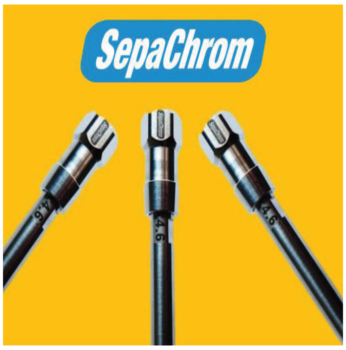
Your Specialists in Chromatography



High Performance HPLC Columns
A New Platform for HPLC and Prep

Adamas®

SepaChrom

Bull. HPLC003EN - 11-2017

Chose of the Right HPLC Column

Chosing the right column for your application is very important and some time a difficult exercise; however taking some steps will help you to make the correct choice and impact positively your daily separation activity. Here some tips :

1. Set Your Separation Goals.

Do I need **High Resolution**? or **Maximum Sensitivity**? Is my **Analysis Time** crucial? Those are the main questions an HPLC user have to consider in the method development. He also need to determine if long column life, low operating cost, or other important factors are required.

2. Packing Material.

The choice of the most appropriate media depend by the nature of your compounds and by your goals. The **Right Selectivity** of your packing to obtain a good separation and a relatively short analysis time is the base to select the media.

3. Column Format.

Analytical, Semi-Prep or Prep are format that depend by your application and your goals. Inner Diameter and Length also impact the result of your separation.

Base Material

Polymer-based media such as Polystyrene DVB or Methacrylate offer higher pH stability (pH 1-14) than Silica-based material, so HPLC columns packed with polymer-based packings can be thoroughly cleaned with strong acids or bases.
However those are compressible and may shrink or swell with certain solvents, and they do not offer the same resolution compare to Silica-based packings.

Silica-based media are physically much stronger and will not shrink or swell. They offer higher resolution and provides sharp peaks compare to Polymer-based material. Silica-based media are also available with a wide range of bonded phases to ensure the widest selectivity for almost any application.
Silica-Based media are compatible with a broad range of polar and non-polar mobile phases and they are stable to a wide pH.

Particle Shape

Silica-based media particles can have **Irregular, Spheroidal** or **Spherical** shape.

Most modern HPLC packings are spherical. **Spherical** shape offers lower back pressure, much higher performance, stability and reproducibility than irregular particles.

Irregular particles have larger surface area, higher loadibility and they are relatively less expensive, those are the reasons why they are still commonly used in prep and process scale purifications.

Spherical

Irregular

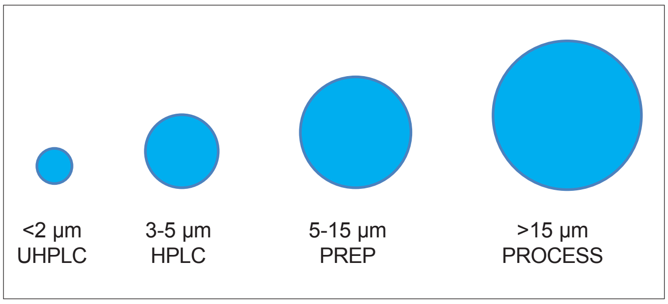
Particle Size

Smaller particle sizes give **Higher Efficiency and Resolution** than larger particle sizes.

Larger particle sizes offer faster flow rates and lower back-pressure.

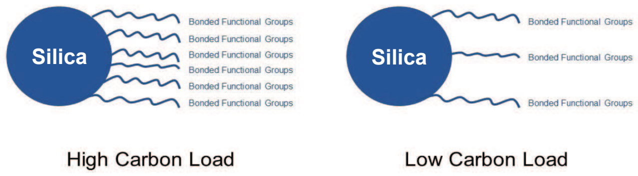
In analytical applications the typical particle sizes range is from 1.5µm to 10µm, however most of the applications are performed with **3µm and 5µm**, which represent the best compromise between efficiency and back-pressure.

In Preparative applications larger particle size are commonly used (10µm to 30µm).



