers some mixed-mode capabilities (hydrophobic interactions) that should be considered when extracting cations from aqueous matrices

DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
50mg/1mL	108	52737-U
100mg/1mL	108	52739-U
500mg/3mL	54	52741-U
500mg/6mL	30	52742-U
1g/6mL	30	52743-U
2g/12mL	20	52744-U
5g/20mL	20	52745-U
10g/60mL	16	52746-U
SPE 96-WELL PLATES		
100mg/well	1	575633-U
50mg/well	1	575634-U
25mg/well	1	575635-U
BULK PACKING		
Bulk packing	100g	57228-U

DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
50mg/1mL	108	52684-U
100mg/1mL	108	52685-U
500mg/3mL	54	52686-U
500mg/6mL	30	52688-U
1g/6mL	30	52689-U
2g/12mL	20	52690-U
5g/20mL	20	52691-U
10g/60mL	16	52692-U
SPE 96-WELL PLATES		
100mg/well	1	575621-U
50mg/well	1	575622-U
25mg/well	1	575623-U
BULK PACKING		
Bulk packing	100g	57221-U

Note: Unless stated otherwise, tubes are polypropylene. Frits are polyethylene with 20µm pores.

Solid Phase Extraction (SPE) Supelclean ENVI SPE Tubes and Disks

Supelclean ENVI SPE Products:

- Developed, highly tested, and quality controlled for environmental applications
- Seven different phase chemistries ranging from our unique ENVI-Carb carbon adsorbents to ENVI-18 DSKs – reversed phase SPE membranes for large volume water samples
- Available in glass tubes, Teflon and stainless steel frit configurations for EPA compliance
- Ultra clean phases for highly sensitive analyses
- Documented applications in compliance to standardized EPA methodology
- Consistent particle size and specific surface area to ensure reproducible recoveries

PROPERTIES	
Base Silica:	Irregular shape, acid washed
Mean Particle Size:	45µm
Mean Pore Diameter:	60Å
Total Pore Volume:	0.8cm ³ /g
Specific Surface Area:	475m ² /g
Endcapped:	Yes

Supelclean ENVI-18 SPE Products

Retention Mechanism: Reversed-phase

Sample Matrix Compatibility: Aqueous solutions (drinking, ground, waste water)

- Polymerically bonded, octadecyl (17%C), endcapped
- Excellent for cleaning, extracting and concentrating pollutants from aqueous environmental samples
- Higher 17%C loading for increased binding capacities and higher recoveries
- Higher carbon loading also offers greater resistance to extreme pH conditions
- Used for extracting herbicides, fungicides, and pesticides from waste material

DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
100mg/1mL	108	57062
500mg/3mL	54	57063
500mg/6mL	30	57064
1g/6mL	30	505706
2g/12mL	20	57114
5g/20mL	20	57137
10g/60mL	16	57138
BULK PACKING		
Bulk packing	100g	57219

Supelclean ENVI-8 SPE Products

Retention Mechanism: Reversed-phase

Sample Matrix Compatibility: Aqueous solutions (drinking, ground, waste water)

- High 14%C loading for increased binding capacities and higher recoveries
- Higher carbon loading also offers greater resistance to extreme pH conditions
- Excellent for cleaning, extracting and concentrating pollutants from aqueous environmental samples
- Used for extracting herbicides, fungicides, and pesticides from waste material

DESCRIPTION	QTY.	CAT. NO.
SPE TUBES		
100mg/1mL	108	57230-U
500mg/3mL	54	57231
500mg/6mL	30	57232
1g/6mL	30	57233
5g/20mL	20	57139
10g/60mL	16	57140-U
SPE TUBES (GLASS TUBES; TEFLON FRITS)		
500mg/3mL	27	57106
500mg/6mL	20	57107

Supelclean ENVI-18 & ENVI-8 DSK SPE Disks

The SPE membrane equivalents of ENVI-18 and ENVI-8 packed bed SPE sorbents

Retention Mechanism: Reversed-phase

Sample Matrix Compatibility: Aqueous solutions (drinking water)

- Porous glass fiber membranes embedded with C18 or C8 modified silica particles.
- Provides faster flow rates and exhibits less clogging than Teflon discs for the extraction of organic contaminants from drinking water samples
- Typical applications include polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), phthalates, semivolatile organics, paraquat and diquat, pesticides and herbicides

DESCRIPTION	QTY.	CAT. NO.
ENVI-18DSK SPE DISKS		
47mm Diam.	24	57171
90mm Diam.	12	57170-U
ENVI-8DSK SPE DISKS		
47mm Diam.	24	57172

Note: Unless stated otherwise, tubes are polypropylene. Frits are polyethylene with 20µm pores.

Solid Phase Extraction (SPE)

Supelclean ENVI SPE Tubes

Supelclean ENVI-Carb SPE Products

Graphitized Non-Porous Carbon

Retention Mechanism: Reversed-phase

Sample Matrix Compatibility: Aqueous solutions (drinking, ground, waste water)

- Extreme affinity for organic polar and non-polar compounds from both non-polar and polar matrices when used under reversed-phase conditions
- Carbon surface comprised of hexagonal ring structures, interconnected and layered into graphitic sheets
- Non-porous nature of the carbon phase allows for rapid processing, adsorption does not require analyte dispersion into solid phase pores
- Independent investigators have found ENVI-Carb extremely useful for the rapid sample preparation of over 200 pesticides from various matrices including ground water, fruits and vegetable

DESCRIPTION	QTY.	CAT. NO.
ENVI-CARB (SURF. AREA 100M²/G; 120/400 MESH)		
250mg/3mL	54	57088
250mg/6mL	30	57092
500mg/6mL	30	57094
1g/12mL	20	57127-U
2g/12mL	20	57128
5g/20mL	20	57129
10g/60mL	16	57130
Bulk Packing	50g	57210-U
ENVI-CARB C (SURF. AREA 10M²/G; 80/100 MESH)		
1g/12mL	20	57149
ENVI-CARB X (SURF. AREA 250M²/G; 120/400 MESH)		
Bulk Packing	50g	10439-U
ENVI-CARB Y (SURF. AREA 25M²/G; 120/400 MESH)		
Bulk Packing	50g	10464-U

Supelclean ENVI-Chrom P SPE Products

Styrene/divinyl benzene co-polymer

Retention Mechanism: Reversed-phase or adsorption

Sample Matrix Compatibility: Aqueous solutions

- Particle Size: 80-160µm; Spherical Shape; Pore Size: 110-175Å; Surface Area: 900m²/g
- Highly crosslinked, neutral, specially cleaned styrene-divinylbenzene resin used to retain hydrophobic compounds with some hydrophilic functionality under reversed-phase conditions
- Highly resistant to extreme pH conditions
- Typical applications include aromatics and phenolic compounds from aqueous sample matrices
- Used for priority pollutant phenols from aqueous samples

DESCRIPTION	QTY.	CAT. NO.
ENVI-CHROM P SPE TUBES (GLASS TUBES; TEFLON FRITS)		
100mg/1mL	108	57143
250mg/3mL	54	57224
250mg/6mL	30	57225-U
500mg/6mL	30	57226
ENVI-CHROM P BULK PACKING		
Bulk packing	50g	57217

Supelclean ENVI-Florisil

Magnesium Silicate

Retention Mechanism: Normal phase or Adsorption

Sample Matrix Compatibility: Organic solutions

- Mesh: 100/120; Available with Teflon or stainless steel frits
- Tested for US Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) statement of work for pesticides
- Highly polar material that strongly adsorbs to polar compounds from nonpolar matrices under normal phase conditions
- Typical applications include alcohols, aldehydes, amines, herbicides, pesticides, PCBs, ketones, nitro compounds, organic acids, and phenols

DESCRIPTION	QTY.	CAT. NO.
ENVI-FLORISIL		
500mg/3mL, Teflon	54	57058
500mg/6mL, SS	30	57046
1g/6mL, SS	30	57053

Note: Unless stated otherwise, tubes are polypropylene. Frits are polyethylene with 20µm pores.

Solid Phase Extraction (SPE) Supelclean SPE Tubes

Reversed-Phase Supelclean SPE Tubes

Extract nonpolar to moderately polar analytes from aqueous samples.

DESCRIPTION	QTY.	CAT. NO.
LC-18 (OCTADECYL, ~10% C, ENDCAPPED)		
100mg/1mL	108	504270
500mg/3mL	54	57012
500mg/6mL	30	57054
1g/6mL	30	505471
2g/12mL	20	57117
5g/20mL	20	57135-U
10g/60mL	16	57136
Bulk Packing	100g	57202
LC-8 (OCTYL, ~7% C, ENDCAPPED)		
100mg/1mL	108	504157
500mg/3mL	54	505145
500mg/6mL	30	57052
Bulk Packing	100g	57201
LC-4 (BUTYLDIMETHYL, 500Å PORES, ENDCAPPED)		
500mg/3mL	54	57089
LC-PH (PHENYL, ~5.5% C, ENDCAPPED)		
100mg/1mL	108	504599
500mg/3mL	54	505269
HISEP (HYDROPHOBIC SITES SHIELDED BY A HYDROPHILIC SURFACE; FOR PROTEIN EXCLUSION)		
500mg/3mL	54	57076-U

Normal Phase Supelclean SPE Tubes

Extract moderately polar to polar analytes from nonaqueous samples.

DESCRIPTION	QTY.	CAT. NO.
LC-CN (CYANOPROPYL, ~7% C, ENDCAPPED)		
100mg/1mL	108	504386
500mg/3mL	54	57013
500mg/6mL	30	57056
5g/20mL	20	57141
10g/60mL	16	57142
LC-NH₂ (AMINOPROPYL, ~5% C)		
100mg/1mL	108	504483
500mg/3mL	54	57014
Bulk Packing	100g	57205
LC-DIOL (DIOL, ~7% C)		
100mg/1mL	108	504718
500mg/3mL	54	57016

Adsorption Supelclean SPE Tubes

No bonded phase; extract polar analytes from nonpolar samples (LCP-Si, LC-Florisil, LC-Alumina).

DESCRIPTION	QTY.	CAT. NO.
LC-SI (SILICA GEL)		
100mg/1mL	108	504041
500mg/3mL	54	505048
500mg/6mL	30	505374
1g/6mL	30	57051
2g/12mL	20	57116
5g/20mL	20	57133
10g/60mL	16	57134
Bulk Packing	100g	57200
LC-FLORISIL (MAGNESIUM SILICATE, 100/120 MESH)		
1g/6mL	30	57057
2g/12mL	20	57115
5g/20mL	20	57131
10g/60mL	16	57132
Bulk Packing	100g	57209
LC-ALUMINA-N (ALUMINA FOR NEUTRAL pH (~6.5) BROCKMANN ACT. I, 60/325 MESH)		
1g/3mL	54	57086
2g/6mL	30	57087
Bulk Packing	100g	57208
LC-ALUMINA-A (ALUMINA FOR ACIDIC pH (~5) BROCKMANN ACT. I, 60/325 MESH)		
1g/3mL	54	57082-U
2g/6mL	30	57083-U
Bulk Packing	100g	57206
LC-ALUMINA-B (ALUMINA FOR BASIC pH (~8.5) BROCKMANN ACT. I, 60/325 MESH)		
1g/3mL	54	57084
2g/6mL	30	57085

Ion Exchange Supelclean SPE Tubes

Interaction based on ionic attraction.

DESCRIPTION	QTY.	CAT. NO.
LC-SAX (QUATERNARY AMINE, Cl⁻ COUNTERION)		
100mg/1mL	108	504815
500mg/3mL	54	57017
Bulk Packing	100g	57203
LC-SCX (ALIPHATIC SULFONIC ACID, Na⁺ COUNTERION)		
100mg/1mL	108	504920
500mg/3mL	54	57018
Bulk Packing	100g	57204
LC-WCX (CARBOXYLIC ACID, Na⁺ COUNTERION)		
100mg/1mL	108	505595
500mg/3mL	54	57061

Solid Phase Extraction (SPE)

Method Development Kits, Discovery 96-Well Plates

Supelclean SPE Method Development Kits

KIT:	KIT A	KIT B	KIT C	KIT RP-3	KIT NP-3	KIT IX-1	KIT IX-3
Packing	Sorbent Qty./Tube Size						
LC-Si	500mg/3mL	100mg/1mL	500mg/6mL 1g/6mL		500mg/3mL		
LC-8	500mg/3mL	100mg/1mL	500mg/6mL	500mg/3mL			
LC-18	500mg/3mL	100mg/1mL 1g/6mL	500mg/6mL	500mg/3mL			
LC-CN	500mg/3mL	100mg/1mL	500mg/6mL	500mg/3mL		100mg/1mL	500mg/3mL
LC-Diol	500mg/3mL	100mg/1mL			500mg/3mL		
LC-NH ₂	500mg/3mL	100mg/1mL			500mg/3mL	100mg/1mL	500mg/3mL
LC-Ph	500mg/3mL	100mg/1mL		500mg/3mL			
LC-SAX	500mg/3mL	100mg/1mL				100mg/1mL	500mg/3mL
LC-SCX	500mg/3mL	100mg/1mL				100mg/1mL	500mg/3mL
LC-WCX	500mg/3mL	100mg/1mL				100mg/1mL	500mg/3mL
LC-Alumina-A			2g/6mL		1g/3mL		
LC-Alumina-B			2g/6mL		1g/3mL		
LC-Alumina-N			2g/6mL		1g/3mL		
LC-Florisil			1g/6mL				
QTY. EA. TUBE:	6	12	3	12	6	24	12
CAT.NO.:	57019	57009-U	57075-U	57071	57074-U	57072	57073

Discovery 96-Well Plates

Discovery 96-Well Plates answer the challenge of high throughput pharmaceutical screening and analysis. The uniform flow dynamics inherent with well plate technology offers a higher level of reproducibility and throughput while maintaining excellent recoveries and increased sensitivity. These plates are packed with the same high-quality phases used in our Discovery SPE line.



DESCRIPTION	QTY.	CAT. NO.
DSC-18 SPE 96-WELL PLATES		
100mg/well	1	575603-U
50mg/well	1	575602-U
25mg/well	1	575601-U
DSC-18LT SPE 96-WELL PLATES		
100mg/well	1	575606-U
50mg/well	1	575605-U
25mg/well	1	575604-U
DSC-8 SPE 96-WELL PLATES		
100mg/well	1	575627-U
50mg/well	1	575628-U
25mg/well	1	575629-U
DSC PH SPE 96-WELL PLATES		
100mg/well	1	575630-U
50mg/well	1	575631-U
25mg/well	1	575632-U
DSC-CN SPE 96-WELL PLATES		
100mg/well	1	575624-U
50mg/well	1	575625-U
25mg/well	1	575626-U
DSC-SI SPE 96-WELL PLATES		
100mg/well	1	575609-U
50mg/well	1	575608-U
25mg/well	1	575607-U

DESCRIPTION	QTY.	CAT. NO.
DSC-DIOL SPE 96-WELL PLATES		
100mg/well	1	575636-U
50mg/well	1	575637-U
25mg/well	1	575638-U
DSC-NH₂ SPE 96-WELL PLATES		
100mg/well	1	575615-U
50mg/well	1	575616-U
25mg/well	1	575617-U
DSC-SAX SPE 96-WELL PLATES		
100mg/well	1	575618-U
50mg/well	1	575619-U
25mg/well	1	575620-U
DSC-WCX SPE 96-WELL PLATES		
100mg/well	1	575633-U
50mg/well	1	575634-U
25mg/well	1	575635-U
DSC-SCX SPE 96-WELL PLATES		
100mg/well	1	575621-U
50mg/well	1	575622-U
25mg/well	1	575623-U
DSC-PS/DVB SPE 96-WELL PLATES		
50mg/well	1	575611-U
25mg/well	1	575610-U

Solid Phase Extraction (SPE) Solid Phase Combinatorial Chemistry

Solid Phase Combinatorial Chemistry

In recent years, advances in combinatorial chemistry (CombiChem) have made a tremendous impact on the pharmaceutical industry by dramatically accelerating the drug discovery process. However, for each synthesis a purification step is required to remove the target molecule from reaction by-products and excess reagents. Because many reactions contain polar to moderately polar reagents, by-products, and products that can be selectively extracted with normal phase SPE, modified flash techniques utilizing silica packed SPE hardware have become a routine procedure for purifying solution-phase combinatorial reactions.

