

CLEAN-UP®

Solid Phase Extraction Columns

Hydrophilic Normal Phase Columns



Hydrophilic Normal Phases Offered:

- Unbonded Silica
- High-Surface Activity Silica
- Florisil®*
- Alumina Acid
- Alumina Base
- Alumina Neutral
- CN, Cyanopropyl
- Diol
- Carbon

*Florisil® is a trademark of U.S.Silica, Co.

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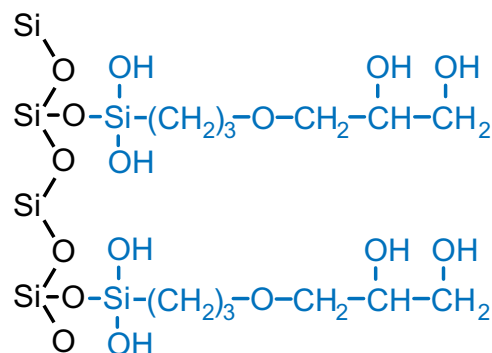
Applications Manual

CLEAN-UP[®]

Hydrophilic Extraction Columns

This sorbent is composed of a silica backbone bonded with carbon chains containing polar functional groups. Groups which will possess such polarity include amines, hydroxyls and carbonyls.

example of a hydrophilic phase



- Silica Backbone
- Hydrophilic Chain

Analytes*

R-OH, R-SH
R-NH₂,
R₂-NH,
R₃-N

Washes

non-polar organic solvents
ie: hexane/ethyl acetate (80:20)
methylene chloride

Elutions

polar organic solvent
usually with
some aqueous

*Typical compounds which can be extracted using hydrophilic columns

Mechanism of Hydrophilic Bonding

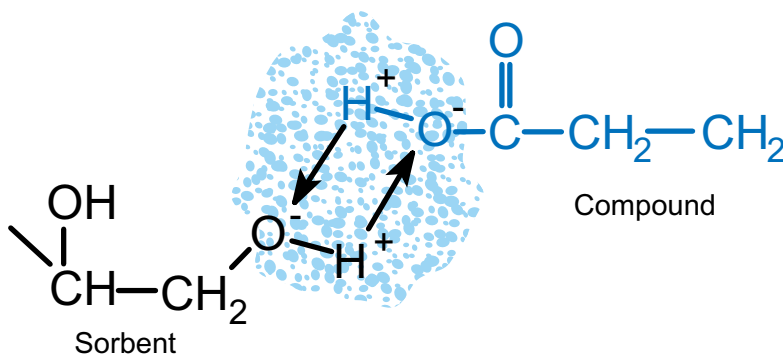
Compounds are retained on hydrophilic sorbents through polar interactions including hydrogen bonding, pi-pi or dipole-dipole interaction. These types of interactions occur when a distribution of electrons between individual atoms in functional groups is unequal, causing negative and positive polarity. Compounds typically extracted on a hydrophilic column include analytes which have polar groups, including amines, hydroxyls and carbonyls. Elution is performed by strong polar solvents.

Hydrophilic Sorbents & Structures

Sorbent	Structure
Silica	-SiOH
Diol	-Si-(CH ₂) ₃ OCH ₂ CHOHCH ₂ OH
Cyanopropyl	-Si-(CH ₂) ₃ CN

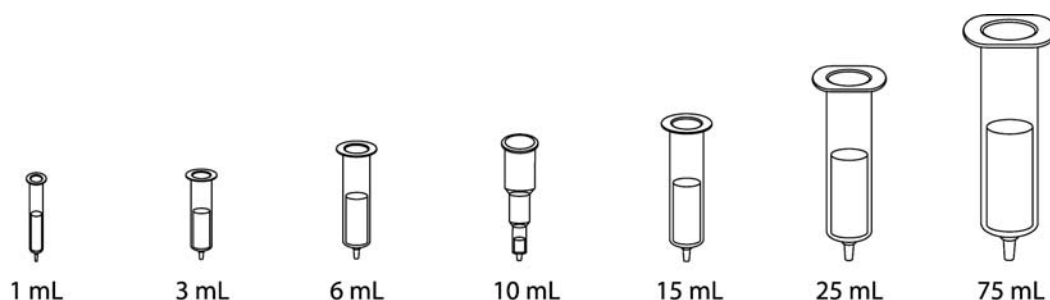
NOTE: If un-ionized, ion exchange sorbents can be used as hydrophilic (polar) sorbents.

example of hydrophilic bonding



CLEAN-UP[®] Solid Phase Extraction Columns

Hydrophilic Extraction Column Guide



Chemistries are offered on these particle sizes.