Carbon Load

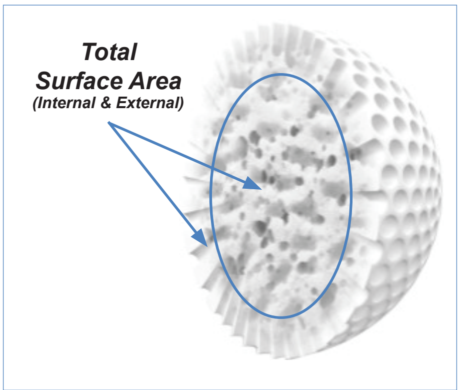
For **Silica-based Reversed-Phase** packings, carbon load information gives the amount of functional bonded phase attached to the Silica-based material.
Lower amount of carbon loads means packings more weakly hydrophobic, which may reduce retention times compare to phases with higher amount of carbon loads.
However, a higher amount carbon load will give higher capacity and often greater resolution, especially for compounds of similar hydrophobicity.



Pore Size & Surface Area

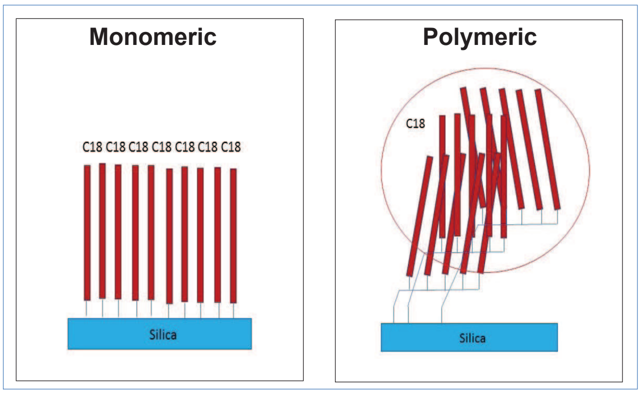
Pore Size
Usually packing materials with smaller pore size value have higher surface area and consequently higher capacity than packings with larger pore size value.
To maximize the interaction between the target molecules and the packing a correct choice of the Pore Size is critical.
In general a 100Å material provide great results for small molecules analysis. For large molecules such Proteins and Peptides a 300Å is typically used.

Surface Area
The Surface Area is the total available surface, most of which is inside the pores, for interaction with the taregt molecules.
Typically Small pores means Larger surface area and Large pores means Smaller surface area.



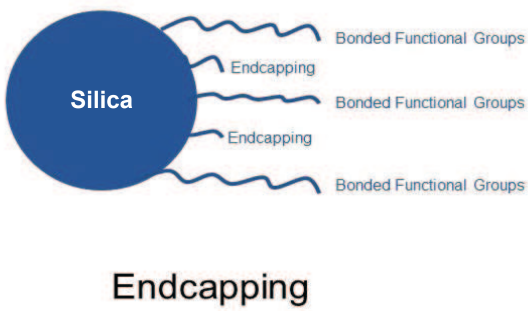
Bonding

The most commercially available reverse phase HPLC packing materials are Monomeric or Polymeric bonded phase.
When a monofunctional alkylsilane reagent is used to prepare the packing material, the functional chains have a single attachment point to the base. These are called **Monomeric** bonded phases.
If di- or trifunctional alkylsilane reagent are used, the polymerically bonded phases have functional chains bound to the base silica particle at multiple attachment points and can involve cross-linking between chains.
These are called **Polymeric** bonded phase.
New high-purity silica phases are very stable whether monomerically or polymerically bonded, however they differ by their selectivity.



Endcapping

After the bonding procedures to obtain your Silica-based reversed-phase packings, a certain amount of residual free silanol groups remain unreact. These groups interact with polar compounds. Endcapping the bonded phase minimizes these secondary interactions.
Paertial or Total endcapping procedures are used to reduce the residual silanol of the bonded phase.
Higher endcapping means less interactions with polar compounds while non-endcapped phases means enhanced polar selectivity, for stronger retention of polar organic compounds.



HPLC Column Formats

Chosing the right column format is critical to obtain the best performance during your analysis or purification.

Analytical Columns Format

Column Length

When a new HPLC method development begin, the user have to consider the complexity of the sample and the desired run time to find the best column length for the application.
Shorter column length provide faster run times and solvent saving. Usually smaller particle size media in shorter column length achieves good resolution in shorter run time, however complex samples may need longer columns, even using smaller particle size.

