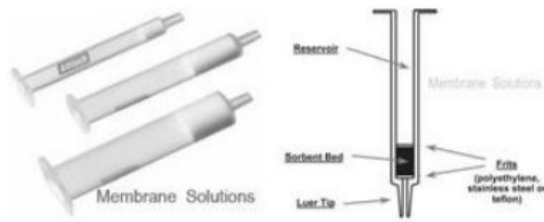


MS® ChrompureSPE Columns



Solid Phase Extraction

Solid-phase extraction (SPE) is a separation process by which compounds that are dissolved or suspended in a liquid mixture are separated from other compounds in the mixture according to their physical and chemical properties. Analytical laboratories use solid phase extraction to concentrate and purify samples for analysis. Solid phase extraction can be used to isolate analytes of interest from a wide variety of matrices, including urine, blood, water, beverages, soil, and animal tissue.

SPE is solvent consumption, convenient, safe and high efficiency. According to the principle of "like dissolves like", SPE can be classified in four types: inverse SPE, normal phase SPE, ion exchange SPE, absorption SPE.



MS Chrompure SPE Columns

MS offers Chrompure series to our customers, which have silica-based, organic copolymer or inorganic chemical based SPE columns. The filling material includes C18, C18-ne, C8, NH₂, CN, GCB, Alumina, Florisil, Silica, SAX, SCX, PSA, PRS PLS, PCX, PAX and so on. Column capacities consist of 1, 3, 6, and 12 ml sizes, etc. Our manufacturing process minimizes variability and improves recovery and cleanup procedures. Chrompure SPE product have the following several characteristics

SPE Main applications:

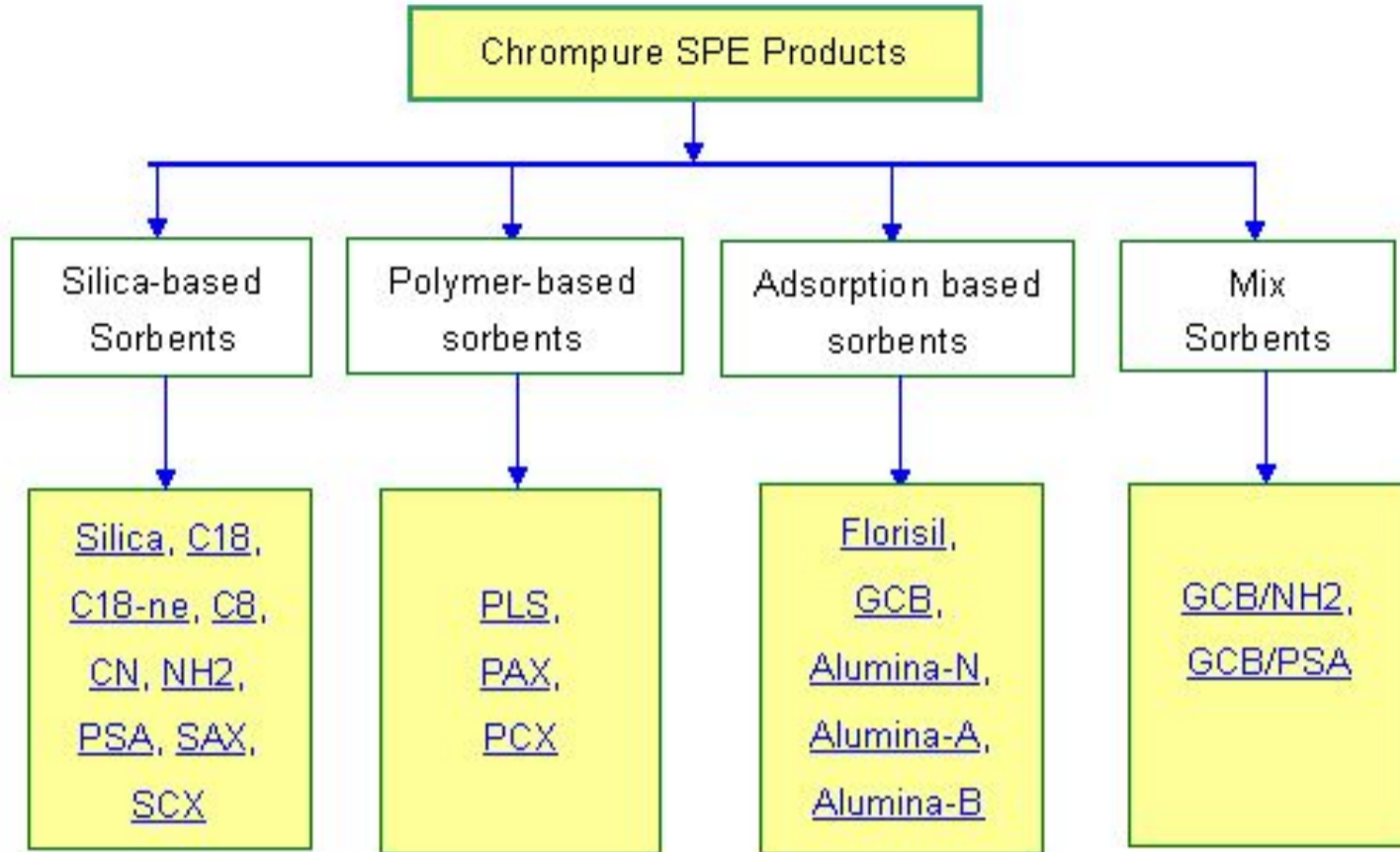
- Biological samples and natural compounds
- Pharmaceuticals and Drugs
- Pesticides and antibiotics in food and agricultural matrices
- Environmental Samples organic compounds and pollutants.