- Small Particle** (5-20 μm)
- Intermediate Particle** (25-40 μm)
- Standard Particle** (40-60 μm)
- Large Particle** (125-210 μm)

Unbonded Silica (Acid Washed)

Part Number	Amount sorbent / Tube volume	Units per bag
CUSIL1L1	50mg / 1mL	100
CUSIL111	100mg / 1mL	100
CUSIL113	100mg / 3mL	50
CUSIL123	200mg / 3mL	50
CUSIL153	500mg / 3mL	50
CUSIL156	500mg / 6mL	50
CUSIL11Z	100mg / 10mL	50
CUSIL12Z	200mg / 10mL	50
CUSIL15Z	500mg / 10mL	50
CUSIL1M6	1g / 6mL	30
CUSIL12M15	2g / 15mL	20
CUSIL15M25	5g / 25mL	20
CUSIL110M75	10g / 75mL	10

% Organic Loading: N/A

Application:
Removes hydrophilic (polar) impurities, purification of hydrophilic (polar) compounds

High-Surface Activity Silica

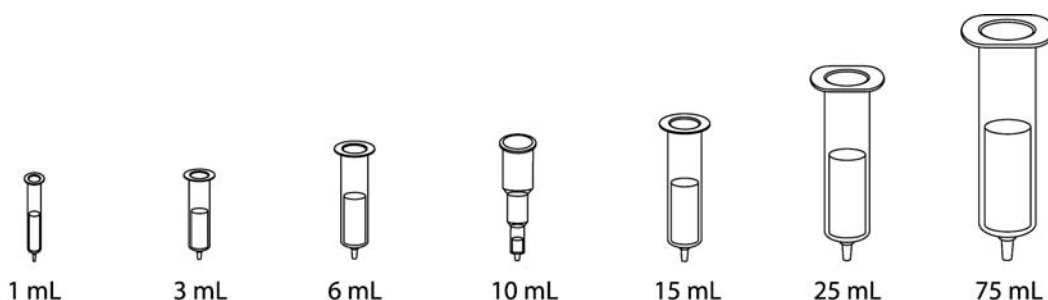
Part Number	Amount sorbent / Tube volume	Units per bag
PHSIL1L1	50mg / 1mL	100
PHSIL111	100mg / 1mL	100
PHSIL113	100mg / 3mL	50
PHSIL123	200mg / 3mL	50
PHSIL153	500mg / 3mL	50
PHSIL156	500mg / 6mL	50
PHSIL11Z	100mg / 10mL	50
PHSIL12Z	200mg / 10mL	50
PHSIL15Z	500mg / 10mL	50
PHSIL1M6	1g / 6mL	30
PHSIL12M15	2g / 15mL	20
PHSIL15M25	5g / 25mL	20
PHSIL110M75	10g / 75mL	10

% Organic Loading: N/A

Application:
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- Large Particle** (125-210 μm)

Florisol [®]		
Part Number	Amount sorbent / Tube volume	Units per bag
CUFLS1L1	50mg / 1mL	100
CUFLS111	100mg / 1mL	100
CUFLS113	100mg / 3mL	50
CUFLS123	200mg / 3mL	50
CUFLS153	500mg / 3mL	50
CUFLS156	500mg / 6mL	50
CUFLS11Z	100mg / 10mL	50
CUFLS12Z	200mg / 10mL	50
CUFLS15Z	500mg / 10mL	50
CUFLS1M6	1g / 6mL	30
CUFLS12M15	2g / 15mL	20
CUFLS15M25	5g / 25mL	20
CUFLS110M75	10g / 75mL	10

% Organic Loading: N/A

Application:
Removes polar type compounds.

Florisol[®] products are manufactured by U.S. Silica, Co.