Discovery SPE products offer combinatorial chemists an excellent opportunity for developing a simple and standardized high throughput purification method for their combinatorial libraries.

In normal phase SPE, polar compounds are retained or adsorbed onto the sorbent via polar-polar interactions when loaded in the presence of an organic sample matrix. Provided that the products, by-products, and reagents display varying polarities, choosing solvents with increasing polarity will allow for sequential elution of key compounds. In most combinatorial flash purification techniques, compounds not of interest are retained on the stationary phase. The products are then collected for analysis in the load flow through, or if weakly adsorbed, they can be selectively removed with a subsequent wash step.

Many combinatorial chemistry labs are synthesizing and characterizing extensive drug libraries. Chemists are therefore employing modified flash chromatography techniques in a 96-well SPE format for the purpose of sample clean-up and baseline impurity removal. In many combinatorial chemistry labs, capacity is a primary concern for such applications. In our studies, we have determined the binding capacity of 4-Fluoro-3-nitrobenzoic acid when loaded into a DSC-Si SPE 96-well plate (100mg/well). Our results show that ~12.5mg of the Fluoro compound can be loaded onto 100mg DSC-Si before breakthrough occurs. Breakthrough determination was analyzed via HPLC analysis (see Table A).

Table A. Binding Capacity of 4-Fluoro-3-Nitrobenzoic acid on DSC-Si (100mg/well)

LOAD AMOUNT*	BREAKTHROUGH AMOUNT
2.5mg	No Breakthrough
5.0mg	No Breakthrough
10.0mg	No Breakthrough
12.5mg	No Breakthrough
15.0mg	0.10 % Breakthrough Occurred

* Sample Matrix in 200µL Methylene Chloride
n = 3 for each load amount.

RELATED INFORMATION

For more information on Combinatorial Chemistry, request the following free technical literature.

No.	Title
EDZ	Sigma-Aldrich Combinatorial Chemistry Handbook
DGQ	Aldrich Polymer Products CD - Catalog and Reference Guide

Discovery DCS-Si SPE Products

DESCRIPTION	QTY.	CAT. NO.
SPE TUBES¹		
50mg/1mL	108	52652-U
100mg/1mL	108	52653-U
500mg/3mL	54	52654-U
500mg/6mL	30	52655-U
1g/6mL	30	52656-U
2g/12mL	20	52657-U
5g/20mL	20	52658-U
10g/60mL	16	52659-U
SPE-96 WELL PLATES		
100mg/well	1	575609-U
50mg/well	1	575608-U
25mg/well	1	575607-U
BULK PACKING		
Bulk Packing	100g	52651-U
BÜCHNER FUNNELS		
50mmID x 30mmH; 12.5g	6	52591-U
70mmID x 40mmH; 25g	6	52592-U
90mmH x 48mmH; 50g	6	52593-U
110mmID x 66mmH; 100g	6	52594-U

¹ Tubes are polypropylene, frits are polyethylene with 20µm pores.



Empty Glass Reaction Tubes

Inert glass tubes, Teflon frits and Teflon closures

- Reduce interferences and contamination of your reaction mixtures
- Resistant to aggressive solvents and chemical solutions
- High flow frit porosity allows for gravity or rapid vacuum rinsing

Empty Glass Reaction Tubes

DESCRIPTION	QTY.	CAT. NO.
6mL glass tubes, Teflon frits	24	504394
Teflon Tube adapters with port	24	504335
6mL solid Teflon caps	24	504343
Male luer plugs, PP	12	504351
Female luer plugs, PP	12	57098
Replacement Teflon frits for 6mL glass tubes	60	504327

Combigel XE-305 Support

Our version of Amberlite XE-305. A proprietary, underivatized, polystyrene resin with unique swelling properties that make it ideal for solid phase combinatorial chemistry reactions.

DESCRIPTION	QTY.	CAT. NO.
Bulk Packing	50g	502537B

Solid Phase Extraction (SPE)

Custom Products, Hardware Configuration

Custom SPE products

Supelco's line of SPE products comprised of an array of sorbents, resins and hardware configurations including polypropylene tubes, glass tubes, 96-well plates, Büchner funnels, and various positive pressure cartridges. Scattered throughout our standard SPE product line you'll see the availability of these various SPE devices at varying degrees. Supelco offers custom manufacturing services so that you can optimize your sample processing procedure to the parameters dictated by your sample prep objectives. If there's a certain permutation of phase chemistry, bed weight and hardware configuration you require that's not listed within our standard product line, please inquire. To request a price quote or inquire on the feasibility of Supelco manufacturing a custom SPE product, please contact your local Sigma-Aldrich office.

For contact details: http://www.sigmaldrich.com/Area_of_Interest/Europe_Home.html



Polypropylene SPE Tubes

Standard Design: Supelco's standard Discovery and Supelclean SPE tubes are comprised primarily of straight-walled serological grade polypropylene syringe barrels. Each of the 20+ available bonded phases and resins are available in an array of bed weights and volumes ranging from 1, 3, 6, 12, 20, and 60mL.

Flangeless Design: Flangeless (tabless/wingless) 1 and 3mL SPE tubes that can be eluted directly into 96-well collection plates, using the Gilson Nebula Series SPE 215 System.

Reversible Design: Our reversible SPE tubes allows for both forward and reverse flow capabilities offering great utility in trace enrichment applications. The tubes consist of a female luer inlet and a male luer outlet. Reversible tubes are available in 0.5, 1, and 2mL configurations.



Glass Tubes

Inert glass tubes (3 & 6mL) are available for preparations that demand high purity extracts and increased solvent compatibility.



Teflon and Stainless Steel Frits

Use Teflon or stainless steel frits when solvent compatibility and tube cleanliness are of concern. Stainless steel frits are not available with glass SPE tubes.



Discovery SPE 96-Well Plates

Process up to 96 samples at once using Discovery SPE 96-Well Plates. The well plates are a one-piece 2mL polypropylene square well design which will fit most standard well plate manifolds. Available bed weights include 25, 50, & 100mg/well. The well plates are compatible with most robotic and automated liquid handling systems:

- TomTec Quadra 96
- Packard Multi-Probe
- Gilson SPE 215
- Beckman Biomek



Büchner Funnels

Our Büchner funnels are sturdy two piece polypropylene units offering excellent chemical resistance, making them invaluable tools for large scale pharmaceutical preparations. The upper half of the Büchner funnels come pre-packed with the Supelco resin or bonded phase of your choice. Holding the packed bed in place are two polyethylene frits layered tight with a thermally welded retaining ring. Available Büchner funnel dimensions and bed weights include:

- 55mmID x 30mmH, 12.5g
- 90mmID x 48mmH, 50g
- 70mmID x 40mmH, 25g
- 110mmID x 66mmH, 100g

Rezorian Cartridges

Our disposable Rezorian Luer-Lock syringe-tip cartridges are fast and convenient for isolating, purifying, and concentrating molecules from a variety of sample matrices. Use where positive pressure is preferred. Rezorian cartridges, pre-packed with the Supelco bonded-phase or resin of your choice, are available in 1 & 5mL configurations.

Solid Phase Extraction (SPE)

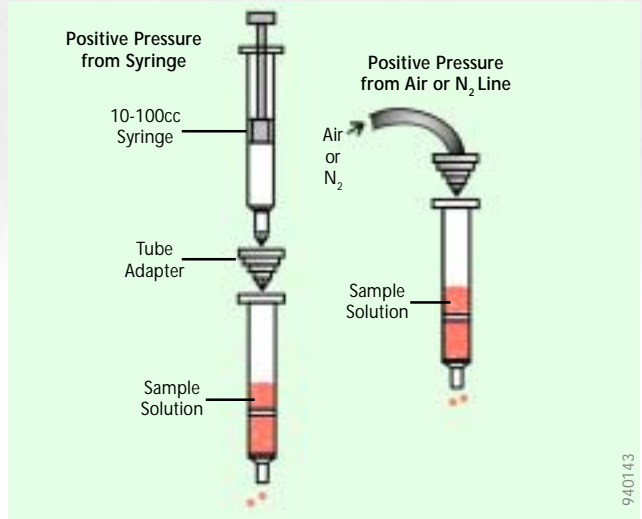
Polypropylene SPE Tube Components, Tube Adapters



Polypropylene SPE Tube Components

These components can be used for packing your own SPE material.

DESCRIPTION	QTY.	CAT. NO.
EMPTY POLYPROPYLENE SPE TUBES WITH POLYETHYLENE FRITS (20µm PORE SIZE)		
1mL	108	57023
3mL	54	57024
6mL	30	57026
12mL	20	57176
20mL	20	57177
60mL	16	57178
EMPTY POLYPROPYLENE SPE TUBES (NO FRITS)		
1mL	108	57240-U
3mL	54	57241
6mL	30	57242
12mL	20	57179
20mL	12	57021
60mL	12	57022
POLYETHYLENE FRITS (20µm PORE SIZE)		
For 1mL Tubes	216	57244
For 3mL Tubes	108	57180-U
For 6mL Tubes	60	57181
For 12mL Tubes	40	57182-U
For 20mL Tubes	40	57183
For 60mL Tubes	32	57184
STAINLESS STEEL FRITS (20µm PORE SIZE)		
For 6mL Tubes	60	57246-U
TEFLON FRITS (20µm PORE SIZE)		
For 1mL Tubes	216	57185
For 3mL Tubes	108	57186
For 6mL Tubes	60	57187
For 12mL Tubes	40	57188
For 20mL Tubes	40	57189
For 60mL Tubes	32	57190-U
CAPS FOR POLYPROPYLENE SPE TUBES (ENCLOSES TOP OF SPE TUBES)		
For 1mL Tubes	108	52171-U
For 3mL Tubes	54	52172-U
For 6mL Tubes	30	52173-U
For 12mL Tubes	20	52174-U
For 20mL Tubes	20	52175-U
For 60mL Tubes	20	52176-U
MALE & FEMALE LUER PLUGS (SEALS LUER OUTLETS ON SPE TUBES)		
Male Luer Plugs	12	504351
Female Luer Plugs	12	57098

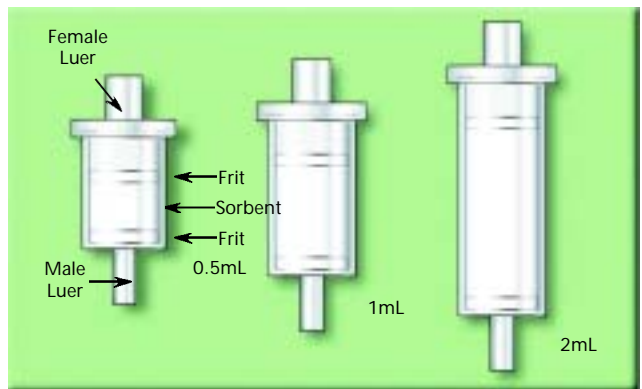


Tube Adapters

Tube adapters serve many purposes. They can be used to stack one SPE tube on top of another to provide different selectivities. A larger empty syringe barrel can be stacked on top of a smaller SPE tube to act as a larger load reservoir. Or, they can serve as an adapter for positive pressure methods (e.g. from a syringe or air/N₂ line).

DESCRIPTION	QTY.	CAT. NO.
SPE TUBE ADAPTERS FOR POLYPROPYLENE TUBES		
For 1, 3, 6mL tubes	12	57020-U
For 12, 20, 60mL tubes	6	57267
AUTOTRACE SPE TUBE ADAPTERS*		
For 3mL Tubes	6	57123
For 6mL Tubes	6	57126

* Allows SPE tubes to be used with AutoTrace Automated Systems



Empty Reversible SPE Tubes

Our reversible SPE tubes provide good utility in trace enrichment applications by permitting forward and reverse flows. These tubes consist of a female luer inlet and a male luer outlet, and are constructed of polypropylene. Reversible tubes are available in 0.5, 1, and 2mL configurations with maximum bed weights of 175, 350, and 700mg respectively. Tubes are available pre-packed with the Supelco bonded-phase or resin of your choice through our custom service (see previous page).

Solid Phase Extraction (SPE)

SPE Vacuum Manifolds

Visiprep SPE Vacuum Manifolds

A Visiprep DL (Disposable Liner) Solid Phase Extraction Vacuum Manifold eliminates the possibility of contamination from one sample to the next in the same manifold port. A disposable Teflon solvent guide runs through each flow control valve. The guide acts as a liner, ensuring that all surfaces that come in contact with the sample can be replaced following each extraction. The guide consists of two parts: a polypropylene luer hub which attaches to the SPE tube and the thin-walled length of Teflon tubing that acts as the liner/solvent guide. The luer hub fits snugly into a matching slot on the flow control valve stem. As the SPE tube is rotated, the valve pinches or releases the liner, stopping or starting flow. Includes 100 liners.

Visiprep Solid Phase Extraction Vacuum Manifolds allow you to simultaneously process up to 12 or up to 24 SPE tubes. Precise flow control is provided through each SPE tube by rotating the independent, screw-type valves in the cover. This precise control ensures the packing will not dry out in some tubes while others finish draining. A solvent-resistant vacuum bleed gauge and valve offer better sealing and vacuum control, via a screw-type mechanism fitted with a Teflon seal. The stand-alone cover with legs prevents the Teflon solvent guides from resting on the work surface and becoming damaged or contaminated.

The glass basin will not dissolve, fog, or discolor when exposed to solvents, and an optional polypropylene splash guard inserts into the basin to eliminate splashing.

The polypropylene collection vessel rack accommodates autosampler vials, small scintillation vials, 10mm and 16mm test tubes, and 1mL, 2mL, 5mL, and 10mL volumetric flasks. An optional plate for the 12-port model enables you to collect samples in up to ten 20mL scintillation vials.

DESCRIPTION	CAT. NO.
VISIPREP DL (DISPOSABLE LINER) SPE VACUUM MANIFOLD	
12-Port Model	57044
24-Port Model	57265
VISIPREP SOLID PHASE EXTRACTION MANIFOLD	
12-Port Model	57030-U
24-Port Model	57250-U



12-Port Visiprep DL (Disposable Liner) Vacuum Manifold



24-Port Visiprep Vacuum Manifold



12-Port Visiprep Vacuum Manifold

Long Stem Flow Control Valves

Equip alternate valves in your 12-port or 24-port Visiprep vacuum manifold with these long stem flow control valves if you intend to use all ports of the manifold with 12mL, 20mL, or 60mL tubes.

Not for use with DL manifolds.

DESCRIPTION	CAT. NO.
Long stem flow control valves (pk. of 6)	57048



P000844

Solid Phase Extraction (SPE) SPE Vacuum Manifolds

PlatePrep Vacuum Manifold

The PlatePrep vacuum manifold consists of a clear acrylic top allowing for easier inspection of flow rates during SPE 96-well plate processing. The polypropylene base offers excellent chemical resistance while a single remote vacuum gauge/bleed valve controls flow through all the wells.

Use this compact vacuum manifold in conjunction with a Discovery SPE 96-well plate to process up to 96 samples concurrently. The single valve control, parallel processing capabilities, and uniform flow dynamics allow for easier method development, reduces clutter, and allow for greater reproducibility. Unused wells can be covered and used at a later date.

Starter Kit Includes:

- 1 PlatePrep Vacuum Manifold
- 1 96 Sq. Well Collection Plate, 2mL, PP
- 2 Disposable Reservoir/Waste Trays, PVC
- 1 96 Sq. Well Piercable Cap Mat
- 5 Reagent Reservoirs
- 1 Cluster Tube Rack

DESCRIPTION	QTY.	CAT. NO.
Supelco PlatePrep Vacuum Manifold	1	57192-U
96-Well Plate Starter Kit with PlatePrep Manifold	1	575650-U
PLATEPREP VACUUM MANIFOLD REPLACEMENT PARTS		
Acrylic Clear Top	1	57193-U
Polypropylene Base	1	57194-U
Gasket/Connector Replacement Kit	1	57195-U
Remote Vacuum Gauge/Bleed Valve Assembly	1	57161-U
96-WELL SPE ACCESSORY ITEMS		
96 Sq. Well Collection Plates, 0.35mL, PP	50	575651-U
96 Sq. Well Collection Plates, 1mL, PP	50	575652-U
96 Sq. Well Collection Plates, 2mL, PP	50	575653-U
Disposable Reservoir/Waste Tray, PVC	25	575654-U
96 Sq. Well Piercable Cap Mats	50	575655-U
Reagent Reservoirs	100	R9259-100EA
Cluster Tube Rack	1	Z372226-1PAK



Supelco Preppy Vacuum Manifold

The Preppy manifold is our simplest and most economical manifold. It too enables the analyst to simultaneously prepare up to 12 samples. It consists of a chemical-resistant cover and gasket, a glass basin, a vacuum release vent, 12 individual control valves with knurled tops, and stainless steel solvent guide needles.

