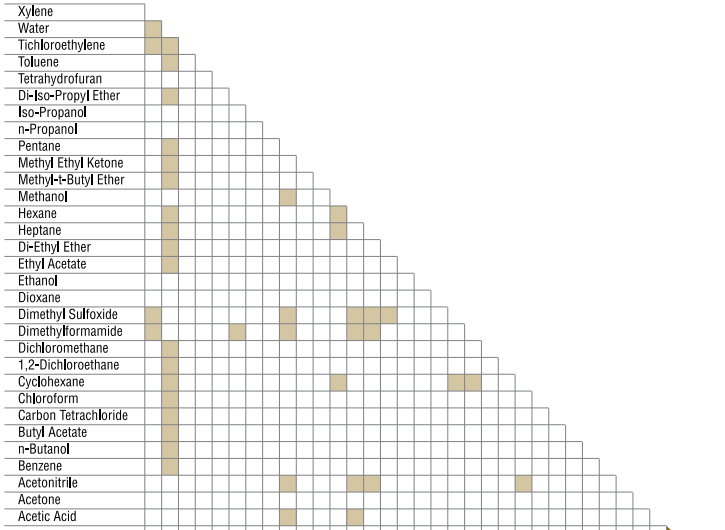
Solvent Miscibility Table



Solvent	Polarity Index	Refractive Index @ 20˚C	UV(nm) Cutoff @ 1AU	Boiling Point (˚C)	Viscosity (cPoise)	Solubility in Water (% w/w)
Acetic Acid	6.2	1.372	230	118	1.26	100
Acetone	5.1	1.359	330	56	0.32	100
Acetonitrile	5.8	1.344	190	82	0.37	100
Benzene	2.7	1.501	280	80	0.65	0.18
n-Butanol	4.0	1.394	254	125	0.73	0.43
Butyl Acetate	3.9	1.399	215	118	2.98	7.81
Carbon Tetrachloride	1.6	1.466	263	77	0.97	0.08
Chloroform	4.1	1.446	245	61	0.57	0.815
Cyclohexane	0.2	1.426	200	81	1.00	0.01
1,2-Dichloroethane[1]	3.5	1.444	225	84	0.79	0.81
Dichloromethane[2]	3.1	1.424	235	41	0.44	1.6
Dimethylformamide	6.4	1.431	268	155	0.92	100
Dimethyl Sulfoxide[3]	7.2	1.478	268	189	2.00	100
Dioxane	4.8	1.422	215	101	1.54	100
Ethanol	5.2	1.360	210	78	1.20	100
Ethyl Acetate	4.4	1.372	260	77	0.45	8.7
Di-Ethyl Ether	2.8	1.353	220	35	0.32	6.89
Heptane	0.0	1.387	200	98	0.39	0.0003
Hexane	0.0	1.375	200	69	0.33	0.001
Methanol	5.1	1.329	205	65	0.60	100
Methyl-t-Butyl Ether[4]	2.5	1.369	210	55	0.27	4.8
Methyl Ethyl Ketone[5]	4.7	1.379	329	80	0.45	24
Pentane	0.0	1.358	200	36	0.23	0.004
n-Propanol	4.0	1.384	210	97	2.27	100
Iso-Propanol[6]	3.9	1.377	210	82	2.30	100
Di-Iso-Propyl Ether	2.2	1.368	220	68	0.37	
Tetrahydrofuran	4.0	1.407	215	65	0.55	100
Toluene	2.4	1.496	285	111	0.59	0.051
Trichloroethylene	1.0	1.477	273	87	0.57	0.11
Water	9.0	1.333	200	100	1.00	100
Xylene	2.5	1.500	290	139	0.61	0.018

Immiscible ■ Miscible □

Immiscible means that in some proportions two phases will be produced

Synonym Table
[1] Ethylene Dichloride
[2] Methylene Chloride
[3] Methyl Sulfoxide
[4] tert-Butyl Methyl Ether
[5] 2-Butanone
[6] 2-Propanol

phenomenex®
...breaking with tradition℠

www.phenomenex.com

Phenomenex products are available worldwide. For the distributor in your country/region, contact Phenomenex USA, International Department at international@phenomenex.com For any questions on Flash visit **www.phenomenex.com/claricepflash**
Talk to our technical experts about anything and everything at **www.phenomenex.com/chat**

IL66610219_W

Agela Technologies™

Claricep™ Flash Column User's Manual

This user's manual is applicable only for the use of Claricep™ Flash irregular and spherical silica columns manufactured by Bonna-Agela Technologies. Please read this instruction manual carefully before use.