Column Lengths Available from Sepachrom	
20-30-50mm Column Length	Fast Separations Work best with 3 µm Particle Size
75-100-125-150mm Column Length	Standard & Hi-Resolution Separations Work best with 3-5 µm Particle Size
200-250-300mm Column Length	Standard & Hi-Resolution Separations Work best with 5-10 µm Particle Size

Column I.D.

Smaller internal diameter columns provide better mass sensitivity, smaller sample sizes injection, and reduce solvent consumption.
Wider internal diameter columns allow for larger sample sizes and minimize the negative effects of your system's dead volume.
2.1mmID columns work best with a microbore flow cell at your detector and an internal loop injector otherwise you have to tolerate some loss in efficiency and resolution.

Analytical Column I.D. Available	
2.1mm Column I.D.	High Sensitiivity and Low Low Sample Volume Best use with Microbore Cell and Internal Sample Loop Valve.
3.0mm Column I.D.	High Sensitivity and ideal to reduce sovent consumption Work with standard HPLC instrumentation
4.0mm Column I.D.	Standard Separations Work with standard HPLC instrumentation
4.6mm Column I.D.	Standard Separations Work with standard HPLC instrumentation

Semi-Prep and Preparative Column Format

Preparative Scale-Up

In Chromatography the objectives of Preparative differ from those of Analytical separations. Speed and Sensitivity are usually less important than Recovery and Product Purity in Preparative chromatography.
Here the 6 common steps of a Preparative Scale-Up method development :

Step 1 : Method Optimization
The Analytical method is optimized to achieve the max loadability through the manipulation of the mobile phase and packing selectivity.

Step.2 : Loading Study
It has to determine the capacity of the stationary phase. The sample loading depend also by the complexity of the mixture.

Step 3 : Mass Determination
The total mass to purify is used to balance the necessary throughput, purity and yield.

Step 4 : Scale-Up
The column size is calculated based on the output requirements.

D = diameter L = length

$$Load_{final} = Load_{initial} \times \frac{(D_{final})^2 \, L_{final}}{(D_{initial})^2 \, L_{initial}}$$

Step 5 : Linear Velocity
When scalin-up, the mobile phase flow rate should be adjusted proportionally to cross-sectional area of the column to maintain consistent linear velocity and retention times.

$$Flow\ Rate_{final} = Flow\ Rate_{initial} \times \frac{(D_{final})^2}{(D_{initial})^2}$$

Step 6 : Gradient
To get the resolution achieved on an analytical column while increasing column diameter, the gradient shape must be maintained by keeping the ratio of the gradient volume to the column volume constant.

Semi-Prep and Preparative Column I.D. Available	
7.8mm Column I.D.	Semi-Prep - Very Small quantity to purify. Sample loading 3x vs. Analytical column I.D. (4.6mmID)
10.0mm Column I.D.	Semi-Prep - Small quantity to purify. Sample loading 5x vs. Analytical column I.D. (4.6mmID)
21.2mm Column I.D.	Lab Scale Prep - Standard Purification Sample loading 20x vs. Analytical column I.D. (4.6mmID)
30 & 50mm Column I.D.	Preparative - High quanitty to purify Sample loading 45x120x vs. Analytical column I.D. (4.6mmID)

Full-Guard Cartridges

How can I protect my best HPLC column?
Full-Guard is the convenient protection system of your HPLC column and allow you to change the Guard Cartridge in seconds.
Select the proper reusable Holder (In-Line or Direct Connect); it works with all Full-Guard Cartridges I.D. (2.1-3.0-4.0 & 4.6mmID).

Full-Guard Holders :

Part.No CD0100 - Direct Connection

Part.No CD0101 - In-Line Connection

Prep Full-Guard Cartridges

Often in a purification steps the sample contains undesiderable molecules that can damage the Prep HPLC Column.
Expensive Preparative HPLC column deserves the best protection.
Select the proper reusable Holder according with the Prep Column I.D.