Chrompure Feature

Available in a range of packing media
 Chrompure quality sorbents for consistent results
 With various packing, ensure better selectivity
 High retention rate and recovery
 Very Good Extraction and flow characteristics



MS Chrompure SPE Columns Production Series



Membrane Solutions LLC

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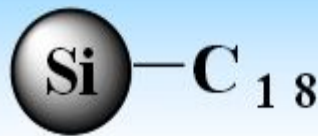
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Silica Base

Chrompure C18-ne



Average Partical Size:50µm
Silica Base:spherical
Pore Size:60 Å
Endcapped: no Carbon
Carbon (C%): 17%

- Non-endcapped bonded phase that enables the silica surface to be more active.
- Moderately nonpolar and polar secondary interactions.
- Enhanced the retention of polar and basic compounds than C18.

Chrompure C18



Average Partical Size:50µm
Silica Base:spherical
Pore Size:60 Å
Endcapped: Yes
Carbon (C%): 17%

Organic analytes extraction: C18 has the broadest spectrum of retention among bonded silica sorbents, since it retains most organic analytes from aqueous matrices, when the compounds of interest vary widely in structure.

Desalting: When analyzing small to intermediate molecules, Chrompure C18 can be used for desalting aqueous matrices prior to ionexchange, as salts pass through the sorbent unretained.

Chrompure C8



Average Partical Size:50µm
Silica Base:Irregular
Pore Size:60 Å
Endcapped: Yes
Carbon (C%): 11%

Moderate Hydrophobicity: separating a wide range of compounds and replace C18 when too strongly retention on C18.
Simultaneous Extraction: fat-and water-solution vitamins from human serum and herbicides, fungicides, pesticides from waste material.

Chrompure CN



Average Partical Size:50µm
Silica Base:Irregular
Pore Size:60 Å
Endcapped: Yes
Carbon (C%): 7.0%

- Both normal and reversed-phase chromatography
- Less polar compared to silica and less hydrophobic compared to C18 and C8.
- Usually used to extract acidic, neutral, and basic compounds from aqueous solutions.

Chrompure NH₂



Average Partical Size:50µm
Silica Base:Irregular
Pore Size:60 Å
Endcapped: No
Carbon (C%): 5.0%
pKa:9.8

- **Aminopropyl phase**, both hydrogen bonding and anion exchange.
- Weaker anion exchanger retention of very strong anions such as sulfonic acids which may be retained irreversibly on SAX.
- Separate peptides, drugs and metabolites from physiological fluids, and extraction of mono-and polysaccharides, steroids, cholesterol and triglycerides.

Chrompure PSA

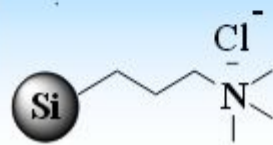


Average Partical Size:50µm
Silica Base:Irregular
Pore Size:60 Å
Endcapped: No
Carbon (C%): 8.0%
pKa:10.1 and 10.9

- Similar selectivity to Chrompure NH₂
- Strong affinity and high capacity for removing fatty acids, organic acids, and some polar pigments and sugars when conducting multi-residue pesticide analysis in foods.
- Excellent sorbent for chelation.