Two optional collection racks are available; one holds both 1 and 4mL autosampler vials, and the other holds 12 or 20mL vials. An optional vacuum gauge/bleed valve assembly can be installed to allow precise control of the vacuum used with the Preppy manifold.

DESCRIPTION	CAT. NO.
PREPPY VACUUM MANIFOLD	
12-Port Model	57160-U
PREPPY REPLACEMENT PARTS	
Cover with flow control valves and solvent needle guides	57158-U
COLLECTION VESSEL RACKS	
For 1 or 4mL vials	57159-U
For 15 or 20mL vials	57162-U
ACCESSORIES	
Vacuum Gauge/Bleed Valve Assembly	57161-U

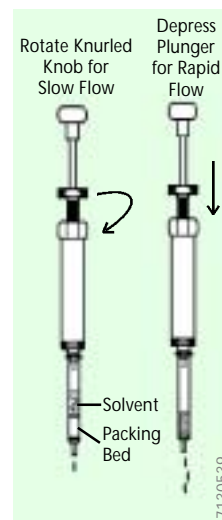


Single SPE Tube Processor

Visi-1 processor provides two rates of flow control

Our Visi-1 Single SPE Tube Processor provides precise flow control through a single 1mL, 3mL, or 6mL SPE tube. There is no faster, more convenient, or more reliable method for processing one or a few samples.

Simply fill the SPE tube with the appropriate solution, attach it to the Visi-1 processor, and rotate the knurled knob clockwise. The solution will pass through the tube in a slow, uniform rate, consistent with the most reproducible results for SPE. Use the plunger to expel the last drop of solvent from the tip of the tube. Remove the tube from the processor, introduce the next solution, and repeat the process.



DESCRIPTION	CAT. NO.
Visi-1 Single SPE Tube Processor	57080-U

Solid Phase Extraction (SPE) Vacuum Manifold Accessories

Replacement Parts and Optional Components for Visiprep Manifolds

DESCRIPTION	CAT. NO.
FOR 12-PORT MANIFOLD	
Cover, 12 flow control valves, gasket ¹	57031-U
Cover, 12 DL flow control valves, gasket ²	57029
Gaskets (pk. of 2)	57033
Glass basin	57049
Glass basin, vacuum gauge and bleed valve ³	57034
Collection rack (base, 3 support rods, center plate, 10mm test tube plate, 12 retaining clips) ³	57037
Plate for 16mm test tubes ³	57039
Plate for 2mL autosampler vials ³	57040-U
Plate for 20mL scintillation vials	57043
Splash guard	57045-U
FOR 24-PORT MANIFOLD	
Cover, 24 flow control valves, gasket ⁴	57251
Cover, 24 DL flow control valves, gasket ⁵	57266
Gaskets (pk. of 2)	57254
Glass basin	57253
Glass basin, vacuum gauge and bleed valve ⁶	57252
Collection rack (base, 2 support rods, center plate, 10mm test tube plate, 8 retaining clips) ⁶	57255
Plate for 16mm test tubes ⁶	57257
Plate for 2mL autosampler vials ⁶	57258
FOR 12-PORT OR 24-PORT MANIFOLD	
Flow control valves (pk. of 2) ⁷	57032
Solvent guide needles, Teflon (pk. of 12) ^{1,8}	57047
Solvent guide needles, stainless steel (pk. of 12) ⁷	57036
Disposable liner flow control valves (pk. of 2) ⁹	57028
Liner guide needles, stainless steel (pk. of 12) ^{2,10}	57027
Disposable valve liners, Teflon (pk. of 100) ^{2,5}	57059
Vacuum gauge and bleed valve	57035-U
Retaining clips for collection racks (pk. of 12)	57041
Test tubes, 10 x 75mm (pk. of 12) ^{1,2,8,10}	57042

¹ Included with 57030-U

² Included with 57044

³ Included with 57030-U and 57044

⁴ Included with 57250-U

⁵ Included with 57265

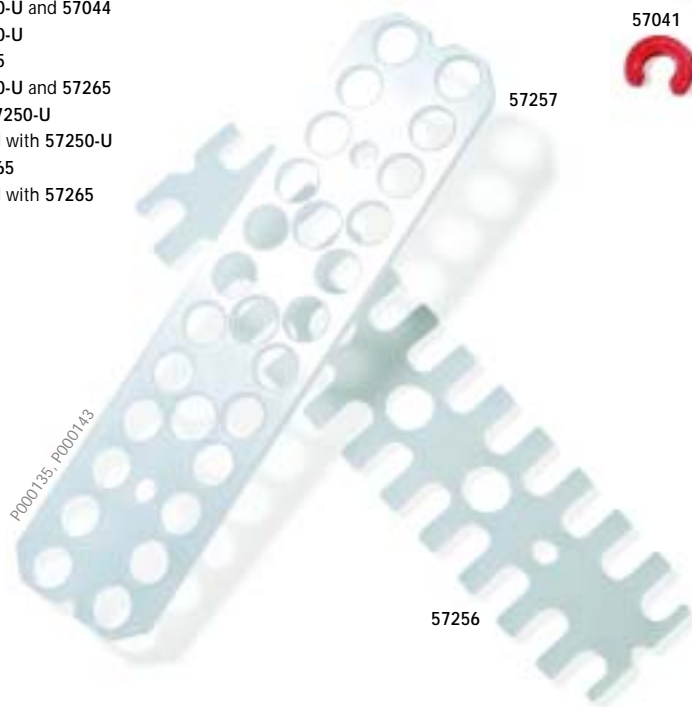
⁶ Included with 57250-U and 57265

⁷ For 57030-U and 57250-U

⁸ 2 packages included with 57250-U

⁹ For 57044 and 57265

¹⁰ 2 packages included with 57265



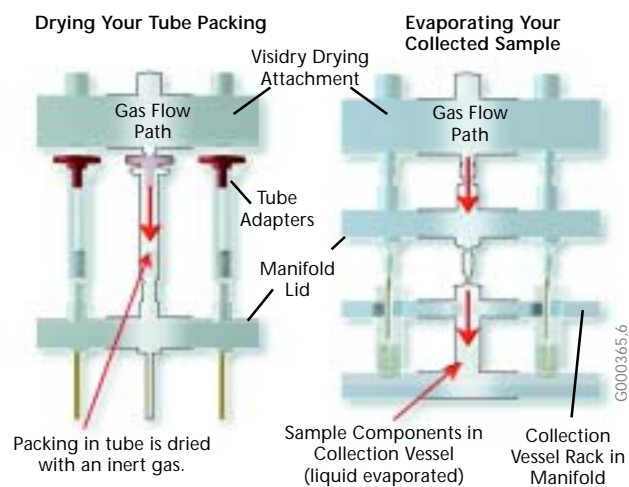
Solid Phase Extraction (SPE) Vacuum Manifold Accessories

Visidry Drying Attachment

The Visidry Drying Attachment was designed for our Visiprep Vacuum Manifold (Cat. No. 57100-U also fits our economical Preppy manifold). The Visidry unit installs in minutes, dries up to 12 or up to 24 SPE tubes at one time, and can be used with any inert gas supply. It is also useful for evaporating and concentrating recovered samples. Gas flow to each port can be independently adjusted.

NOTE: The Visidry drying attachment cannot be used to dry 12mL, 20mL, or 60mL SPE tubes.

DESCRIPTION	CAT. NO.
VISIDRY DRYING ATTACHMENT	
12-Port Model	57100-U
24-Port Model	57124
REPLACEMENT PARTS FOR VISIDRY DRYING ATTACHMENT	
Control knobs (pk. of 2)	57095
Retaining "C" clips (pk. of 2)	57096
Female luer plugs (pk. of 12)	57098

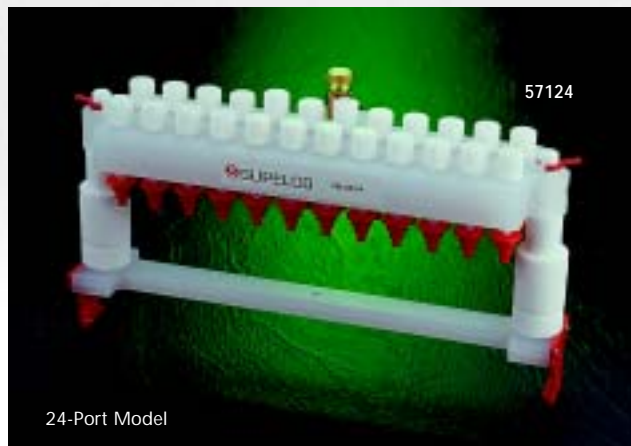


Long Stem Flow Control Knobs

If you have equipped your Visiprep Vacuum Manifold with long stem flow control valves, these control knobs will enable you to attach the Visidry Drying Attachment without removing the long stem valves.

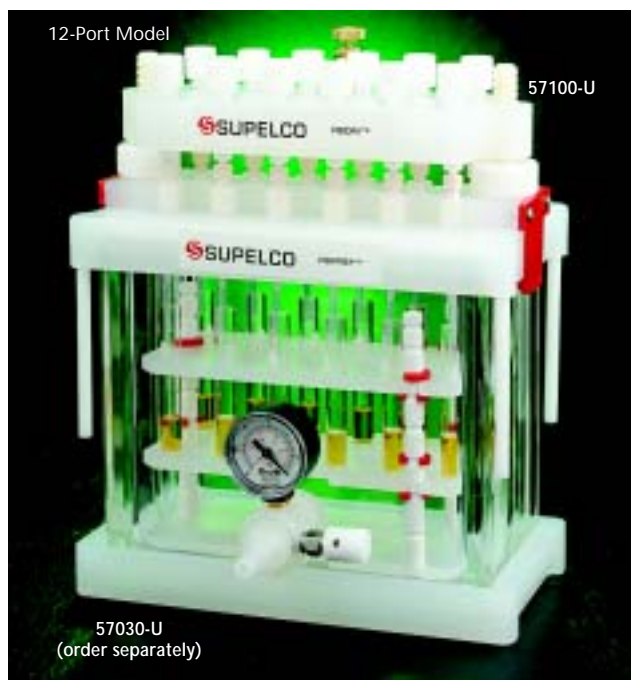
NOTE: These knobs cannot be used with a 24-port manifold being used to process 12mL, 20mL, or 60mL tubes.

DESCRIPTION	CAT. NO.
Long Stem Flow Control Knobs (pk. of 6)	57093



24-Port Model

P000110



57030-U
(order separately)

P000846

Solid Phase Extraction (SPE) Vacuum Manifold Accessories

Visiprep Large Volume Samplers for Direct Sample Extraction

For continuous "hands off" direct transfer of multiple liquid samples

A Visiprep large volume sampler enables you to transfer low viscosity samples directly from any sample container to conventional solid phase extraction tubes on a Visiprep SPE vacuum manifold.

Two samplers are available. One sampler has three tube adapters compatible with 12mL, 20mL, or 60mL polypropylene SPE tubes. Simultaneous extraction of 12 samples on a 12-port Visiprep manifold requires four of these samplers.¹ The other sampler has four tube adapters for 3mL or 6mL SPE tubes. To simultaneously extract 12 samples, three samplers are required.

The samplers consist of 1/8-inch Teflon tubing with a screw fitting at one end and a stainless steel weight at the other end. To use the sampler, feed the weighted end into a sample container until it touches the bottom. Insert the tube adapters into the conditioned SPE tubes on your Visiprep manifold. Turn on the vacuum to the Visiprep manifold and open the manifold flow control valves, and the samples will be delivered to the SPE tubes. The flow rate of sample through each tube can be independently controlled by using the flow control valves. Both the screw fittings and the Teflon tubing on the samplers are color-coded for easy sample identification.

Also fits Preppy SPE Vacuum Manifold.

DESCRIPTION	CAT. NO.
VISIPREP LARGE VOLUME SAMPLER	
for 12mL, 20mL, or 60mL SPE tubes (3 adapters)	57272
for 3mL or 6mL SPE tubes (4 adapters)	57275
REPLACEMENT PARTS	
1/8" Teflon tubes, color-coded (pk. of 4)	57276
Nuts and ferrules, color-coded (pk. of 4)	57277
Stainless steel weights (pk. of 4)	57278
TUBE ADAPTERS, 1/4-28 THREADS	
For 3mL or 6mL tubes (pk. of 4)	57273-U
For 12mL, 20mL, or 60mL tubes (pk. of 3)	57274-U

¹ Also, you must equip alternate manifold valves with long stem flow control knobs to accommodate 12mL, 20mL, or 60mL SPE tubes.



Trap Kit for SPE Vacuum Manifolds

When installed between a Visiprep SPE vacuum manifold and the vacuum source, a Supelco SPE Vacuum Pump Trap collects all liquids that are aspirated through the SPE tubes, preventing contamination of the vacuum pump. The easily assembled kit contains a polypropylene filtering flask, a one-hole rubber stopper, 4" (10cm) of polypropylene tubing and 5' (1.5m) of red rubber vacuum hose.

DESCRIPTION	CAT. NO.
SPE Vacuum Pump Trap Kit	57120-U



Vacuum Gauge / Bleed Valve Assembly

Install in-line to allow control of vacuum

DESCRIPTION	CAT. NO.
Vacuum Gauge / Bleed Valve Assembly	57161-U



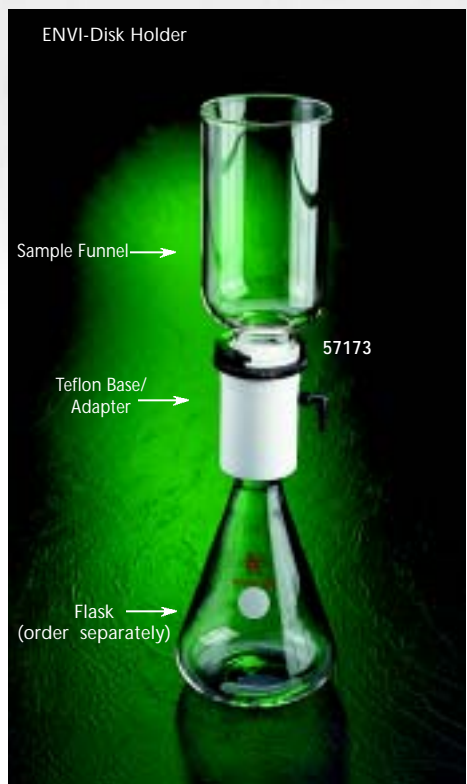
SPE Elution Rack

This versatile stand-alone elution rack can be used with a variety of SPE tubes and receiving vessels, for simultaneous gravity feed extraction of up to 12 tubes. When using reversible tubes with luer endfittings, you can attach an empty syringe barrel to the tube to serve as a solvent reservoir. By assembling the plates in appropriate combinations, you can configure the rack to accept the following:

- 1mL, 3mL, or 6mL syringe barrel-type tubes
- Closed cartridge (reversible) tubes
- 5mL or 10mL volumetric flasks
- 2mL or 4mL vials
- Test tubes up to 15mm ID x 10cm

DESCRIPTION	CAT. NO.
SPE Elution Rack	21043-U

Solid Phase Extraction (SPE) ENVI-Disk Accessories



ENVI-Disk Holder

Use the ENVI-Disk Holder with 47mm ENVI-DSK SPE disks. The unique design of the holder allows each disk to be installed and held firmly in place without wrinkling or tearing. A screw clamp provides uniform pressure on the disk and the sealing surfaces to prevent troublesome leaks – spring-loaded clamps cannot offer the sealing integrity of the ENVI-Disk Holder.

The unit consists of a 1-liter sample funnel, a threaded screw clamp, a Teflon disk support, and a Teflon filter base/adapter with a vacuum attachment fitting. The filter base fits onto any standard 1-liter flask that has a 40/35 tapered ground glass neck. Use 25 x 250mm test tubes to collect disk eluates. The flask and collection tubes are not included with the holder, but can be purchased separately.