Installation

(1) Open the package and remove both end plugs attached to the flash column and place them in the box for future use.
(2) Align the flash column to a proper height within the flash system and connect the fittings. Each Claricep flash column has standard fittings which facilitate easy connections to intermediate pressure instruments from various vendors.

Column Pre-conditioning

The following recommended pre-conditioning methods are designed to eliminate air bubbles from dry Claricep columns and to improve column performance.

Reversed Phase Mode: C18, C8, Phenyl, and AQ C18

Pre-conditioning Step:
Flush the column with the same mobile phase intended to be used in the chromatographic method at the recommended flow rate* and equilibrate column.

Tips:
- Two columns can be connected in series and pre-conditioned simultaneously to increase the efficiency of the pre-conditioning step; make sure however that the pressure stays within the limits of both the column and system.
- Columns may be flushed with alcohol and then stored with same mobile phase used until their next intended use. Make sure to place the end plugs back on column before storage.
- If the storage solvent evaporates due to inappropriate sealing or air bubbles appear prior to column use, flush the column with the same storage solvent and then equilibrate with 90:10 Methanol/Water.

Normal Phase Mode: Silica, CN, Amide NH2, SAX, SCX, and Alumina

Pre-conditioning Step:
Flush the column with the same mobile phase intended to be used in the chromatographic method at the recommended flow rate* and equilibrate column.

Tips:
- If Claricep NH2 columns are used in Normal Phase Mode, follow the Normal Phase Mode Pre-conditioning procedure.
  If Claricep NH2 columns are used in Reversed Phase Mode, follow the Reversed Phase Mode Pre-conditioning procedure.
- Inspect the column during conditioning. When air bubbles stop eluting, equilibrate with the mobile phase. If mobile phase used is Hexane, Dichloromethane, or Ethyl Acetate, column should be used immediately to prevent evaporation of mobile phase.
- For NH2 columns used in Reversed Phase Mode, the percentage of water in the mobile phase should not exceed 30 %.

HILIC Phase Mode: HILIC and Diol

Each HILIC column is packed with a hydrophilic stationary phase and can be used both in Normal or Reversed Phase Modes. For Diol column used in Reversed Phase Mode, you can use up to 95 % aqueous mobile phase.

* *Refer to Index Table on page 3 for Column Volume and Recommended Flow Rate*

phenomenex®
...breaking with tradition℠

Sample Loading

Solid Sample Loading:

Option 1 Use an i-Series Claricep™ Flash screw-on column. This is a new feature of Claricep columns that allows the user to open the cap of the column and load solid sample directly on the column. See **Figure 1.**

Option 2 Use an Empty Flash Cartridge (EFC). Insert the Empty Flash Cartridge (EFC) in the inlet port of the Flash cartridge as demonstrated in **Figure 2**. Empty Flash Cartridge should have a Luer lock end-fitting to prevent any backpressure and safety concern. Make sure to select s-Series of the Empty Flash Cartridge, part number "FCHXXX-S".

Liquid Sample Loading:

Inject the liquid sample directly into the Flash column using the sample injector. In case of viscous sample injection, we recommend using "Screw-on" flash column (c- and s-Series). These columns feature a screw-on lid offering more convenience to load directly into the flash column head as demonstrated in **Figure 1**.