Full-Guard Prep Holders :

Part.No CX0120 - for 7.8-10mm Guard
Part.No CX0112 - for 21.2mm Guard
Part.No CX0120 - for 30mm Guard

www.sepachrom.com SepaChrom info@sepachrom.com

Adamas®
Ultra High Purity Silica Platform for HPLC

Adamas® is the media platform for analytical and preparative scale-up application base on Ultra High-Purity silica. The very low metal content ensure high stability, high performance and low bleed columns for high demanding application.

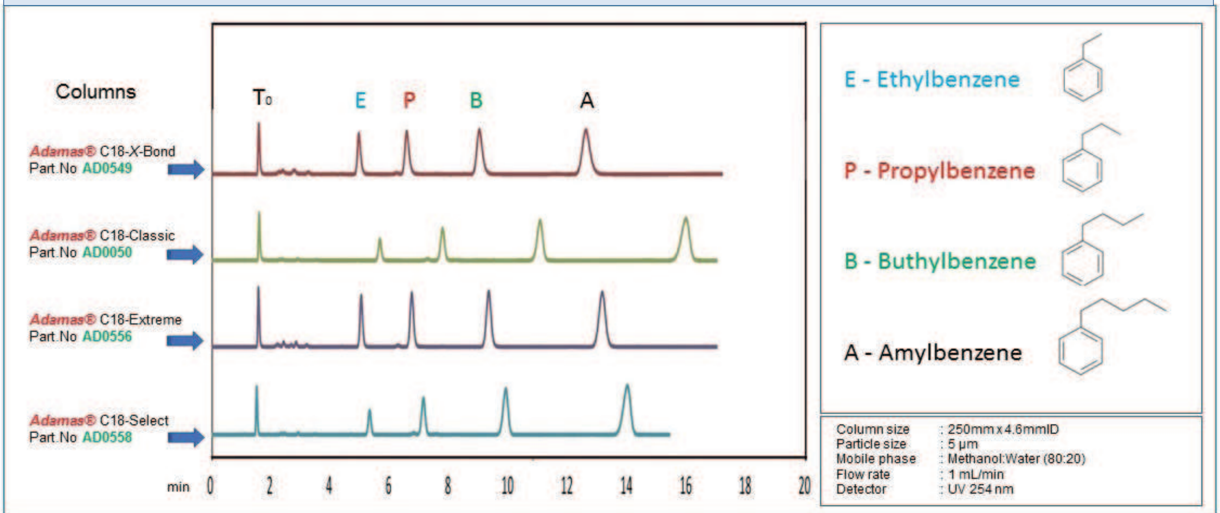
Often, in a method development process and in an effort to improve sample throughput, users will run a “standard method” on a “standard single media; *Adamas*® has a wide range of chemistries, including five C18, which ensure the maximum selectivity selection to achieve your best separation. A correct strategy will use phases with complementary selectivity which gives confidence that one of them will produce the separation. Resolution — that’s the key!

- **Better Peak Symmetry** : Ultra High-purity silica eliminates peak tailing problems
- **Long Column Life** : Exceptional column stability minimizes downtime and reduces cost
- **Ideal for Critical Analysis** : Low to no detectable column bleed
- **5 Selectivities of C18 Phases** : Optimizes retention, resolution, and analysis time

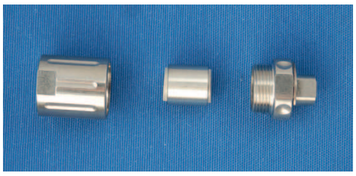
Adamas®
C18 Selectivity

- ***Adamas*© C18-Classic** — The “Classic” C18 Column, 17% Carbon Load, fully End-capped, good resistance to alkaline pH, High Hydrophobicity due to the “brush” C18 chains distribution, Traditional Interaction.
- ***Adamas*© C18-Extreme** — This phase is typically used in Extreme pH condition (pH 1-12) showing a good steric selectivity. The very low bleeding ensure the MS compatibility even in acidic conditions.
- ***Adamas*® C18-*X*-Bond** — Proprietary bonding, (similar to Tri-art or Xbridge technologies). The very high steric selectivity and lower hydrophobicity results in an interesting alternative to the Classic C18. MS Compatible
- ***Adamas*® C18-Select** — The fully exposed silanols (No End-capping) results in an high interaction with polar groups and an excellent choice for polar compunds separation.
- ***Adamas*® C18-AQ** — Long hydrocarbon chains collapse when work in 100% aqueous condition. Adamas© C18-AQ is fully compatible with 100% aqueous mobile phase due to a double functional group. 11% Carbon Load.