To use the holder, place the base/adapter on the 1-liter flask and center an ENVI-Disk on the disk support in the base. Loosen the screw clamp to install the funnel, then tighten to secure the unit. Attach the base/adapter to a vacuum source, and the unit is ready to use.

DESCRIPTION	CAT. NO.
ENVI-Disk Holder	57173
Flask, 1-liter, 40/35 fitting ¹	Z290610-1EA
Collection Tube, 25 x 250mm ¹	57175

¹ Order separately – not included with holder.



ENVI-Disk Holder Manifold

The ENVI-Disk Holder Manifold holds one to six ENVI-Disk Holders with flasks, allowing you to simultaneously extract up to six 1-liter samples. Each of the six stations is controlled through an independent flow control valve. These valves are designed to vent the flask to the atmosphere when moved from the open to the closed position. The flow rate is controlled by the needle valve on the manifold.

The unit includes a sturdy polymer base with six stations, six flow control valves, a needle valve, a vacuum gauge, and vacuum tubing. A 1-liter glass bottle in the manifold acts as a trap, to protect the vacuum source in the event of an overflow from one of the sample flasks.

DESCRIPTION	CAT. NO.
ENVI-Disk Holder Manifold	57174



ENVI-Disk Clamp

- Eliminates leaks
- Attaches to any 34/45 tapered flask

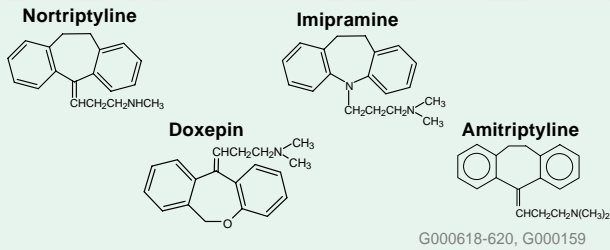
When used with a standard 47mm glass filtration apparatus, the ENVI-Disk Clamp creates a better seal, eliminating leaks with SPE extraction disks or when filtering HPLC mobile phase solvents.

Use only with a filtration glassware funnel base that has a removable filtration stage, such as Supelco Mobile Phase Filtration Apparatus 1 (Cat. No. 58061) or 2 (Cat. No. 58062-U), or with a funnel base (Cat. No. 58064 or 58068). It cannot be used with a permanent fritted glass filtration stage or stainless steel holder screen.

DESCRIPTION	CAT. NO.
ENVI-Disk Clamp, 47mm assembly	57260-U
Replacement Teflon stage	57261

Solid Phase Extraction (SPE) Applications

Drugs



Efficiency of Recovery

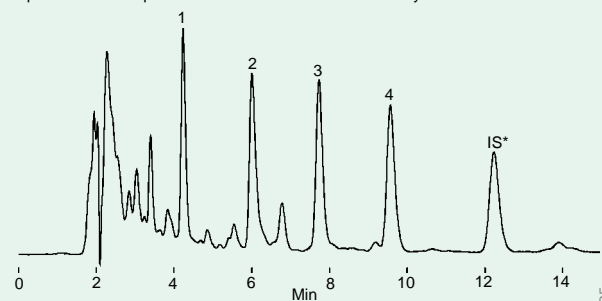
Compound	Concentration (µg/mL)	%Recovery	%RSD (n=6)
1. Nortriptyline	0.10	103.6	±4.5
	0.50	97.5	±4.5
2. Doxepin	0.10	102.2	±3.0
	0.50	100.8	±1.8
3. Imipramine	0.10	92.0	±1.5
	0.50	97.5	±1.7
4. Amitriptyline	0.10	93.6	±1.2
	0.50	95.7	±1.4

SPE Procedure, Using Zymark RapidTrace SPE Workstation

Step	Solvent/Solution	Volume (mL)	Flow Rate (mL/min)	Comments
1. Condition	MeOH	2.0	5.0	conditions sorbent
2. Condition	H ₂ O	2.0	5.0	conditions sorbent
3. Load	spiked porcine serum	2.0 ^A	0.75	applies serum sample
4. Rinse	20% MeOH in H ₂ O	2.0	5.0	washes sorbent
5. Purge-Cannula	H ₂ O	4.0	30.0	cleans sample cannula
6. Rinse	vent	0.1	2.0	positions SPE tube over waste port
7. Dry	N ₂	Time = 10 min		dries sorbent
8. Purge-Cannula	MeOH	4.0	30.0	cleans sample cannula
9. Collect	MeOH	1.0	1.0	elutes analytes into collection vessel
10. Collect	vent	6.0	3.0	pushes residual eluent into vessel ^B
11. Purge-Cannula	H ₂ O	4.0	30.0	cleans sample cannula

^A 1mL porcine serum spiked with 0.1µg/mL or 0.5µg/mL each analyte basified with 3µL 10N KOH, then diluted with 1mL water

^B 350µL water added per mL methanolic eluent before analysis.



Antidepressants (Tricyclic) From Serum Using Zymark RapidTrace SPE Workstation (SPE/GC)

SPE Tube: Discovery DSC-18, 100mg/1mL
 Cat. No.: 52602-U
 HPLC Column: Discovery C18, 15cm x 4.6mm, 5µm particles, preceded by a 2cm C18 guard column and 0.5µm frit filter
 Cat. No.: 504955
 Mobile Phase: MeCN:MeOH:25mM KH₂PO₄ (pH 7 with triethylamine) (45:25:30)
 Flow Rate: 1mL/min
 Temp.: ambient
 Det.: UV, 254nm
 Inj.: 50µL diluted porcine serum extract

Efficiency of Recovery

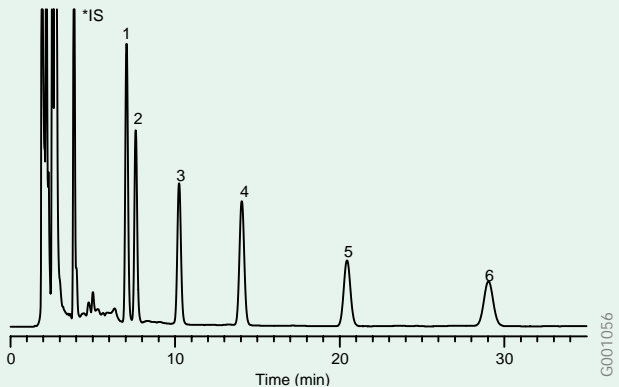
Compound	Concentration (µg/mL)	%Recovery	%RSD (n=6)
1. Phenobarbital	0.5	96.2	±1.6
	1.0	94.9	±1.7
2. Aprobarbital	0.5	98.5	±2.1
	1.0	100.8	±0.8
3. Butabarbital	0.5	97.2	±1.9
	1.0	98.7	±1.8
4. Mephobarbital	0.5	99.7	±2.4
	1.0	101.0	±2.0
5. Pentobarbital	0.5	96.4	±1.7
	1.0	96.4	±1.9
6. Secobarbital	0.5	98.2	±1.7
	1.0	97.7	±1.8

SPE Method For RapidTrace SPE Workstation Application

- Condition & equilibrate each tube/well with 2mL MeOH & 2mL DI Water.
- Load sample.
- Wash each tube/well with 2mL 5% MeOH.
- Vacuum or air dry with for 5-10 min.

This removes any excess water from the sorbent. The presence of water in the final eluent may prolong eluent evaporation.

- Elute with 1-2mL MeOH.
- Dry eluate with nitrogen purge (40°C; 15-20 min).
- Reconstitute with 200µL mobile phase.
- Quantify against internal or external standards via HPLC analyses.



Barbiturates from serum using 500mg/3mL Discovery DSC-18Lt SPE tubes and Zymark's RapidTrace SPE Workstation.

*IS = Barbital (internal standard).

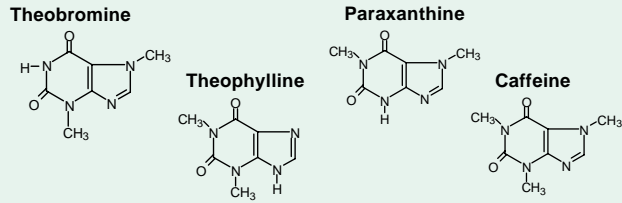
Sample Info: 0.5mL porcine serum spike with 0.5µg/mL or 1.0µg/mL each analyte then diluted with 0.5mL water.

Barbiturates From Serum Using Zymark RapidTrace SPE Workstation (SPE/HPLC)

SPE Tube: Discovery DSC-18Lt, 500mg/3mL
 Cat. No.: 52613-U
 HPLC Column: Discovery C18, 15cm x 4.6mm, 5µm particles, preceded by a 2cm C18 guard column and 0.5µm frit filter
 Cat. No.: 504955
 Mobile Phase: MeOH/H₂O (40:60)
 Flow Rate: 1mL/min
 Temp.: 30°C
 Det.: UV, 214nm
 Inj.: 30µL diluted porcine serum extract

Solid Phase Extraction (SPE) Applications

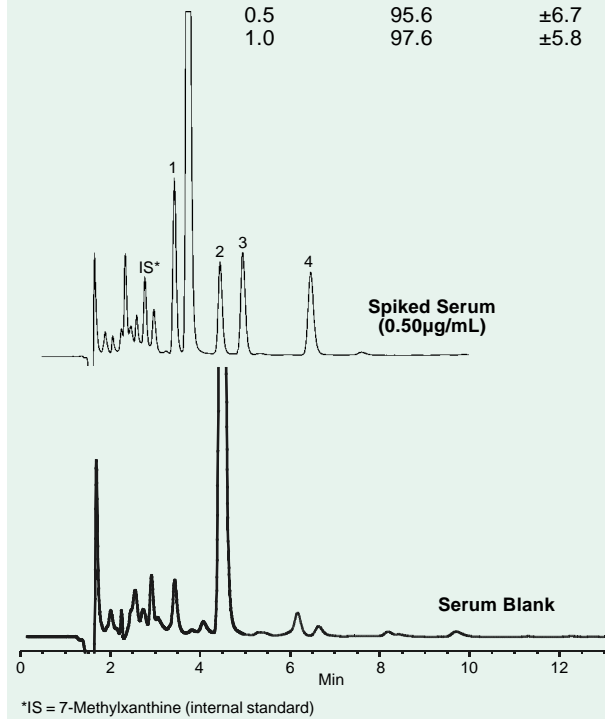
Drugs



G000588-590, G000096

Efficiency of Recovery

Compound	Concentration (µg/mL)	%Recovery	%RSD (n=6)
1. Theobromine	0.1	97.4	±6.8
	0.5	96.4	±8.5
	1.0	96.1	±5.0
2. Paraxanthine	0.1	96.2	±8.4
	0.5	95.2	±8.7
	1.0	95.0	±8.7
3. Theophylline	0.1	97.8	±8.5
	0.5	97.8	±8.8
	1.0	98.5	±5.7
4. Caffeine	0.1	98.8	±3.9
	0.5	95.6	±6.7
	1.0	97.6	±5.8



Bronchodilator: Theophylline and Other Caffeine Metabolites from Serum (SPE/HPLC)

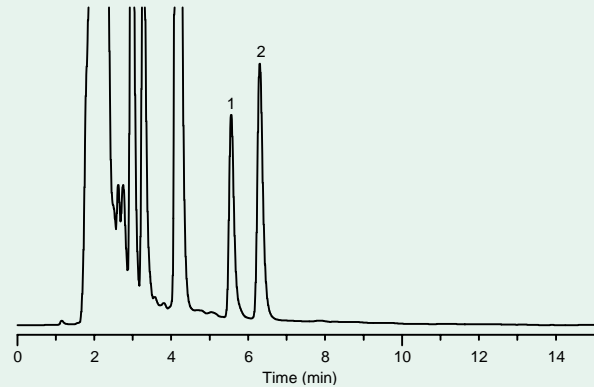
SPE Tube: Discovery DSC-18, 500mg/3mL
 Cat. No.: 52603-U
 Condition: 2mL methanol, then 2mL water
 Apply Sample: 1mL porcine serum spiked with 0.1µg/mL, 0.50µg/mL, or 1.0µg/mL each analyte
 Wash and Dry: 2mL 5% methanol in water; dry tube 10 min with nitrogen stream
 Elute: 1mL methanol; evaporate to dryness with nitrogen stream at room temperature; reconstitute in 200µL mobile phase containing 0.2µg/mL or 7-methylxanthine (IS)
 Column: Discovery RP-AmideC16, 15cm x 4.6mm, 5µm particles, preceded by 2cm RP-AmideC16 guard column and 0.5µm frit filter
 Cat. No.: 505013
 Mobile Phase: methanol:1% acetic acid (17:38)
 Flow Rate: 1mL/min
 Temp.: 30°C
 Det.: UV, 272nm
 Inj.: 20µL reconstituted porcine serum extract

Efficiency of Recovery

Compound (µg/mL)	Discovery DSC-SCX (n=3)		Leading Competitor SCX (n=2)	
	% Recovery	%RSD	%Recovery	%RSD
1. 3-methylpyrazole (1.0)	89.4	±10.2%	67.1	±20%
2. 4-methylpyrazole (1.0)	79.4	±6.8%	50.5	±30%

SPE Procedure

1. Condition & equilibrate with 2mL MeOH & 2mL DI water.
2. Load 1mL urine sample spiked with 1µg/mL of each analyte.
3. Wash with 2mL DI water.
4. Elute with 2mL 5% MeOH in 250mM phosphate buffer, pH 7.4.
5. Quantify against external standards via HPLC analyses.

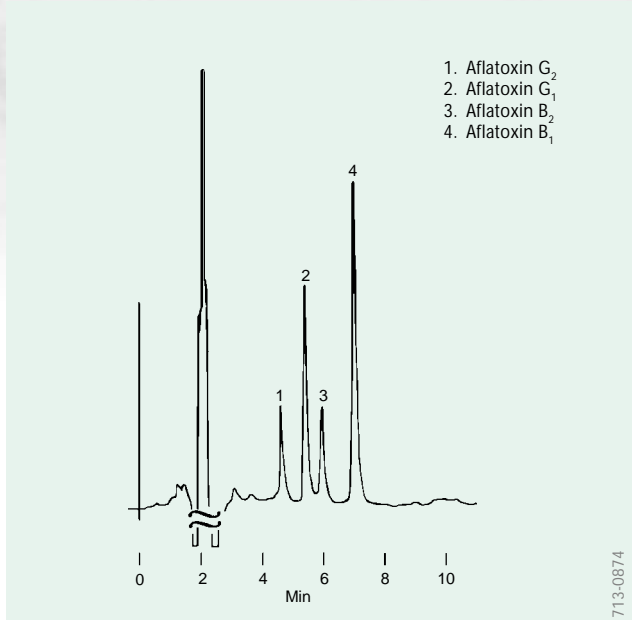


Competitor Comparison of 3-methylpyrazole and 4-methylpyrazole From Urine Using Discovery DSC-SCX (SPE/HPLC)

SPE Tube: Discovery DSC-SCX, 500mg/3mL
 Cat. No.: 52686-U
 HPLC Column: Discovery C18, 15cm x 4.6mm, 5µm particle, preceded by a 2cm guard column and 0.5µm frit filter
 Cat. No.: 504955
 Mobile Phase: MeOH:5mM phosphate buffer, pH 6 (20:80)
 Flow Rate: 1mL/min
 Temp.: 30°C
 Det.: UV, 220nm
 Inj.: 25µL diluted urine extract

Solid Phase Extraction (SPE) Applications

Mycotoxins, Herbicides



Aflatoxins (SPE/HPLC)

Sample: cornmeal spiked with aflatoxins (30ppb G₂ and B₂, 100ppb G₁ and B₁) Blend 50g sample for 1 min in 100mL methanol:water (8:2) and filter.

Extraction Tube: **Supelclean LC-CN, 500mg/3mL**
Cat. No.: **57013**

Conditioning: 2mL 0.5% aqueous acetic acid

Sample Addition: 1mL filtered extract + 4mL 0.5% aqueous acetic acid

Washing: 500µL 20% THF in 0.5% aqueous acetic acid, then 2mL hexane. Dry packing under nitrogen. 3mL 25% THF in hexane. Dry packing 1 min under nitrogen.

Elution: 2 x 2mL 1% THF in methylene chloride. Evaporate eluate to dryness under nitrogen. Reconstitute with 100µL of methanol, then dilute with 100µL of 0.5% aqueous acetic acid.