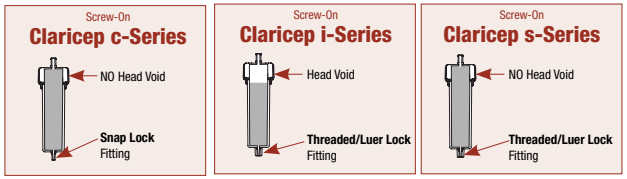


Figure 1. Screw-on Flash columns

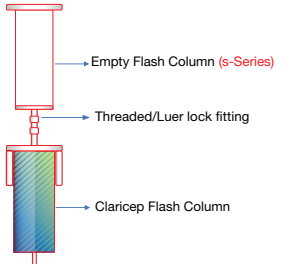


Figure 2. Empty Flash column with Regular Flash column

Recommendations

a) Reversed phase flash columns should be stored wet and well capped in 10–30 % water and 70–90 % organic solvent such as Acetonitrile, Methanol, or Ethanol to prevent bacteria from growing. Make sure to never dry out the column.

b) Storing C18 columns for long periods is allowed with no loss in performance.

c) Do not use 100 % water with general C18 phases as it can promote phase collapse. 100 % water can only be used with the AQ C18 phase.

d) Once columns have been wetted, make sure to never dry out the columns. This will induce channeling due to expansion and contraction of the media phase.

e) ALWAYS pre-condition columns before initial use, especially for reversed phase columns.

f) After use, cap the flash column with plugs to prevent evaporation of mobile phase.

g) Hexane, Ethyl Acetate, Methylene Dichloride, and mineral Ether cannot be used as storage solvents.

h) After any Reverse phase purification, please condition the Flash column with 5 column volume (CV) of 100% Organic solvent (Acetonitrile/Methanol and Ethanol) to prevent any cross contamination.

i) Avoid major changes of pressure and temperature and any mechanical vibration during use.

j) Regular Claricep Flash columns should not be disassembled. Only "Screw-on" Flash columns have a cap that can be opened.

k) For 1500 - 5000 g columns, O-ring can be used in alcohols, acetonitrile, ethyl acetate, acetone etc. It can swell slightly in petroleum ether or alkane solvent, but will not cause leaking.

l) It might appear that 1500 - 5000 g columns have a little different surface color from other sizes, which can be caused by different batches of plastic material, but won't cause any decrease in performance.

Index Table

Flash Column Parameters (Reverse Phase and Normal Phase)

Specifications	4g	12g	20g	40g	80g	120g	220g	330g	800g	1500g	3000g	5000g
Sampling volume1*	0.01-0.02g	0.03-0.06g	0.05-0.1g	0.1-0.2g	0.2-0.4g	0.3-0.6g	0.5-1.0g	0.75-1.5g	2-4g	3.75-7g	7.5-15g	15-30g
Sampling volume2*	0.02-0.08g	0.06-0.24g	0.1-0.4g	0.2-0.8g	0.4-1.6g	0.6-2.4g	1.0-4.0g	1.5-6.0g	4-16g	7-28g	15-60g	30-120g
Sampling volume3*	0.08-0.4g	0.24-1.2g	0.4-2.0g	0.8g-4.0g	1.6-8.0g	2.4-12.0g	4.0-22.0g	6.0-33.0g	16-80g	28-150g	60-300g	120-500g
column volume (mL)	8	17	34	64	115	200	290	380	1080	2000	4000	8000
mini flow rate (mL/min)	5	8	10	20	25	35	45	50	150	240	350	500
max flow rate mL/min)	18	20	25	40	50	80	90	100	200	300	450	650
Recommended flow rate (mL/min)	10	15	18	30	40	60	70	75	180	270	400	550
Pressure MAX	**180 PSI / 12 BAR**									**120 PSI / 8 BAR**		
Length (cm)	7.0	9.0	11.0	14.0	21.0	23.5	15.7	23.5	34.8	37.0	47.0	60.0
Diameter (cm)	1.5	2.1	2.6	3.1	3.2	4.1	5.7	5.7	8.0	9.5	11.9	14.0
Ratio of Length/Diameter	4.7	4.3	4.2	4.5	6.6	5.7	2.8	4.1	4.4	3.9	3.9	4.3
Equilibration volume (CV)	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Equilibration Time (min)	2.4	3.4	5.7	6.4	8.6	10.0	8.3	10.1	12.0	14.8	20.0	29.1

*Note: Sample loading volume refering to ΔCV= 1/Rf1 - 1/Rf2 - CV Range recommended - 2.5 to 10 CV (Rf range 0,1 to 0,4)
Sampling volume1 - ΔCV= 1 to 2 ; Sampling volume2 - ΔCV= 3 to 5, Sampling volume3 - ΔCV = 6 to 7,5
The chart is based on using IRR 40-60µm silica columns under normal phase conditions