Chrompure SAX



Average Partical Size: 50µm
Silica Base: Irregular
Pore Size: 60 Å
Endcapped: No
Carbon (C%): 6.0%
pKa: completely dissociated

- Strongest anion exchange sorbent because of its quaternary amine functional group.
- Positive charged, better retention of weaker anions such as carboxylic acids that may not retain strongly enough on PSA or NH₂.
- Activate the ion exchanger by conditioning it with appropriate buffers.

Chrompure SCX



Average Partical Size: 50µm
Silica Base: Irregular
Pore Size: 60 Å
Endcapped: No
Carbon (C%): 6.0%
pKa: <1.0

- **Strongest cation exchange** sorbent because of its sulfonic acid functional group.
- Optimized for use in organic applications.
- **Nonpolar character** exhibited by benzene ring is useful to compounds with both cationic and nonpolar properties in aqueous solvent.

Polymer-based

Chrompure PLS



Partical Size: 70µm
Pore Size: 80 Å
area: 600-800m²

- Copolymer of polystyrene/divinylbenzene, contained both hydrophilic and hydrophobic radicals
- Good retention on polar and non-polar molecule hydrophile/lipophile balance.
- PLS has higher stability and wider pH range. Popular utilised in food.

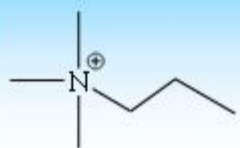
Chrompure PCX



Partical Size: 50µm
Pore Size: 80 Å
area: 600-800m²

Sulfonic acid group bonding polystyrene/divinylbenzene copolymer is mixed strong cation exchange sorbent. Both cation exchange and reverse phase retention mode, suitable for carboxylic acid compounds pKa between 2-8, mainly anionic compounds.

Chrompure PAX



Partical Size: 50µm
Pore Size: 80 Å
area: 600-800m²

- Quaternary ammonium group bonded copolymer is mixed anion exchange and reverse phase sorbent.
- Excellent extraction to purified acid, carboxylic acid compounds, pKa between 2-8.

Inorganic Chemical Base

Chrompure Si

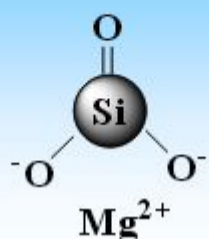


Average Partical Size: 50µm
Silica Base: Irregular
Pore Size: 60 Å
Endcapped: No

- The most polar sorbent, one of the best sorbents available for selectively separating analytes of very similar structure.
- Extract various compounds from non-polar solvents using hydrogen bonding, accomplishing the elution successively with increasing the solvent polarity.
- Excellent capacity for removing target molecules from reaction by-products and excess reagents.



Chrompure Florisil



Partical Size: 150-200 μ m
Silica Base: irregular

- Florisil is a magnesia silica gel, a polar sorbent capable to extract polar compounds from nonpolar matrix.
- Separate chlorinated pesticides, amines, herbicides, PCBs, ketones, organic acids and phenols.

Chrompure Alumina-A



Acidic pH: ~4.5
(Brockman Act.I)
Average Partical Size:
125 μ m
Silica Base: irregular

- Alumina-A enhances Lewis acid properties, which makes the sorbent more retentive towards electron-rich compounds.
- Alumina-A has a slightly cationic nature through pretreatment with acidic solutions.
- Suitable for retention neutral and anionic species.

Chrompure Alumina-N



Acidic pH: ~7.5
(Brockman Act.I)
Average Partical Size:
125 μ m
Silica Base: irregular

- Exhibits Lewis base properties, more retentive towards electron-donors compounds.
- The surface has a slightly anionic nature through pretreatment with acidic solutions.
- Suitable for retention of neutral and cationic compounds.
- Strong hydrogen bonding is also effective for polar cations.

Chrompure Alumina-B



Acidic pH: ~10.0
(Brockman Act.I)
Average Partical Size:
125 μ m
Silica Base: irregular

- Extremely polar sorbent, similar to silica.
- More stable under high pH conditions than unbonded silica.
- An electrically neutral surface retentive for electron-rich compounds like aromatic species and aliphatic amines, and compounds with lectronegative group like oxygen,phosphorus and sulfur atoms.
- Extrat both nonpolar and polar compounds from aqueous and nonaqueous matrices respectively.