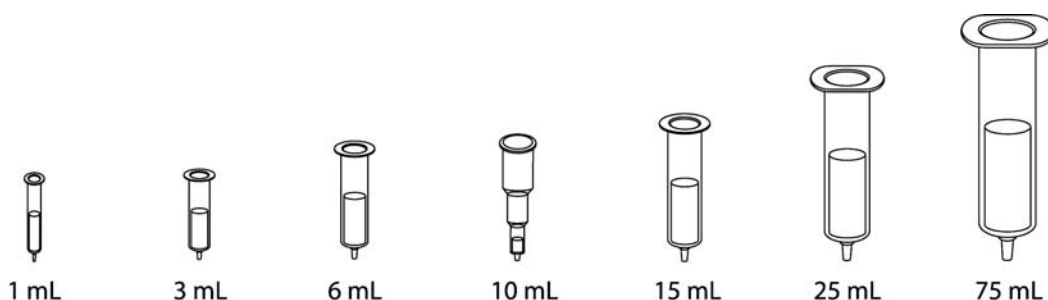
Alumina Acid		
Part Number	Amount sorbent / Tube volume	Units per bag
CUALA1L1	50mg / 1mL	100
CUALA111	100mg / 1mL	100
CUALA113	100mg / 3mL	50
CUALA123	200mg / 3mL	50
CUALA153	500mg / 3mL	50
CUALA156	500mg / 6mL	50
CUALA11Z	100mg / 10mL	50
CUALA12Z	200mg / 10mL	50
CUALA15Z	500mg / 10mL	50
CUALA1M6	1g / 6mL	30
CUALA12M15	2g / 15mL	20
CUALA15M25	5g / 25mL	20
CUALA110M75	10g / 75mL	10

% Organic Loading: N/A

Application:
Removes polar type compounds.

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Standard Particle (40-60 μm)

Large Particle (125-210 μm)

% Organic Loading: N/A

Application:
Removes polar type compounds.

Alumina Base

Part Number	Amount sorbent / Tube volume	Units per bag
CUALB1L1	50mg / 1mL	100
CUALB111	100mg / 1mL	100
CUALB113	100mg / 3mL	50
CUALB123	200mg / 3mL	50
CUALB153	500mg / 3mL	50
CUALB156	500mg / 6mL	50
CUALB11Z	100mg / 10mL	50
CUALB12Z	200mg / 10mL	50
CUALB15Z	500mg / 10mL	50
CUALB1M6	1g / 6mL	30
CUALB12M15	2g / 15mL	20
CUALB15M25	5g / 25mL	20
CUALB110M75	10g / 75mL	10

Alumina Neutral

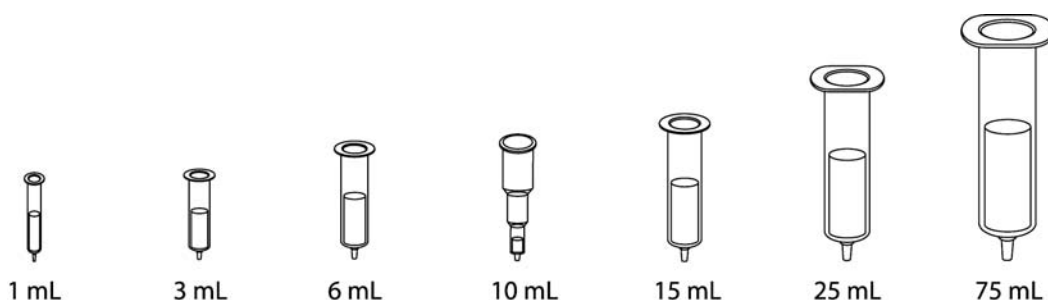
Part Number	Amount sorbent / Tube volume	Units per bag
CUALN1L1	50mg / 1mL	100
CUALN111	100mg / 1mL	100
CUALN113	100mg / 3mL	50
CUALN123	200mg / 3mL	50
CUALN153	500mg / 3mL	50
CUALN156	500mg / 6mL	50
CUALN11Z	100mg / 10mL	50
CUALN12Z	200mg / 10mL	50
CUALN15Z	500mg / 10mL	50
CUALN1M6	1g / 6mL	30
CUALN12M15	2g / 15mL	20
CUALN15M25	5g / 25mL	20
CUALN110M75	10g / 75mL	10

% Organic Loading: N/A

Application:
Removes polar type compounds.