Selectivity of 4 ***Adamas*©** C18 columns : C18-Classic, C18-***X***-Bond, C18-Extreme and C18-Select



Adamas®
Preparative HPLC Columns - Hardware
- Highest Quality Stainless Steel and Smooth Surface
- High Performance Flow Distribution Design



Full-Guard Semi-Prep Holder
For Full-Guard Prep Cartridge

Stock # CX0120 - for Cartridges
10mmL x 7.8mmID & 10mmL x 10mmID

Full-Guard Prep Holder
For Full-Guard Prep Cartridge

Stock # CX0112 - for Cartridges
10mmL x 21.2mmID

Stock # CX0121 - for Cartridges
10mmL x 30.0mmID

Adamas®
Preparative HPLC Columns - Normal Phase
- Ultra Pure Silica Gel
- Columns with different sizes are available on request.
- Guard Cartridge require the proper Full-Guard Holder

Ordering Information

Phase	Particle Size	Length / ID	7.8mm	10.0mm	21.2mm	30.0mm	50.0mm		Guard
Adamas® Silica	5µ	100mm	AD0578	AD0587	AD0596	ASK	ASK		ASK 10mmL x ID (7.8-10-21.2-30-50mm)
	5µ	150mm	AD0579	AD0588	AD0597	ASK	ASK		
	5µ	250mm	AD0580	AD0589	AD0598	ASK	ASK		
	10µ	100mm	AD0581	AD0590	AD0599	ASK	ASK		
	10µ	150mm	AD0582	AD0591	AD0600	ASK	ASK		
	10µ	250mm	AD0583	AD0592	AD0601	ASK	ASK		
	15µ	100mm	AD0584	AD0593	AD0602	ASK	ASK		
	15µ	150mm	AD0585	AD0594	AD0603	ASK	ASK		
	15µ	250mm	AD0586	AD0595	AD0604	ASK	ASK		
Adamas® Diol	5µ	100mm	AD0605	AD0614	AD0623	ASK	ASK		ASK 10mmL x ID (7.8-10-21.2-30-50mm)
	5µ	150mm	AD0606	AD0615	AD0624	ASK	ASK		
	5µ	250mm	AD0607	AD0616	AD0625	ASK	ASK		
	10µ	100mm	AD0608	AD0617	AD0626	ASK	ASK		
	10µ	150mm	AD0609	AD0618	AD0627	ASK	ASK		
	10µ	250mm	AD0610	AD0619	AD0628	ASK	ASK		
	15µ	100mm	AD0611	AD0620	AD0629	ASK	ASK		
	15µ	150mm	AD0612	AD0621	AD0630	ASK	ASK		
	15µ	250mm	AD0613	AD0622	AD0631	ASK	ASK		
Adamas® Cyano	5µ	100mm	AD0632	AD0641	AD0650	ASK	ASK		ASK 10mmL x ID (7.8-10-21.2-30-50mm)
	5µ	150mm	AD0633	AD0642	AD0651	ASK	ASK		
	5µ	250mm	AD0634	AD0643	AD0652	ASK	ASK		
	10µ	100mm	AD0635	AD0644	AD0653	ASK	ASK		
	10µ	150mm	AD0636	AD0645	AD0654	ASK	ASK		
	10µ	250mm	AD0637	AD0646	AD0655	ASK	ASK		
	15µ	100mm	AD0638	AD0647	AD0656	ASK	ASK		
	15µ	150mm	AD0639	AD0648	AD0657	ASK	ASK		
	15µ	250mm	AD0640	AD0649	AD0658	ASK	ASK		

Adamas®

Preparative HPLC Columns - Reverse Phase

- Ultra Pure Silica Gel
- Columns with different sizes are available on request.
- Guard Cartridge require the proper Full-Guard Holder