Chrompure Carbon



Sorbent:laminated structure
graphitized carbon
Average Partical
Size:120-400Mesh

- Higher and more stable recovery rates in extracting polar substance, like organolchlorine , organophosphorus and nitrogen pesticides.
- Excellent performance in oganic extraction and purification.
- Extremely rapid extract processing due to the few-porosity.

Mix Sorbents

Chrompure GCB/NH2



GCB:
Surface Area:170m2/g
Partical Size: 200-400 Mesh
NH2
Average Partical Size:50 μ m
Poe Size:60 Å
Carbon (C%): 5.0%

- Chrompure GCB&NH2 dual layer SPE column contains GCB (upper layer) and NH2 (lower layer) SPE sorbents.
- GCB has a strong affinity towards planar molecules, pigments like chlorophyll and carotinoids, sterols commonly in foods and natural products.
- NH2 can effectively retains fatty acids, organic acids, some polar pigments and sugars in food matrices.



Chrompure GCB/PSA

GCB/PSA

GCB:
Surface Area: 170m²/g
Partical Size: 200-400 Mesh
NH₂
Average Partical Size: 50μm
Poe Size: 60 Å
Carbon (C%): 8.0%

- Chrompure GCB/PSA is a dual layer SPE cartridge that contains GCB (upper layer) and PSA (lower layer) SPE sorbents.
- GCB has a strong affinity towards planar molecules, pigments like chlorophyll and carotinoids, sterols commonly in foods and natural products.
- PSA can effectively retains fatty acids, organic acids, some polar pigments and sugars in food matrices.
- Similar to Chrompure GCB/NH₂, but GCB/PSA has more retention for analytes because its PSA in the lower layer contains both primary and secondary amines

Membrane Solutions LLC

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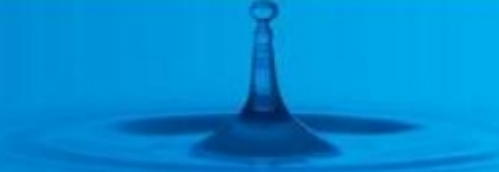
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Cross reference of comparable phases by manufacturer

Sorbent Phase	MS	Waters	Agilent	Phenomenex	Supelco	Biotage
C18	Chrompure C18	Sep-pak tC18	Bond Elut C18	Strata C18-E	Sepelclean ENVI-18	Isolute C18(EC)
C18-Ne	Chrompure C18-ne	Sep-pak C18	Bond Elut C18OH	Strata C18-U		Isolute C18
C8	Chrompure C8	Sep-Pak C8	Bond Elut C8	Strata C8	Sepelclean ENVI-8	Isolute C8(EC)
CN	Chrompure CN	Sep-Pak CN	Bond Elut CN-E	Strata CN	Sepelclean LC-CN	Isolute CN
NH2	Chrompure NH2	Sep-Pak NH2	Bond Elut NH2	Strata NH2	Sepelclean LC-NH2	Isolute NH2
PSA	Chrompure PSA	—	Bond Elut PSA	Strata PSA	Sepelclean PSA	Isolute PSA
SAX	Chrompure SAX	—	Bond Elut SAX	Strata SAX	Sepelclean LC-SAX	Isolute SAX
SCX	Chrompure SCX	—	Bond Elut SCX	Strata SCX	Sepelclean LC-SCX	Isolute SCX-3
Silica	Chrompure SI	Sep-Pak SI	Bond Elut SI	Strata SI-1	Sepelclean LC-SI	Isolute SI
HLB	Chrompure PLS	Oasis HLB	Bond Elut Plexa	Strata -X	Supel-Select HLB	Evolute ABN
PCX	Chrompure PCX	Oasis MCX	Bond Elut Plexa PCX	Strata -XC	Supel-Select SCX	Evolute CX
PAX	Chrompure PAX	Oasis MAX	Bond Elut Plexa PAX	Strata -XA	Supel-Select SAX	Evolute AX
Florisil	Chrompure FL	Sep-Pak FL	Bond Elut FL	Strata FL-PR	Sepelclean LC-Florisil	Isolute FL
Graphitized carbon	Chrompure GCB	—	Bond Elut Carbon	—	Sepelclean ENVI Carb	—
Alumina-N	Chrompure AL-N	Sep-Pak Alumina N	Bond Elut Alumina N	Strata Alumina-N	Sepelclean LC-Alumina N	Isolute AL-N
Alumina-A	Chrompure AL-A	Sep-Pak Alumina A	Bond Elut Alumina A	Strata Alumina-A	Sepelclean LC-Alumina A	Isolute AL-A
Alumina-B	Chrompure AL-B	Sep-Pak Alumina B	Bond Elut Alumina B	Strata Alumina-B	Sepelclean LC-Alumina B	Isolute AL-B
GCB/NH2	Chrompure GCB/NH2	—	Bond Elut Carbon/NH2	—	Sepelclean ENVI Carb/NH2	—
GCB/PSA	Chrompure GCB/PSA	—	Bond Elut Carbon/PSA	—	Sepelclean ENVI Carb-II/PSA	—