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CN, Cyanopropyl

% Organic Loading: 6.90

Part Number Endcapped	Part Number Unendcapped	Amount sorbent / Tube volume	Units per bag
CECNP1L1	CUCNP1L1	50mg / 1mL	100
CECNP111	CUCNP111	100mg / 1mL	100
CECNP113	CUCNP113	100mg / 3mL	50
CECNP123	CUCNP123	200mg / 3mL	50
CECNP153	CUCNP153	500mg / 3mL	50
CECNP156	CUCNP156	500mg / 6mL	50
CECNP11Z	CUCNP11Z	100mg / 10mL	50
CECNP12Z	CUCNP12Z	200mg / 10mL	50
CECNP15Z	CUCNP15Z	500mg / 10mL	50
CECNP1M6	CUCNP1M6	1g / 6mL	30
CECNP12M15	CUCNP12M15	2g / 15mL	20
CECNP15M25	CUCNP15M25	5g / 25mL	20
CECNP110M75	CUCNP110M75	10g / 75mL	10

Application:
Removes steroid type compounds.

Diol

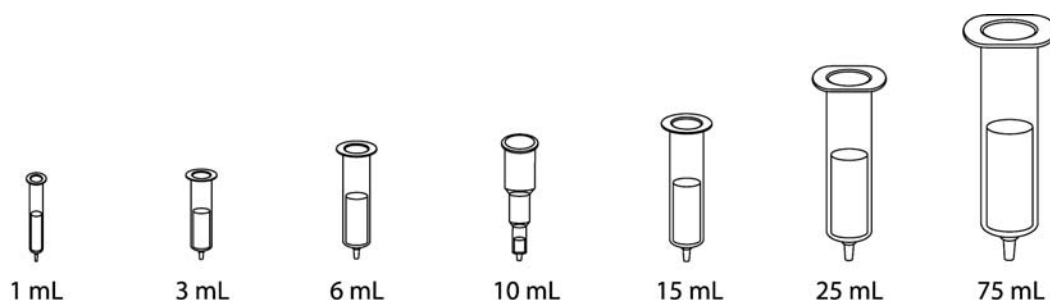
% Organic Loading: 8.00

Part Number Unendcapped	Amount sorbent / Tube volume	Units per bag
CUDOL1L1	50mg / 1mL	100
CUDOL111	100mg / 1mL	100
CUDOL113	100mg / 3mL	50
CUDOL123	200mg / 3mL	50
CUDOL153	500mg / 3mL	50
CUDOL156	500mg / 6mL	50
CUDOL11Z	100mg / 10mL	50
CUDOL12Z	200mg / 10mL	50
CUDOL15Z	500mg / 10mL	50
CUDOL1M6	1g / 6mL	30
CUDOL12M15	2g / 15mL	20
CUDOL15M25	5g / 25mL	20
CUDOL110M75	10g / 75mL	10

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Removes hydrophilic (polar) impurities, purification of hydrophilic (polar) compounds

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Carbon - Graphitized non-porous, 120/400 mesh

Part Number	Amount sorbent / Tube volume	Units per bag
CUCARBL1	50mg / 1mL	100
CUCARB11	100mg / 1mL	100
CUCARB1L3	150mg / 3mL	50
CUCARB23	200mg / 3mL	50
CUCARB2L3	250mg / 3mL	50
CUCARB53	500mg / 3mL	50
CUCARB2L6	250mg / 6mL	30
CUCARB56	500mg / 6mL	30
CUCARB1Z	100mg / 10mL	50
CUCARB2Z	200mg / 10mL	50
CUCARB5Z	500mg / 10mL	50
CUCARBM6	1g / 6mL	30
CUCARBM15	1g / 15mL	20
CUCARB2M15	2g / 15mL	20
CUCARB5M25	5g / 25mL	20
CUCARB10M75	10g / 75mL	10

CLEAN-UP[®] Carbon

Carbon supports have been used to isolate extremely polar organic compounds. They work by a hydrophobic mechanism with a high surface area and ion exchange. This interaction can happen in a wide range of polar and non-polar solvents.