Column: **SUPELCOSIL LC-18, 25cm x 4.6mm ID, 5µm particles** (with guard column)

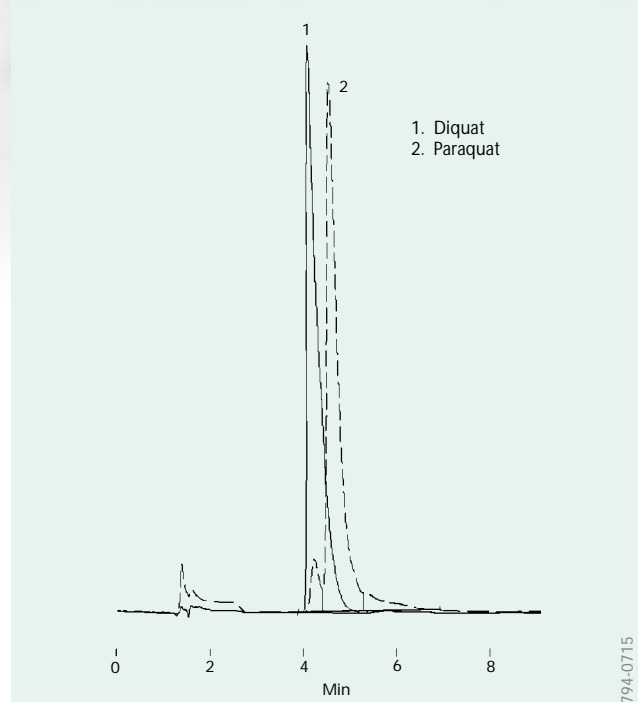
Cat. No.: **58298**

Mobile Phase: methanol:acetonitrile:water (22.5:22.5:55)

Flow Rate: 1.5mL/min

Det.: VIS, 365nm

Inj.: 100µL



Paraquat and Diquat (SPE/HPLC)

Refer to US EPA Method 549.1 for full details.

Sample: 250mL drinking water, adjust sample pH to 10.5 ± 0.2 with sodium hydroxide solution (10% w/v) or hydrochloric acid solution (10% v/v)

Extraction Disk: **ENVI-8 DSK, 47mm**

Cat. No.: **57172**

Conditioning: 10mL methanol

2 x 10 mL reagent water

10mL conditioning solvent A (0.5g cetyl trimethyl ammonium bromide and 5mL conc. ammonium hydroxide in 500mL water, dilute to 1L)

2 x 10mL reagent water

10mL conditioning solvent B (10.0g hexanesulfonic acid, sodium salt and 10mL ammonium hydroxide in 250mL deionized water, dilute to 500mL)

Sample Addition: adjust vacuum to flow rate of 100mL/min

Extraction: 0.5 to 1.0mL methanol (to cover disk)

2 x 4mL eluting solution (13.5mL orthophosphoric acid and 10.3mL diethylamine in 500mL water, dilute to 1L)

Column: **SUPELCOSIL LC-18, 15cm x 4.6mm ID, 5µm particles**

Cat. No.: **58230-U**

Mobile Phase: 3.5mL triethylamine and 1.0g

1-hexane-sulfonic acid, sodium salt to 800mL deionized water add orthophosphoric acid to pH = 2.5, dilute to 1L

Flow Rate: 1.0mL/min

Temp.: 35°C

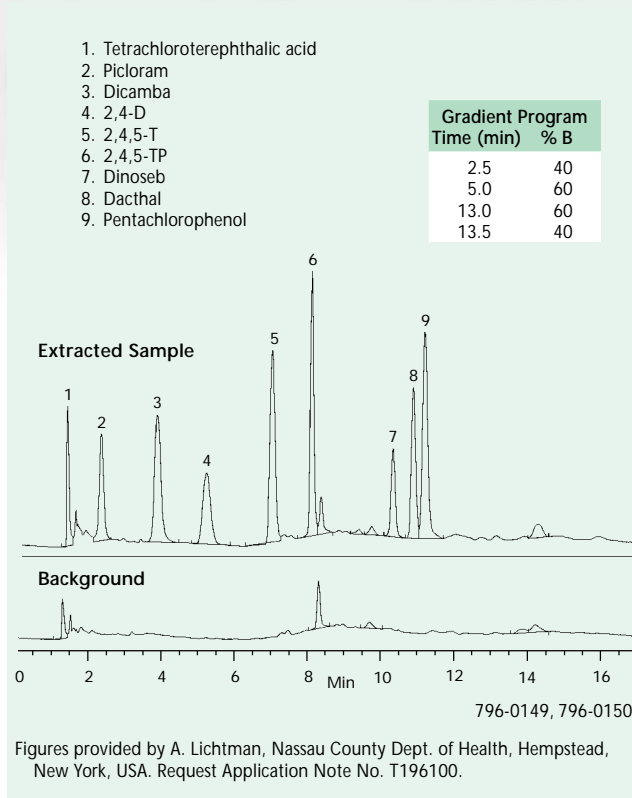
Det.: Photodiode array, quantify

Diquat -308nm, Paraquat -257nm

Inj.: 100µL

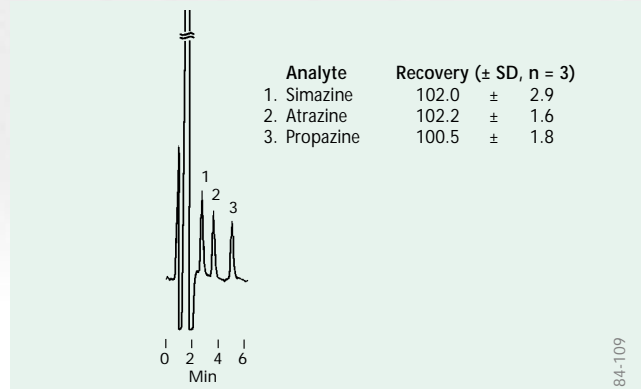
Solid Phase Extraction (SPE) Applications

Herbicides



Acidic Herbicides in Water (SPE/HPLC)

Extraction Tube: ENVI-Carb, 250mg/6mL
 Cat. No.: 57092
 Column: polymeric-coated silica-based PAH specialty column, 20cm x 3mm ID, 5µm particles
 Supelco Equivalent: SUPELCOSIL LC-PAH (available on request)
 Mobile Phase: gradient, A = water/0.05% H₃PO₄, B = acetonitrile
 Temp.: 50°C
 Flow Rate: 0.5mL/min
 Det.: photodiode array: peak width — 0.053 min sampling interval — 0.320 sec, monitor 210nm & 225nm
 Inj.: 10µL of extract (4-5ppb each analyte in water)



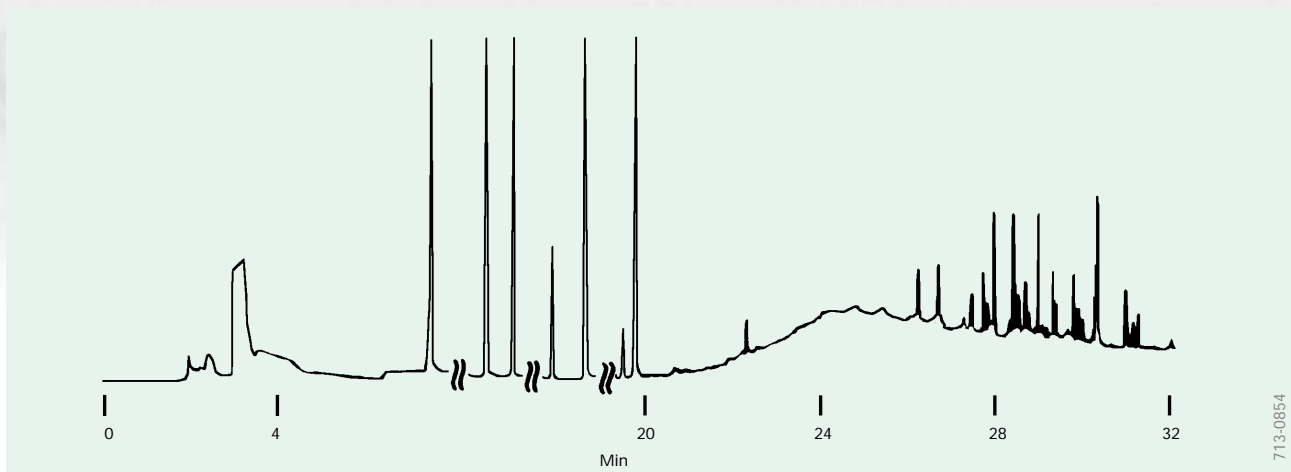
Triazine Herbicides from Grass (SPE/HPLC)

Sample: 5g fresh grass clippings spiked with 2ppm each herbicide. Add 4g anhydrous sodium sulfate and 20mL methylene chloride:acetone (80:20) Shake 20 min and allow mixture to stand 1 min
 Extraction Tube: Supelclean LC-SCX, 500mg/3mL
 Cat. No.: 57018
 Conditioning: 1mL methylene chloride
 Sample Addition: 2mL grass extract
 Washing: 2 x 2mL acetonitrile
 Dry packing for 5 min under nitrogen 2 x 2mL deionized water
 Elution: 1.5mL methanol
 Dilute to 2mL with deionized water.
 Column: SUPELCOSIL LC-8-DB, 15cm x 4.6mm ID, 5µm particles *
 Cat. No.: 58347
 Mobile Phase: acetonitrile:water (45:55)
 Flow Rate: 1.5mL/min
 Det.: UV, 254nm
 Inj.: 100µL

* With Supelguard LC-8-DB column, 2.0cm x 4.6mm ID, 5µm particles

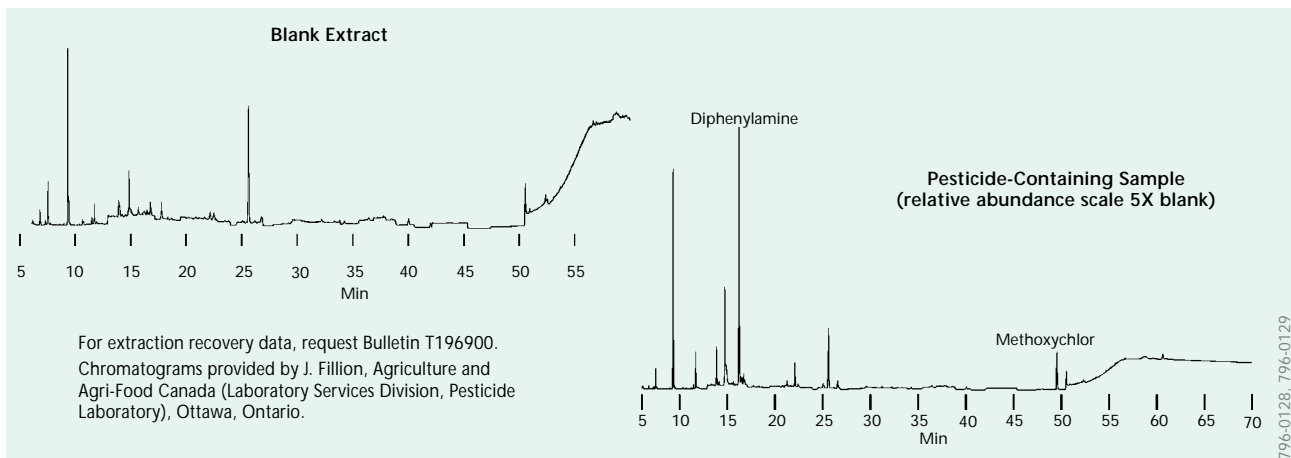
Solid Phase Extraction (SPE) Applications

PCBs, Pesticides



PCB (SPE/GC)

Sample: used transformer oil containing 50ppb Aroclor 1254
Extraction Tube: **Supelclean LC-Florisil, 1.0g/6mL**
Cat. No.: **57057**
Extraction Tube: **Supelclean LC-Si, 1.0g/6mL**
Cat. No.: **57051**
Connect tubes in series, LC-Florisil on top
Conditioning: 500µL isoctane
Sample Addition: 0.2g, weigh onto top of frit of tube
Drying: none
Elution: 5 x 2mL isoctane, up to 10 mL in volumetric flask
Column: **SPB-5, 30m x 0.32mm ID, 0.25µm film**
Cat. No.: **24048**
Oven: 40°C (4 min) to 300°C at 10°C/min, hold 5 min
Carrier: nitrogen
Det.: ECD
Inj.: 1µL splitless (30 sec delay), then split (50:1)



For extraction recovery data, request Bulletin T196900.
Chromatograms provided by J. Fillion, Agriculture and Agri-Food Canada (Laboratory Services Division, Pesticide Laboratory), Ottawa, Ontario.

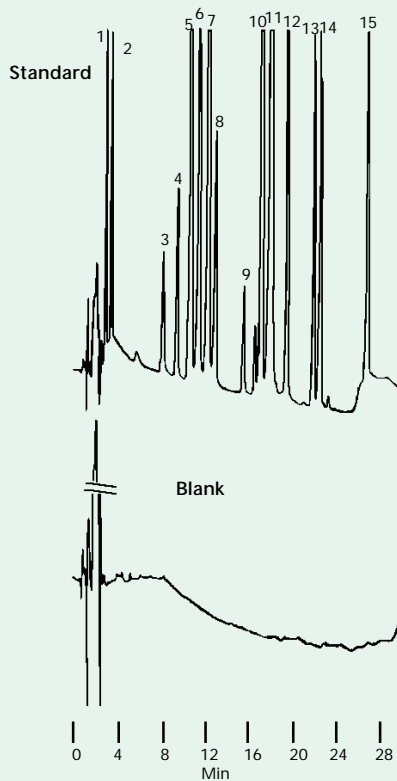
Pesticides in Fruits and Vegetables (SPE/GC)

Sample: homogenize 50g sample in 100mL acetonitrile then add 10g NaCl and homogenize 5min
Extraction Tube: **ENVI-Carb, 500mg/6mL**
Cat. No.: **57094**
Extraction: Centrifuge 13mL of acetonitrile layer at high speed for 5 min. Evaporate 10mL aliquot to 0.5mL under nitrogen at 35°C. Transfer sample to SPE tube. Elute pesticides with 20mL acetonitrile:toluene (3:1). Concentrate to 2mL by rotary evaporation. Add 2 x 10mL acetone, concentrating material to 2mL after each addition. Add 50µL cis-chlordane in acetone (500ng/µL) then dilute to 2.5mL with acetone.
Supelco Equivalent: **SPB-1701** (available on request)
Column: 14% cyanopropylphenyl/86% dimethylsiloxane, 30m x 0.25mm ID, 0.15µm film
Oven: 70°C (hold 2 min) to 130°C at 25°C; 130°C to 220°C at 2°C/min; 220°C to 280°C at 10°C/min and hold 4.6 min
Carrier: helium
Det.: MSD, 285°C
Inj.: 2µL, splitless

Solid Phase Extraction (SPE) Applications

Pesticides

Analyte	% Recovery (\pm RSD, n = 5)
1. Oxamyl	111 \pm 9.6
2. Methomyl	105 \pm 5.0
3. N-1-Naphthylthiourea	—
4. Aldicarb	92 \pm 0.8
5. Simazine	91 \pm 6.5
6. Monuron	99 \pm 3.2
7. Cyanazine	90 \pm 5.4
8. Metribuzin	97 \pm 3.9
9. Carbofuran	106 \pm 6.2
10. Atrazine	89 \pm 5.7
11. Carbaryl	97 \pm 3.5
12. Diuron	88 \pm 5.7
13. Propham	95 \pm 3.2
14. Propachlor	96 \pm 3.8
15. Linuron	88 \pm 5.4

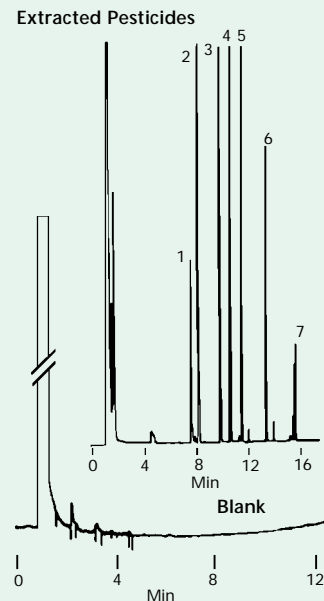


85-438

Nonvolatile Pesticides (SPE/HPLC)