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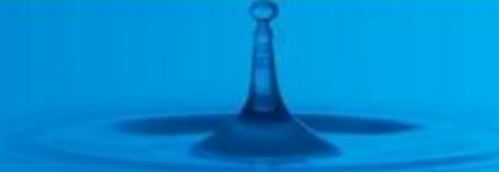
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Chrompure SPE column order information

Cat. No.	Description	Mass	Volume	Package (pcs/pk)
LBSC181001		100mg	1mL	100
LBSC182003		200mg	3mL	50
LBSC185003	C18	500mg	3mL	50
LBSC185006		500mg	6mL	30
LBSC1810006		1000mg	6mL	30
LBSC18N1001		100mg	1mL	100
LBSC18N2003		200mg	3mL	50
LBSC18N5003	C18-ne	500mg	3mL	50
LBSC18N5006		500mg	6mL	30
LBSC18N10006		1000mg	6mL	30
LBSC81001		100mg	1mL	100
LBSC82003		200mg	3mL	50
LBSC85003	C8	500mg	3mL	50
LBSC85006		500mg	6mL	30
LBSC810006		1000mg	6mL	30
LBSCN1001		100mg	1mL	100
LBSCN5003	CN	500mg	3mL	50
LBSCN10006		1000mg	6mL	30
LBSPSA1001		100mg	1mL	100
LBSPSA5003	PSA	500mg	3mL	50
LBSPSA5006		500mg	6mL	30
LBSPSA10006		1000mg	6mL	30
LBSNH21001		100mg	1mL	100
LBSNH22003		200mg	3mL	50
LBSNH25003	NH2	500mg	3mL	50
LBSNH25006		500mg	6mL	30
LBSNH210006		1000mg	6mL	30
LBSSAX1001		100mg	1mL	100
LBSSAX5003	SAX	500mg	3mL	50
LBSSAX5006		500mg	6mL	30
LBSSCX1001		100mg	1mL	100
LBSSCX5003	SCX	500mg	3mL	50
LBSSCX5006		500mg	6mL	30

Cat. No.	Description	Mass	Volume	Package (pcs/pk)
LBSSI1001		100mg	1mL	100
LBSSI5003	Silica	500mg	3mL	50
LBSSI10006		1000mg	6mL	30
LBSFL1001		100mg	1mL	100
LBSFL5003	Florisil	500mg	3mL	50
LBSFL5006		500mg	6mL	30
LBSFL10006		1000mg	6mL	30
LBSALA1001		100mg	1mL	100
LBSALA5003	AL-A	500mg	3mL	50
LBSALA10006		1000mg	6mL	30
LBSALB1001		100mg	1mL	100
LBSALB5003	AL-B	500mg	3mL	50
LBSALB10006		1000mg	6mL	30
LBSALN1001		100mg	1mL	100
LBSALN5003	AL-N	500mg	3mL	50
LBSALN10006		1000mg	6mL	30
LBSGCB2503		250mg	3mL	50
LBSGCB5003	GCB	500mg	3mL	50
LBSGCB5006		500mg	6mL	30
LBSPLS0603		60mg	3mL	50
LBSPLS1506		150mg	6mL	30
LBSPLS2006	PLS	200mg	6mL	30
LBSPLS5006		500mg	6mL	30
LBSPLS5012		500mg	12mL	20
LBSPCX0603		60mg	3mL	50
LBSPCX1506	PCX	150mg	6mL	30
LBSPCX2006		200mg	6mL	30
LBSPCX5012		500mg	12mL	20
LBSPAX0603		60mg	3mL	50
LBSPAX1506	PAX	150mg	6mL	30
LBSPAX5012		500mg	12mL	20

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