Ordering Information

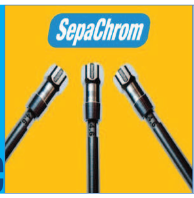
Phase	Particle Size	Length / ID	7.8mm	10.0mm	21.2mm	30.0mm	50.0mm	Guard
Adamas® C18-Classic	5µ	100mm	AD0659	AD0668	AD0677	ASK	ASK	ASK 10mmL x ID (7.8-10-21.2-30-50mm)
	5µ	150mm	AD0660	AD0669	AD0678	ASK	ASK	
	5µ	250mm	AD0661	AD0670	AD0679	ASK	ASK	
	10µ	100mm	AD0662	AD0671	AD0680	ASK	ASK	
	10µ	150mm	AD0663	AD0672	AD0681	ASK	ASK	
	10µ	250mm	AD0664	AD0673	AD0682	ASK	ASK	
	15µ	100mm	AD0665	AD0674	AD0683	ASK	ASK	
	15µ	150mm	AD0666	AD0675	AD0684	ASK	ASK	
	15µ	250mm	AD0667	AD0676	AD0685	ASK	ASK	
Adamas® C18-Extreme	5µ	100mm	AD0686	AD0695	AD0704	ASK	ASK	ASK 10mmL x ID (7.8-10-21.2-30-50mm)
	5µ	150mm	AD0687	AD0696	AD0705	ASK	ASK	
	5µ	250mm	AD0688	AD0697	AD0706	ASK	ASK	
	10µ	100mm	AD0689	AD0698	AD0707	ASK	ASK	
	10µ	150mm	AD0690	AD0699	AD0708	ASK	ASK	
	10µ	250mm	AD0691	AD0700	AD0576	ASK	ASK	
	15µ	100mm	AD0692	AD0701	AD0709	ASK	ASK	
	15µ	150mm	AD0693	AD0702	AD0710	ASK	ASK	
	15µ	250mm	AD0694	AD0703	AD0711	ASK	ASK	
Adamas® C18-X-Bond	5µ	100mm	AD0712	AD0721	AD0730	ASK	ASK	ASK 10mmL x ID (7.8-10-21.2-30-50mm)
	5µ	150mm	AD0713	AD0722	AD0731	ASK	ASK	
	5µ	250mm	AD0714	AD0723	AD0732	ASK	ASK	
	10µ	100mm	AD0715	AD0724	AD0733	ASK	ASK	
	10µ	150mm	AD0716	AD0725	AD0734	ASK	ASK	
	10µ	250mm	AD0717	AD0726	AD0575	ASK	ASK	
	15µ	100mm	AD0718	AD0727	AD0735	ASK	ASK	
	15µ	150mm	AD0719	AD0728	AD0736	ASK	ASK	
	15µ	250mm	AD0720	AD0729	AD0737	ASK	ASK	
Adamas® C18-Select	5µ	100mm	AD0738	AD0747	AD0756	ASK	ASK	ASK 10mmL x ID (7.8-10-21.2-30-50mm)
	5µ	150mm	AD0739	AD0748	AD0757	ASK	ASK	
	5µ	250mm	AD0740	AD0749	AD0758	ASK	ASK	
	10µ	100mm	AD0741	AD0750	AD0759	ASK	ASK	
	10µ	150mm	AD0742	AD0751	AD0760	ASK	ASK	
	10µ	250mm	AD0743	AD0752	AD0761	ASK	ASK	
	15µ	100mm	AD0744	AD0753	AD0762	ASK	ASK	
	15µ	150mm	AD0745	AD0754	AD0763	ASK	ASK	
	15µ	250mm	AD0746	AD0755	AD0764	ASK	ASK	
Adamas® C18-AQ	5µ	100mm	AD0765	AD0774	AD0783	ASK	ASK	ASK 10mmL x ID (7.8-10-21.2-30-50mm)
	5µ	150mm	AD0766	AD0775	AD0784	ASK	ASK	
	5µ	250mm	AD0767	AD0776	AD0785	ASK	ASK	
	10µ	100mm	AD0768	AD0777	AD0786	ASK	ASK	
	10µ	150mm	AD0769	AD0778	AD0787	ASK	ASK	
	10µ	250mm	AD0770	AD0779	AD0577	ASK	ASK	
	15µ	100mm	AD0771	AD0780	AD0788	ASK	ASK	
	15µ	150mm	AD0772	AD0781	AD0789	ASK	ASK	
	15µ	250mm	AD0773	AD0782	AD0790	ASK	ASK	

Adamas® **C4 - C8 - Phenyl - Amino - HILIC - CHIRALS** are available on request.