Sample: water spiked with pesticides (10-50 μ g/L each component)
 Extraction Tube: **Supelclean ENVI-Carb, 250mg/3mL**
 Cat. No.: **57088**
 Conditioning: 5mL methylene chloride:methanol (80:20)
 1mL methanol
 10mL 2% acetic acid in water
 Keep bed moist until sample is added.
 Sample Addition: 100mL, 5mL/min
 Drying: 1 min with vacuum suction
 Elution: 0.8mL methanol
 2 x 3.5mL methylene chloride:methanol (80:20)
 Dry eluate to 500 μ L under gentle stream of nitrogen
 Reconstitute to 1mL with methanol.
 Column: **SUPELCOSIL LC-18-DB, 25cm x 4.6mm ID, 5 μ m particles**
 Cat. No.: **58355-U**
 Mobile Phase: A = water:acetonitrile (90:10), B = acetonitrile
 80% A for 5 min then to 30% A over 30 min
 Flow Rate: 1.5mL/min
 Det.: UV, 220nm
 Inj.: 20 μ L

Analyte	% Recovery (\pm CV)
1. Hexachlorobenzene	87 \pm 11
2. γ -BHC (Lindane)	99 \pm 13
3. Heptachlor	96 \pm 12
4. Aldrin	94 \pm 13
5. Heptachlor epoxide	98 \pm 13
6. Endrin	93 \pm 11
7. Methoxychlor	110 \pm 13



713-1192,1193

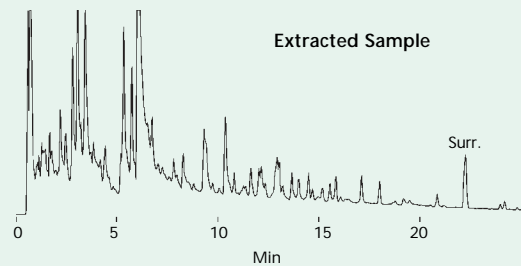
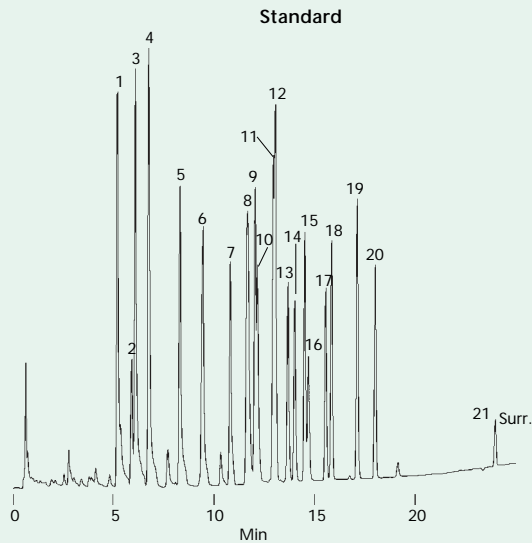
Chlorinated Pesticides (SPE/GC)

Sample: drinking water spiked with pesticides
 Extraction Tube: **Supelclean ENVI-18, 500mg/6mL**
 Cat. No.: **57064**
 Conditioning: 2 x 6mL hexane:ethyl ether (1:1)
 6mL methanol
 6mL deionized water
 Sample Addition: 250mL, 10mL/min
 Drying: 10 min
 Elution: 2 x 1.5mL hexane:ethyl ether (1:1) Concentrate eluate to 2mL under stream of nitrogen.
 Column: **PTE-5, 30m x 0.25mm ID, 0.25 μ m film**
 Cat. No.: **24135-U**
 Oven: 150°C (2 min) to 275°C at 10°C/min
 Carrier: helium
 Det.: ECD, 310°C
 Inj.: 1 μ L

Solid Phase Extraction (SPE) Applications

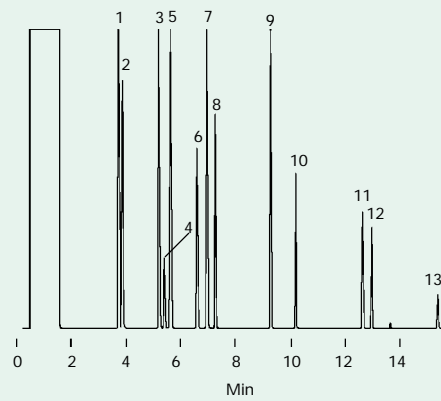
Pesticides, Phenols

- | | |
|----------------------------|--------------------------------|
| 1. α -BHC | 12. 4,4'-DDE |
| 2. β -BHC | 13. Endrin |
| 3. γ -BHC (Lindane) | 14. Endosulfan II |
| 4. δ -BHC | 15. 4,4'-DDD |
| 5. Heptachlor | 16. Endrin aldehyde |
| 6. Aldrin | 17. Endosulfan sulfate |
| 7. Heptachlor epoxide | 18. 4,4'-DDT |
| 8. γ -Chlordane | 19. Endrin ketone |
| 9. Endosulfan I | 20. Methoxychlor |
| 10. α -Chlordane | 21. Decachlorobiphenyl (Surr.) |
| 11. Dieldrin | |



794-0399, 0402

Analyte	% Recovery (\pm CV)
1. Phenol	101.8 \pm 3.7
2. 2-Chlorophenol	104.7 \pm 1.7
3. 2-Methylphenol	107.0 \pm 1.9
4. 2-Bromophenol (Int. Std.)	—
5. 3-Methylphenol	104.9 \pm 1.6
6. 2-Nitrophenol	96.3 \pm 2.8
7. 2,4-Dimethylphenol	105.3 \pm 2.2
8. 2,4-Dichlorophenol	106.3 \pm 2.2
9. 4-Chloro-3-methylphenol	104.6 \pm 2.0
10. 2,4,6-Trichlorophenol	103.9 \pm 2.1
11. 4-Nitrophenol	99.9 \pm 4.1
12. 2,3,4,6-Tetrachlorophenol	104.6 \pm 1.5
13. Pentachlorophenol	97.7 \pm 4.8



712-0073

Phenols (SPE/GC)

Sample: water spiked with phenols
 Extraction Tube: **Supelclean ENVI-Chrom P, 250mg/6mL**
 Cat. No.: **57225-U**
 Conditioning: 6mL methyl t-butyl ether*
 6mL methanol
 6mL deionized water
 Sample Addition: 100mL
 Drying: 10 min, vacuum suction
 Elution: 2mL methyl t-butyl ether,* allow to soak with vacuum off
 2mL methyl t-butyl ether,* elute dropwise
 Additional methyl t-butyl ether until 5mL of eluate is collected.
 Column: **PTE-5 QTM, 15m x 0.53mm ID, 0.5 μ m film**
 Cat. No.: **25355**
 Oven: 65°C to 185°C at 10°C/min, hold 1 min, then to 275°C at 20°C/min, hold 5 min
 Carrier: helium
 Det.: FID, 300°C
 Inj.: 1 μ L splitless (45 sec hold)

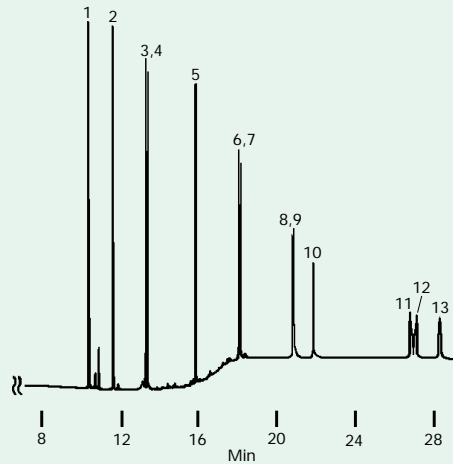
* Can substitute ethyl acetate.

Chlorinated Pesticides in Hazardous Waste (SPE/GC)

Sample: 100mL aqueous hazardous waste, adjust pH to 5-7 if necessary, add 5mL methanol
 Extraction Tube: **ENVI-8, glass, 500mg/6mL**
 Cat. No.: **57107 (0.5g) or 57108 (1g)**
 Conditioning: 3mL methanol, (do not allow bed to dry out)
 2mL 5% methanol in water
 Sample Addition: adjust vacuum to flow rate of 5mL/min
 Dry: purge tube with nitrogen for 2-3 min (use Visidry attachment)
 Extraction: 2 x 4mL hexane:acetone (90:10), allow to soak, elute dropwise
 Column: **PTE-5 QTM, 15m x 0.53mm ID, 0.5 μ m film**
 Cat. No.: **25355**
 Oven: 150°C (0.5min) to 275°C (5min)
 Carrier: helium
 Det.: ECD, 300°C
 Inj.: 1 μ L, 200°C, split/splitless (45 sec delay)

Solid Phase Extraction (SPE) Applications

Polynuclear Aromatic Hydrocarbons, Semivolatiles

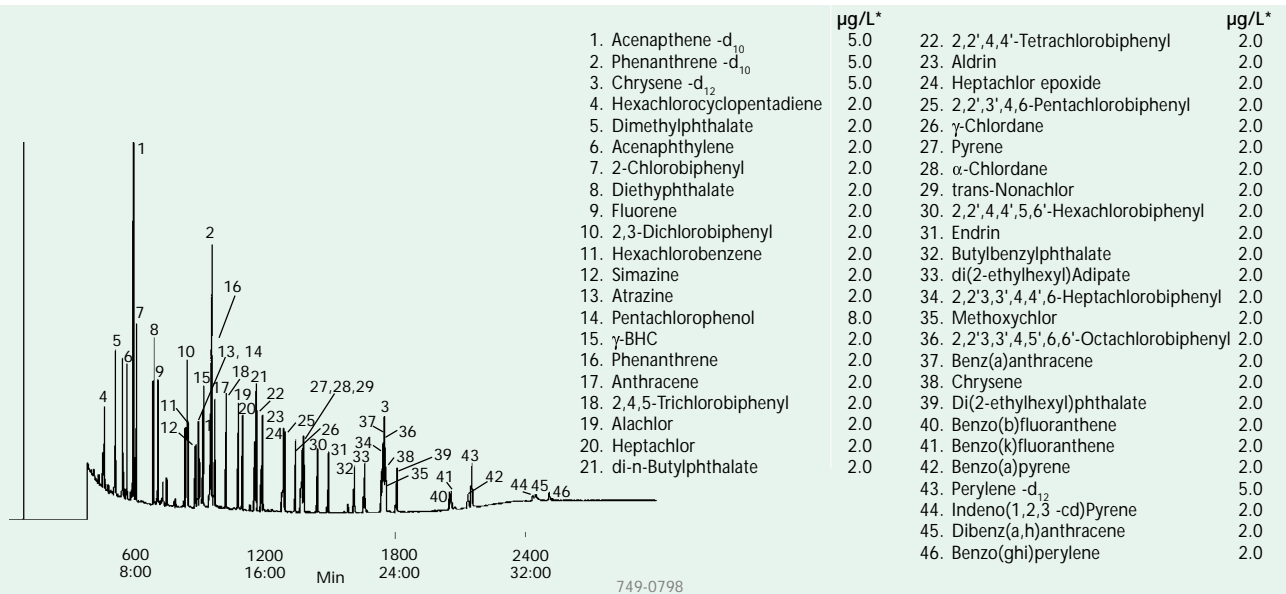


Analyte	%Recovery(± CV)
1. Acenaphthylene	66 ± 28
2. Fluorene	95 ± 7.5
3. Phenanthrene	95 ± 8
4. Anthracene	95 ± 11
5. Pyrene	97 ± 7.1
6. Benzo(a)anthracene	94 ± 8.3
7. Chrysene	101 ± 8.8
8. Benzo(b)fluoranthene	103 ± 10
9. Benzo(k)fluoranthene	103 ± 9.4
11. Indeno(1,2,3-cd)pyrene	102 ± 10
10. Benzo(a)pyrene	94 ± 11
12. Dibenzo(a,h)anthracene	104 ± 9.7
13. Benzo(ghi)perylene	101 ± 11

80-207

PAHs in Water (SPE/GC)

Sample: water spiked with PAHs
 Extraction Tube: Supelclean ENVI-18, 500mg/6mL
 Cat. No.: 57064
 Conditioning: 2 x 6mL toluene:methanol (10:1), 6mL methanol, 6mL deionized water
 Sample Addition: 250mL, 10mL/min
 Drying: 10 min
 Elution: 2 x 1mL toluene:methanol (10:1)
 Column: PTE-5, 30m x 0.25mm ID, 0.25µm film
 Cat. No.: 24135-U
 Oven: 70°C (2 min) to 280°C at 8°C/min
 Carrier: helium
 Det.: FID, 310°C
 Inj.: 1µL



Analyte	µg/L*	Analyte	µg/L*
1. Acenaphthene -d ₁₀	5.0	22. 2,2',4,4'-Tetrachlorobiphenyl	2.0
2. Phenanthrene -d ₁₀	5.0	23. Aldrin	2.0
3. Chrysene -d ₁₂	5.0	24. Heptachlor epoxide	2.0
4. Hexachlorocyclopentadiene	2.0	25. 2,2',3',4,4',6-Pentachlorobiphenyl	2.0
5. Dimethylphthalate	2.0	26. γ-Chlordane	2.0
6. Acenaphthylene	2.0	27. Pyrene	2.0
7. 2-Chlorobiphenyl	2.0	28. α-Chlordane	2.0
8. Diethylphthalate	2.0	29. trans-Nonachlor	2.0
9. Fluorene	2.0	30. 2,2',4,4',5,6'-Hexachlorobiphenyl	2.0
10. 2,3-Dichlorobiphenyl	2.0	31. Endrin	2.0
11. Hexachlorobenzene	2.0	32. Butylbenzylphthalate	2.0
12. Simazine	2.0	33. di(2-ethylhexyl)Adipate	2.0
13. Atrazine	2.0	34. 2,2',3',4,4',6-Heptachlorobiphenyl	2.0
14. Pentachlorophenol	8.0	35. Methoxychlor	2.0
15. γ-BHC	2.0	36. 2,2',3',4,4',5,6'-Octachlorobiphenyl	2.0
16. Phenanthrene	2.0	37. Benz(a)anthracene	2.0
17. Anthracene	2.0	38. Chrysene	2.0
18. 2,4,5-Trichlorobiphenyl	2.0	39. Di(2-ethylhexyl)phthalate	2.0
19. Alachlor	2.0	40. Benzo(b)fluoranthene	2.0
20. Heptachlor	2.0	41. Benzo(k)fluoranthene	2.0
21. di-n-Butylphthalate	2.0	42. Benzo(a)pyrene	2.0
		43. Perylene -d ₁₂	5.0
		44. Indeno(1,2,3-cd)Pyrene	2.0
		45. Dibenzo(a,h)anthracene	2.0
		46. Benzo(ghi)perylene	2.0