Other **Lengths** and **Internal Diameters** are available on request. Ask a quotation.

Other Products available from SepaChrom

HPLC



HPLC, UHPLC Silica Based Columns for Analytical Applications
Vydac® Columns for Proteins and Peptides Separations
Polymer Base Columns for Carbohydrate & Organic Acids Analysis
Chiral HPLC Columns
Ion Chromatography Columns for Anions and Cations Analysis

MEDIA

Irregular and Spherical Silica Gel for Flash, Prep & Industrial Purification
Bonded Silica C18, Cyano, Diol, Amino
Wide Range Porosity (30Å- 2500Å) and Particle Size (10μ-200μ) for Any Application
Polymer Based Resin for Reversed Phase and Ion Exchange Chromatography

PREP

10mm-25mmID Packed Prep Columns for Lab Scale Purification
25mm-100mmID Packed & Empty, Flanged & Spring Column Technology
50mm-2000mmID Process Scale Chromatography Columns & Systems, Flanged & DAC Technology
Scale-up Method Development & Packing Service

FLASH

Instruments for Flash and Prep Chromatography up to 750mL/min & 250 bar Pressure.
190-840 Multi Wavelength & Scan Collection,
Integrated ELSD, MS Simple Quad Detector
Flash Columns for All Existing Flash Instruments : Silica, Reverse Phase, CN, Diol, NH2, Chiral Phases, 15μ to 50μ Particle Size

SPE

Silica Based SPE Cartridges for Pharma, Environmental, Food&Beverage Applications.
Polymer Base SPE Cartridges for Clinical & Forensic Applications.
Ion Chromatography SPE Cartridges
Accessories for SPE
Siringe Filters & QuEChERS

VIALS

Autosampler Vials for HPLC, IC e GC
Sampling Vials
Head Space Vials
Crimper & Decapper and Sampling Accessories

GC

High Performance GC Capillary Column SepaChrom :
SepaFlex : Full Range of GC Capillary Columns, MS Columns, ChiralFlex, UltraMet-HT, SpeedyFlex
Econo-Sep : Batch Tested Common GC Capillary Columns
GC Capillary Column Heliflex® & Eco-no-Cap™

Accessori HPLC-GC

SS & PEEK Tubing for Analytical,Preparative and Ion Chromatography
Fittings, Ferrule & Valves for HPLC, IC and GC
Syringes and Septa for GC
Traps for GC Gas Lines
Gas Generators

Company Profile

About us :
SepaChrom is a new company specialising in **Chromatography.** ***SepaChrom*** is the brainchild of the founders who wanted to create a dedicated and unique company able to support **Chromatography Users** in optimizing their challenges.
Our Core competence is the manufacture, sale and support of ***High-Quality*** products for ***GC, Analytical*** and ***Preparative*** scale ***HPLC*** and ***Flash*** purification, including consumables and accessories, through ***Process*** scale purification.
Our Mission :
Our team has decades of experience, which, combined with a range of High Quality selected products and the most efficient technological solutions, allows ***SepaChrom*** to support Pharma, Biotech, Chemical, Food and Beverage, Cosmetic, Environmental, Clinical and Petrochemical industries, in R&D departments as well in QC laboratories and Production. Our commitment is to provide the Highest level of Technical Support that Chromatographers expect from ***Your Specialist in Chromatography***
Customers in Mind :
The success of ***SepaChrom*** is driven by complete ***satisfaction*** of our customers, and consequently by their success.
SepaChrom's expertise results in High-Quality ***pre & post*** sale support to the Chromatographic Users. This includes ***fast delivery*** of your products from our warehouse to your location.

SepaChrom
Your Specialists in Chromatography

Sepachrom Srl

Via Trento 33
20017 RHO MI - Italy

T.: +39 02 365 41 401
F.: +39 02 365 48 378
E.: info@sepachrom.com
W.: www.sepachrom.com