749-0798

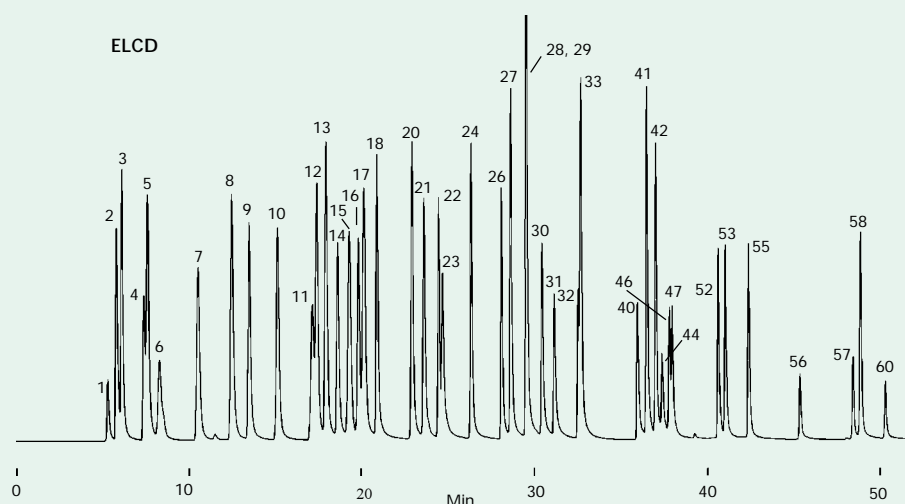
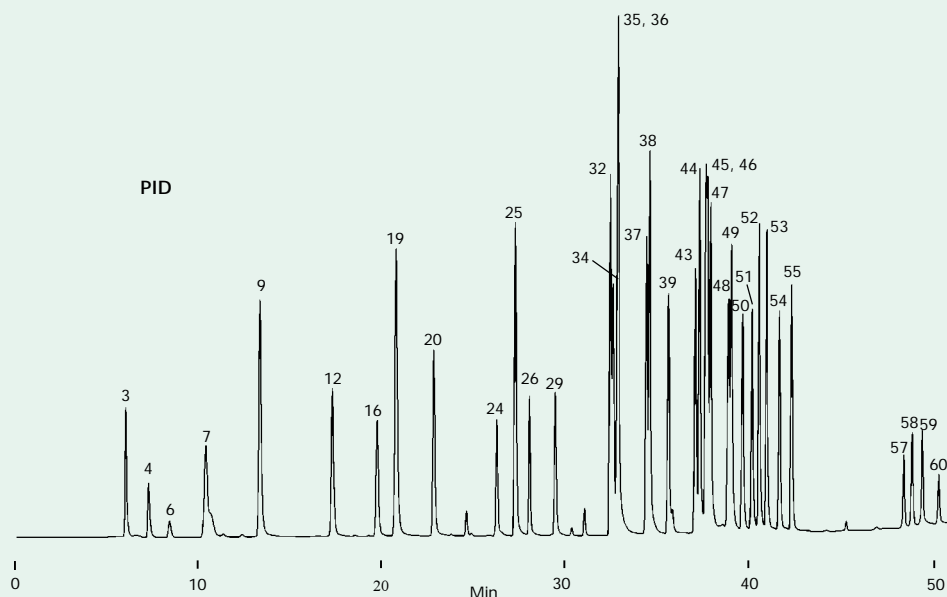
Semivolatiles (SPE/GC)

Sample: 1L drinking water, pH to <2 with 6N HCl, add 5mL methanol and mix thoroughly
 Extraction Disk: ENVI-18 DSK, 47mm
 Cat. No.: 57171
 Conditioning: 5mL dichloromethane (pull completely through disk)/5mL methanol (do not allow disk to dry out)/5mL reagent water
 Sample Addition: adjust vacuum to flow rate of 100mL/min
 Extraction: rinse sample container with 2 x 5mL acetonitrile, extract disk with solution
 Column: 5% diphenyl/95% dimethyl silicone capillary, 30m x 0.25mm ID, 0.25µm film
 Oven: 40°C to 160°C (3 min), then to 300°C (3 min) at 6°C/min
 Supelco Equivalent: Equity-5 (Cat. No. 28089-U)
 Carrier: helium, 33cm/sec
 Det.: MS, scan range m/z=45-450
 Inj.: 1µL, split/splitless, 1min delay

Solid Phase Extraction (SPE) Applications

Volatiles

- | | | | |
|-------------------------------|-------------------------------|-------------------------------|---------------------------------|
| 1. Dichlorodifluoromethane | 16. 1,1-Dichloropropane | 31. 1,2-Dibromoethane | 46. 2-Chlorotoluene |
| 2. Chloromethane | 17. Carbon tetrachloride | 32. Chlorobenzene | 47. 4-Chlorotoluene |
| 3. Vinyl chloride | 18. 1,2-Dichloroethane | 33. 1,1,1,2-Tetrachloroethane | 48. tert-Butylbenzene |
| 4. Bromomethane | 19. Benzene | 34. Ethylbenzene | 49. 1,2,4-Trimethylbenzene |
| 5. Chloroethane | 20. Trichloroethylene | 35. m-Xylene | 50. sec-Butylbenzene |
| 6. Trichlorofluoromethane | 21. 1,2-Dichloropropane | 36. p-Xylene | 51. p-Isopropyltoluene |
| 7. 1,1-Dichloroethylene | 22. Bromodichloromethane | 37. o-Xylene | 52. 1,3-Dichlorobenzene |
| 8. Methylene chloride | 23. Dibromomethane | 38. Styrene | 53. 1,4-Dichlorobenzene |
| 9. trans-1,2-Dichloroethylene | 24. cis-1,3-Dichloropropene | 39. Isopropylbenzene | 54. n-Butylbenzene |
| 10. 1,1-Dichloroethane | 25. Toluene | 40. Bromoform | 55. 1,2-Dichlorobenzene |
| 11. 2,2-Dichloropropane | 26. trans-1,3-Dichloropropene | 41. 1,1,2,2-Tetrachloroethane | 56. 1,2-Dibromo-3-chloropropane |
| 12. cis-1,2-Dichloroethylene | 27. 1,1,2-Trichloroethane | 42. 1,2,3-Trichloropropane | 57. 1,2,4-Trichlorobenzene |
| 13. Chloroform | 28. 1,3-Dichloropropane | 43. n-Propylbenzene | 58. Hexachlorobutadiene |
| 14. Bromochloromethane | 29. Tetrachloroethylene | 44. Bromobenzene | 59. Naphthalene |
| 15. 1,1,1-Trichloroethane | 30. Chlorodibromomethane | 45. 1,3,5-Trimethylbenzene | 60. 1,2,3-Trichlorobenzene |



Chromatograms provided courtesy of O I Analytical, College Station, TX.

713-1165, 1166

Volatile Compounds by US EPA Method 502.2 (PT/GC)

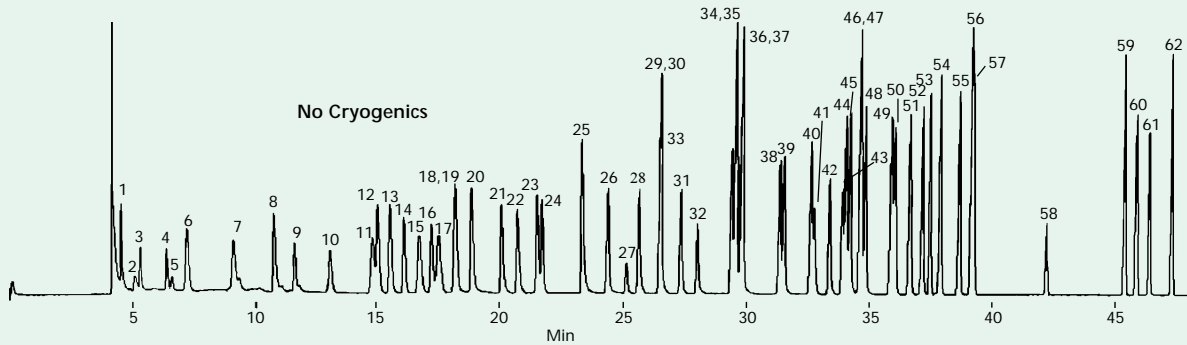
Sample: 5mL water (5ppb each analyte)
 Instrument: OI Analytical Model 4560
 Trap: VOCARB 3000
 Cat. No.: 21131-U
 Purge: 11min, at 25°C, 37mL/min

Desorption: 0.5min at 220°C
 Column: VOCOL, 105m x 0.53mm ID, 3.0µm film
 Cat. No.: 25358
 Oven: 35°C (10 min) to 200°C at 4°C/min, hold
 Carrier: helium, 8.5mL/min
 Det.: ELCD (OI Model 5220)/PID(OI Model 5230) in series

Solid Phase Extraction (SPE) Applications

Volatiles

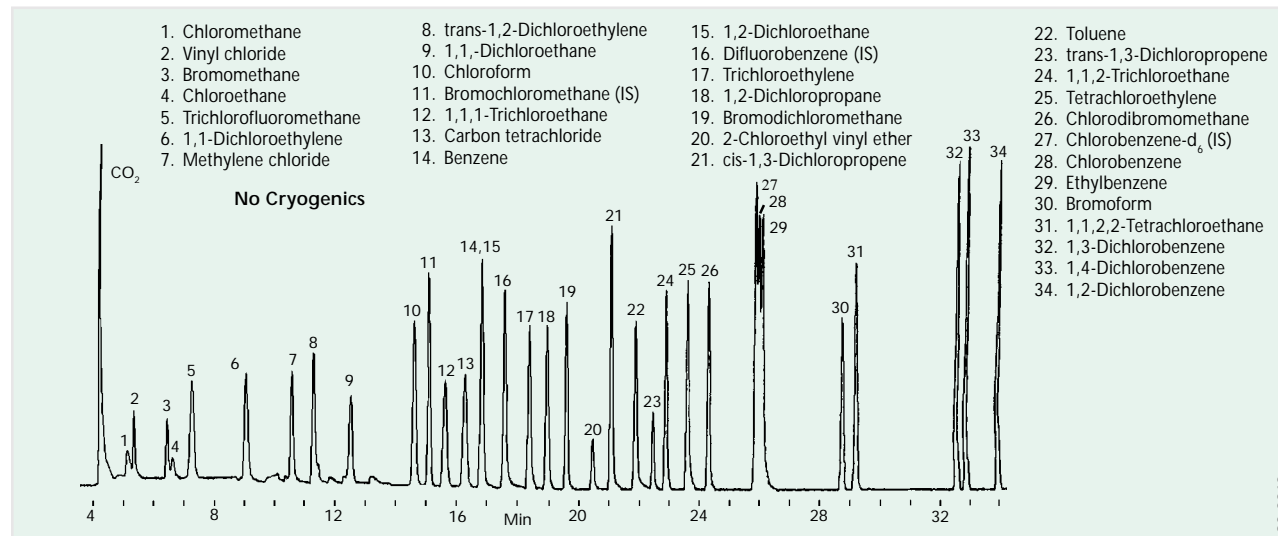
- | | | | |
|-------------------------------|-------------------------------|-------------------------------|--|
| 1. Dichlorodifluoromethane | 17. Carbon tetrachloride | 33. Chlorobenzene | 49. tert-Butylbenzene |
| 2. Chloromethane | 18. 1,2-Dichloroethane | 34. 1,1,1,2-Tetrachloroethane | 50. 1,2,4-Trimethylbenzene |
| 3. Vinyl chloride | 19. Benzene | 35. Ethylbenzene | 51. sec-Butylbenzene |
| 4. Bromomethane | 20. Fluorobenzene (int std) | 36. m-Xylene | 52. p-Isopropyltoluene |
| 5. Chloroethane | 21. Trichloroethylene | 37. p-Xylene | 53. 1,3-Dichlorobenzene |
| 6. Trichlorofluoromethane | 22. 1,2-Dichloropropane | 38. o-Xylene | 54. 1,4-Dichlorobenzene |
| 7. 1,1-Dichloroethylene | 23. Bromodichloromethane | 39. Styrene | 55. n-Butylbenzene |
| 8. Methylene chloride | 24. Dibromomethane | 40. Isopropylbenzene | 56. 1,2-Dichlorobenzene-d ₄ (int std) |
| 9. trans-1,2-Dichloroethylene | 25. cis-1,3-Dichloropropene | 41. Bromoform | 57. 1,2-Dichlorobenzene |
| 10. 1,1,-Dichloroethane | 26. Toluene | 42. 1,1,2,2-Tetrachloroethane | 58. 1,2-Dibromo-3-chloropropane |
| 11. 2,2-Dichloropropane | 27. trans-1,3-Dichloropropene | 43. 1,2,3-Trichloropropane | 59. 1,2,4-Trichlorobenzene |
| 12. cis-1,2-Dichloroethylene | 28. 1,1,2-Trichloroethane | 44. n-Propylbenzene | 60. Hexachlorobutadiene |
| 13. Chloroform | 29. 1,3-Dichloropropane | 45. Bromobenzene | 61. Naphthalene |
| 14. Bromochloromethane | 30. Tetrachloroethylene | 46. 1,3,5-Trimethylbenzene | 62. 1,2,3-Trichlorobenzene |
| 15. 1,1,1-Trichloroethane | 31. Chlorodibromomethane | 47. 2-Chlorotoluene | |
| 16. 1,1-Dichloropropene | 32. 1,2-Dibromoethane | 48. 4-Chlorotoluene | |



Volatile Compounds by US EPA Method 524.2 (PT/GC)

Sample: 10ppb each component in 5mL water
 Trap: VOCARB 3000
 Cat. No.: 21066-U
 Purge: 11 min, 40mL/min
 Dry: 3 min
 Desorb. Temp: 250°C for 4 min
 Bake: 280°C for 10 min

Column: VOCOL, 105m x 0.53mm ID, 3.0µm film
 Cat. No.: 25358
 Oven: 35°C (10 min) to 200°C at 4°C/min, hold 10 min
 Carrier: helium, 10mL/min
 Det.: MS, Scan Range m/z = 35-260 at 0.6 sec/scan



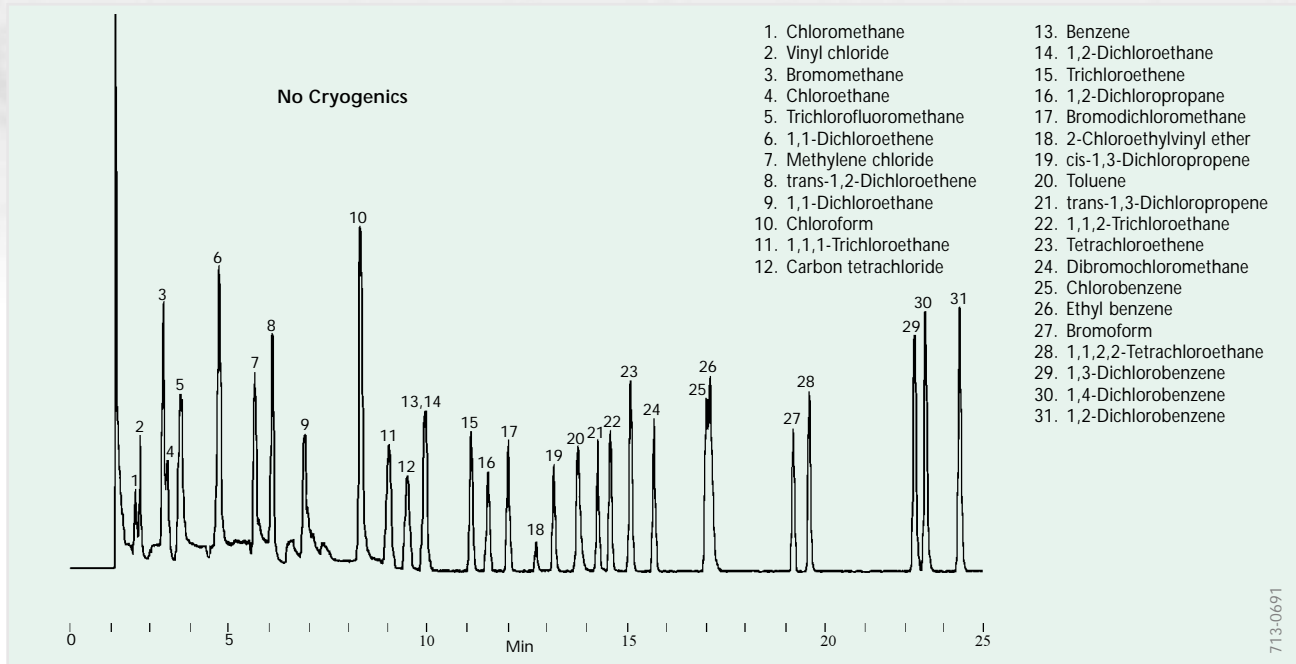
Volatile Compounds by US EPA Method 624 (PT/GC)

Sample: 20ppb each component in 5mL water
 Trap: VOCARB 3000
 Cat. No.: 21066-U
 Purge: 11 min, 35mL/min
 Dry Purge: 3 min
 Desorb. Temp: 250°C for 4 min
 Bake: 60°C for 10 min

Column: VOCOL, 105m x 0.53mm ID, 3.0µm film
 Cat. No.: 25358
 Oven: 35°C (4 min) to 200°C at 6°C/min
 Carrier: helium, 7.5mL/min
 Det.: MS, Scan Range m/z = 35-260 at 0.6 sec/scan

Solid Phase Extraction (SPE) Applications

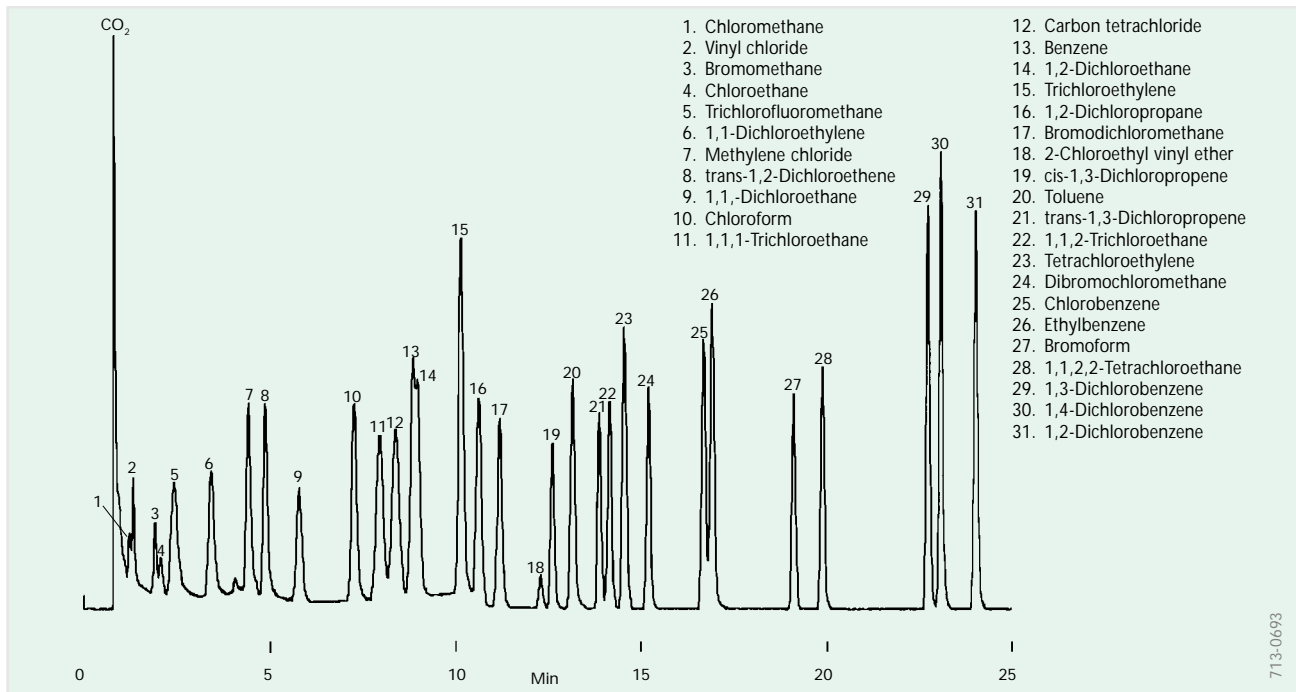
Volatiles



Volatile Compounds by US EPA Method 624 (PT/GC)

Sample: 20ppb each component in 5mL water
 Trap: VOCARB 3000
 Cat. No.: 21066-U
 Purge: 11min, 35mL/min
 Dry Purge: 3 min
 Desorb.: 250°C for 4 min

Bake: 260°C for 10 min
 Column: VOCOL, 60m x 0.53mm ID, 3.0µm film
 Cat. No.: 25381
 Oven: 35°C (4 min) to 200°C at 6°C/min
 Carrier: helium, 7.5mL/min
 Det.: MS, Scan Range m/z = 35-260 at 0.6 sec/scan



Volatile Compounds by US EPA Method 624 (PT/GC)

Sample: 20ppb each component in 5mL water
 Trap: VOCARB 3000
 Cat. No.: 21066-U
 Purge: 11min, 40mL/min
 Dry Purge: 3 min
 Desorb.: 250°C for 4 min

Bake: 280°C for 10 min
 Column: VOCOL, 30m x 0.53mm ID, 3.0µm film
 Cat. No.: 25320-U
 Oven: 5°C (2 min) to 200°C at 5°C/min
 Carrier: helium, 7.5mL/min
 Det.: MS, Scan Range m/z = 35-260 at 0.6 sec/scan

Services and Support

From Purchasing to Problem Solving, We're Here to Help

vision

“We are committed to the success of our Customers, Employees, and Shareholders through leadership in Life Science, High Technology, and Service”

Quality customer service...

Easy Ordering

Supelco offers many ways to easily place your order or inquire about an existing order. You can call, fax, or visit our web site 24 hours a day, 7 days a week.

In the USA and Canada, please contact us at:

Phone : 800-247-6628 / 800-325-3010

Fax: 814-359-5459

Web: sigma-aldrich.com/supelco

Other countries, contact your local Sigma-Aldrich representative. For more information, visit sigma-aldrich.com

Ready to order products? Searching for Material Safety Data Sheets or other product information? Need a new catalog? Many of your questions can be answered at our award winning web site. Go to sigma-aldrich.com/supelco to search for products, check up-to-the-minute availability, place orders, check order status, or directly trace the order shipment with a tracking number that is hot linked to the carrier's web site. You can check status and trace an order in two clicks!

On-Time Delivery

Still waiting for capillary GC columns that you ordered last week or last month? Not getting responsive customer service? Get the service you deserve today with products that meet your performance demands and are delivered when you need them.

Same day shipping is our mission. Supelco's aim is to ship all stock products ordered by 6PM Eastern Time on the same day.

Superior Support

When you want additional information about a product, or help with a problem, our knowledgeable Technical Service chemists and our extensive library of free technical literature are just a telephone call, fax message, or email away. We are always ready to respond to your questions, suggestions, criticisms, and changing needs.

In the USA and Canada: please contact us at the following telephone numbers Monday - Friday during the hours of 8AM - 8PM Eastern Time

Phone: 800-359-3041 / 814-359-3041

Fax: 800-359-3044 / 814-359-5468

Email: techservice@sial.com

Other countries, contact your local Sigma-Aldrich representative. For more information, visit sigma-aldrich.com

...the backbone of Supelco

ARGENTINA

Sigma-Aldrich de Argentina SA
Av. Pueyrredon 2446
5 "B"
C1119ACU Buenos Aires
Tel.: 54-11-4807 0321
0810-888-7446
Fax: 54-11-4807 0346
Email: cservice@sigma-aldrich.com.ar

AUSTRALIA

Sigma-Aldrich Pty. Ltd.
PO Box 970
Castle Hill, NSW 1765
Tel.: (612) 8853 5555
Fax: (612) 8853 5500
Free Tel.: 1 800 800 097
Free Fax: 1 800 800 096
Email: ausmail@sial.com

AUSTRIA

Sigma-Aldrich Handels GmbH
Favoritner Gewerbetrieb 10
A-1100 Wien
Tel.: 01 605 81 10
Fax: 01 605 81 20
Email: sigma@sigma.co.at

BELGIUM

Sigma-Aldrich N.V./S.A.
K. Cardijnplein 8
B-2880 Bornem
Tel.: 03 899 1301
Fax: 03 899 1311
Free Tel.: 0800 14747
Free Fax: 0800 14745
Email: becustsv@eurnotes.sial.com

BRAZIL

Sigma-Aldrich Química Brasil Ltda.
Rua Ari Aps 83 Jd. Pinheiros
05594-010
São Paulo, SP Brasil
Phone: 55 11 3733 2900
Fax: 55 11 3733 5151
Email: sigmabr@sigma-aldrich.com.br

CANADA

Sigma-Aldrich Canada Ltd.
2149 Winston Park Drive
Oakville, Ontario L6H 6J8
Tel.: 905 829 9500
Fax: 905 829 9292
Free Tel.: 800 565 1400
Free Fax: 800 265 3858
Email: canada@sial.com

CHINA

Sigma-Aldrich China Inc., Shanghai Rep. Office
Unit B, 22nd Floor, China Overseas Building
No. 398 Huai Hai Zhong Road
Shanghai 200020
P.R.China
Tel.: (86-21) 6386-2766
Fax: (86-21) 6386-3966
Email: china@sial.com

CZECH REPUBLIC

Sigma-Aldrich s.r.o.
Pobrezni 4
186 00 Praha 8
Tel.: 00 420 2 2176 1310
Fax: 00 420 2 2176 3300
Email: CZEcustsv@eurnotes.sial.com

DENMARK

Sigma-Aldrich Denmark A/S
Vejlegaardsvej 65B
DK-2665 Vallensbaek Strand
Tel.: +45 43565900
Fax: +45 43565905
Email: DenOrder@eurnotes.sial.com

FINLAND

Sigma-Aldrich Finland
Y-A Kemia Oy
Teerisuonkuja 4
00700 Helsinki
Tel.: (09) 350 9250
Fax: (09) 350 92555
Email: finorder@eurnotes.sial.com

FRANCE

Sigma-Aldrich Chimie S.a.r.l.
L'Isle d'Abeau Chesnes - B.P. 701
38297 St. Quentin Fallavier Cedex
Tel.: 04 74822920
Fax: 04 74956808
Free Tel.: 0800 211408
Free Fax: 0800 031052
Email: fradsv@eurnotes.sial.com

GERMANY

Sigma-Aldrich Chemie GmbH
Eschenstr. 5
82024 Taufkirchen
Tel.: 089 / 6513-1130
Fax: 089 / 6513-1161
Free Tel.: 0800 / 5155 000
Free Fax: 0800 / 6490 000
Email: DeOrders@eurnotes.sial.com

GREECE

Sigma-Aldrich (o.m.) Ltd.
72 Argonafton Str.
16346 Ilioupoli, Athens
Tel.: 30 01 9948010
Fax: 30 01 9943831
Email: GRCustSV@SIALEUROPE

HUNGARY

Sigma-Aldrich Kft.
1399 Budapest
Pf. 701/400
Magyarorszag
Tel.: 06-1-235-9055
Fax: 06-1-235-9050
Free Tel.: 06-80 355355
Free Fax: 06-80 344344
Email: info@sigma.sial.hu

INDIA

Sigma-Aldrich Corporation
Survey No. 31/1, Sitharamapalayam
Mahadevapura P.O.
Bangalore 560 048
Tel.: 91-80-852 4222
Fax: 91-80-852 4214
Email: india@sial.com
sigmaindia@vsnl.com

IRELAND

Sigma-Aldrich Ireland Ltd.
Airtown Road
Tallaght
Dublin 24
Tel.: (01) 4041900
Fax: (01) 4041910
Free Tel.: 1 800 200 888
Free Fax: 1 800 600 222
Email: EICustsv@eurnotes.sial.com

ISRAEL

Sigma-Aldrich Israel Ltd.
Park Rabin
Rehovot 76100
Tel.: 08 9484 222
Fax: 08 9484 200
Free Tel.: 1 800 70 2222
Email: sigisr@sigma.co.il

ITALY

Sigma-Aldrich S.r.l.
Via Gallarate, 154
20151 Milano
Tel.: 02 33417310
Fax: 02 38010737
Free Tel.: 800 827018
Email: itorder@eurnotes.sial.com

JAPAN

Sigma-Aldrich Japan K.K.
Supelco Division
Higashi Nihonbashi Sky Building 4F
1-1-7, Higashi Nihonbashi, Chuo-ku
Tokyo 103-0004
Tel.: (03) 5821 3191
Fax: (03) 5821 3578

KOREA

Sigma-Aldrich Korea Ltd.
PO Box 36, Yongin, 449-600
Tel.: 031 329 9000
Fax: 031 329 9090
Tel.: 080 023 7111
Fax: 080 023 8111
Email: supelco@sial.co.kr

MALAYSIA

Sigma-Aldrich (M) Sdn. Bhd.
60, 60-1, Jalan Awan Jawa
Taman Yari, Off Jin Klang Lama
Kuala Lumpur 58200
Tel.: 603-782 4181
Fax: 603-782 4067
Email: sigalm@po.jaring.my

MEXICO

Sigma-Aldrich Química, S.A. de C.V.
Calle 6 Norte No. 107
Parque Industrial Toluca 2000
50200 Toluca, Méx.
Tel.: (7) 276 1600
Fax: (7) 276 1601
Free Tel.: 01 800 007 5300
Free Fax: 01 800 712 9920
Email: mexico@sial.com

THE NETHERLANDS

Sigma-Aldrich Chemie B.V.
Stationsplein 4 E
Postbus 27
NL-3330 AA Zwijndrecht
Tel.: 078 6205411
Fax: 078 6205421
Free Tel.: 0800 0229088
Free Fax: 0800 0229089
Email: nlcustsv@eurnotes.sial.com

NEW ZEALAND

Sigma-Aldrich Pty. Ltd.
PO Box 12423, Penrose
Auckland
Tel.: (612) 8853 5555
Fax: (612) 8853 5500
Free Tel.: 0800 936 666
Free Fax: 0800 937 777
Email: ausmail@sial.com

NORWAY

Sigma-Aldrich Norway AS
Postboks 188 Leirald
1011 Oslo
Tel.: (+47) 23 17 60 00
Fax: (+47) 23 17 60 10
Email: norsigma@sial.com

POLAND

Sigma-Aldrich Sp. z o.o.
Szelagowska 30
61-626 Poznan
Tel.: (061) 8232481
Fax: (061) 8232781
Email: plcustsv@eurnotes.sial.com

PORTUGAL

Sigma-Aldrich Química, S.A.
Sucursal em Portugal
Apartado 131
2711-901 Sintra
Tel.: 21 9242555
Fax: 21 9242610
Free Tel.: 800 20 21 80
Free Fax: 800 20 21 78
Email: encomendas@eurnotes.sial.com

RUSSIA

Sigma-Aldrich Russia
TechCare Systems, Inc.
Makarenko Str. 2/21
Building 1, Flat 22
Moscow 103062
Tel.: 7-095 9753321
Fax: 7-095 9754792
Email: techcare@online.ru

SINGAPORE

Sigma-Aldrich Pte., Ltd.
102E Pasir Panjang Road
#08-01 Citilink Warehouse
Singapore 118529
Tel.: 65-271 1089
Fax: 65-271 1571
Email: sapl@sial.com

SOUTH AFRICA

CNR Kelly & Ackerman Streets
Southern Life Industrial Park Unit
Unit 16/17
Jet Park 1459
Tel.: 27 11 397 8886
Fax: 27 11 397 8859
Free Tel.: 0800 110075
Free Fax: 0800 110079
Email: rsa@sial.com

SPAIN

Sigma-Aldrich Química S.A.
Apto. 161
28100 Alcobendas (Madrid)
Tel.: 91 6619977
Fax: 91 6619642
Free Tel.: 900 101376
Free Fax: 900 102028
Email: pedidos.esorders@eurnotes.sial.com

SWEDEN

Sigma-Aldrich Sweden AB
Solkraftsvägen 14C
135 70 Stockholm
Tel.: 08-742 42 00
Fax: 08-742 42 43
Free Tel.: 020-350510
Free Fax: 020-352522
Email: sweorder@eurnotes.sial.com

SUPELCO SWITZERLAND

c/o Fluka Chemie GmbH
Industriestrasse 25
P.O. Box 260
9471 Buchs
Tel.: 081 755 25 11
Fax: 081 755 28 15
Free Tel.: 0800 80 00 80
Email: Fluka@sial.com

UNITED KINGDOM

Sigma-Aldrich Company Ltd.
Supelco UK
Fancy Road, Poole
Dorset BH12 4QH
Tel.: 01747 833000
Fax: 01747 833313
Free Tel.: 0800 717181
Free Fax: 0800 378785
Email: ukorders@eurnotes.sial.com

UNITED STATES

Supelco
Supelco Park
595 North Harrison Road
Bellefonte, PA 16823-0048
Tel.: 814 359 3441
Fax: 814 359 5459
Free Tel.: 800 247 6628
Free Fax: 800 447 3044
Email: supelco@sial.com

sigma-aldrich.com/supelco

Order/Customer Service 800-247-6628, 800-325-3010 • Fax 800-325-5052 • E-mail supelco@sial.com
Technical Service 800-359-3041, 814-359-3041 • Fax 800-359-3044, 814-359-5468 • E-mail techservice@sial.com

SUPELCO • Supelco Park, 595 North Harrison Road, Bellefonte, PA 16823-0048 • 814-359-3441

We are committed to the success of our Customers, Employees and Shareholders through leadership in Life Science, High Technology and Service.

The SIGMA-ALDRICH Family



SIGMA



ALDRICH



Fluka



SUPELCO



T402150-00
FEB

© 2002 Sigma-Aldrich Co. Printed in USA. Supelco brand products are sold through Sigma-Aldrich, Inc. Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.